

**Social/energy policy: an inquiry into the intersection of two policy domains
with Australia's national electricity market**

Field of study:

Energy Policy

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Declaration

I, Andrew John Nance confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Andrew John Nance

Dedication

To Dr Gill Owen who sadly passed away in 2016 after a distinguished energy career in both the UK and Australia. Gill provided supervision and inspiration to this project from 2013. Thank you.

Acknowledgements

My first exposure to the public policy dilemma of energy affordability and renewable energy came in 2002 and it has been a regular feature of my work ever since. 15 years later this thesis represents an attempt to bring together the various threads encountered in that time.

This research has been shaped by numerous individuals over many years and it would not be possible to acknowledge everyone. Particular thanks go to the staff and students of UCL Australia for the encouragement and friendship over the 8 years it took to complete this thesis. My friends and colleagues at The Energy Project deserve my thanks as do colleagues at the numerous community sector organisations that I have worked with over the years.

My gratitude goes to my amazing and inspiring children Sophie-Rose and George who have had to put up with me working on this research at nights and on the weekends for the vast majority of their lives.

I doubt I would have finished without the support, advice and encouragement of my dear friend Karen Grogan. Thank you.

Title:

Social/energy policy: an inquiry into the intersection of two policy domains with Australia's national electricity market

Abstract:

The introduction of competition to electricity markets has been a priority of energy policy in Australia for over 20 years. Throughout this process, economic efficiency objectives have had explicit primacy over social or environmental objectives. Neoliberalism, or *economic rationalism* as it is often referred to in Australia, not only radically changed the provision of electricity from the 1990s but recast the provision of welfare services by transferring many services from provision by government to provision by 'private welfare agencies'. Energy policy and social policy can therefore be seen to have been placed on similar paths towards market-based provision of service to households. Importantly this has shifted many frontline responsibilities away from governments to energy retailers and community sector organisations.

The electricity market's consumer safety net has been described as a *shared responsibility* between industry, governments and community sector organisations. This *shared responsibility* represents the intersection of energy policy and social policy in Australia akin to *fuel poverty* policies internationally. However, this intersection is ill-defined and not systemically governed. The key role of community sector organisations in particular is rarely formalised. This research represents the first attempt to develop a coordinated national policy framework for the consumer safety net of Australia's National Electricity Market.

The research question that this thesis seeks to answer is:

- When considering a consumer safety net for consumers in a liberalised electricity market, what is an appropriate analytical framework for policy and practice that can be used by stakeholders to improve governance and consumer outcomes?
- Subsequently, what priorities emerge from this framework that could be advanced through the policy cycle?

In response, this thesis provides a comprehensive, structured review and analysis of the relationship between energy policy and social policy at a time when electricity pricing is undergoing significant changes in terms of structures (tariff reform) and upward pressure as a result of climate change policies and the development of a natural gas export industry.

The theory and practice of public policy analysis is summarised and guides the structure of the thesis. The research argues for a systematic approach based on the pursuit of 5 public policy outcomes that reflect the interaction between household energy bills and energy, climate and social policies:

- Stable and Efficient Pricing AND
- Informed and engaged consumers AND
- Energy consumed efficiently and productively AND
- Robust consumer protections AND
- All households have a capacity to pay their energy bills

This thesis provides context in Chapters 1 and 2 then a chapter is dedicated to each of the five policy outcomes. In each case, the research and analysis is presented in four parts that represent key stages of a policy cycle, the way in which public policy evolves over time: a review of the current arrangements; analysis to identify key issues; empirical analysis and; policy formulation. Consequently, priority policy issues are identified, and recommendations made in the concluding chapter.

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1 Introduction

The political economy of electricity pricing in Australia has been charged by rapid price rises over the last decade. Australia-wide average electricity prices increased around 85% above general inflation in the decade to the September quarter 2017¹. As shown in **Figure 1**, electricity prices have also significantly outpaced wages and, as shown later in the thesis, wages have outpaced pensions and other government income support (ACOSS, 2016). This has challenged the budgets of most households and, perhaps not surprisingly, consideration of climate policy measures that may increase prices is being resisted from many quarters.

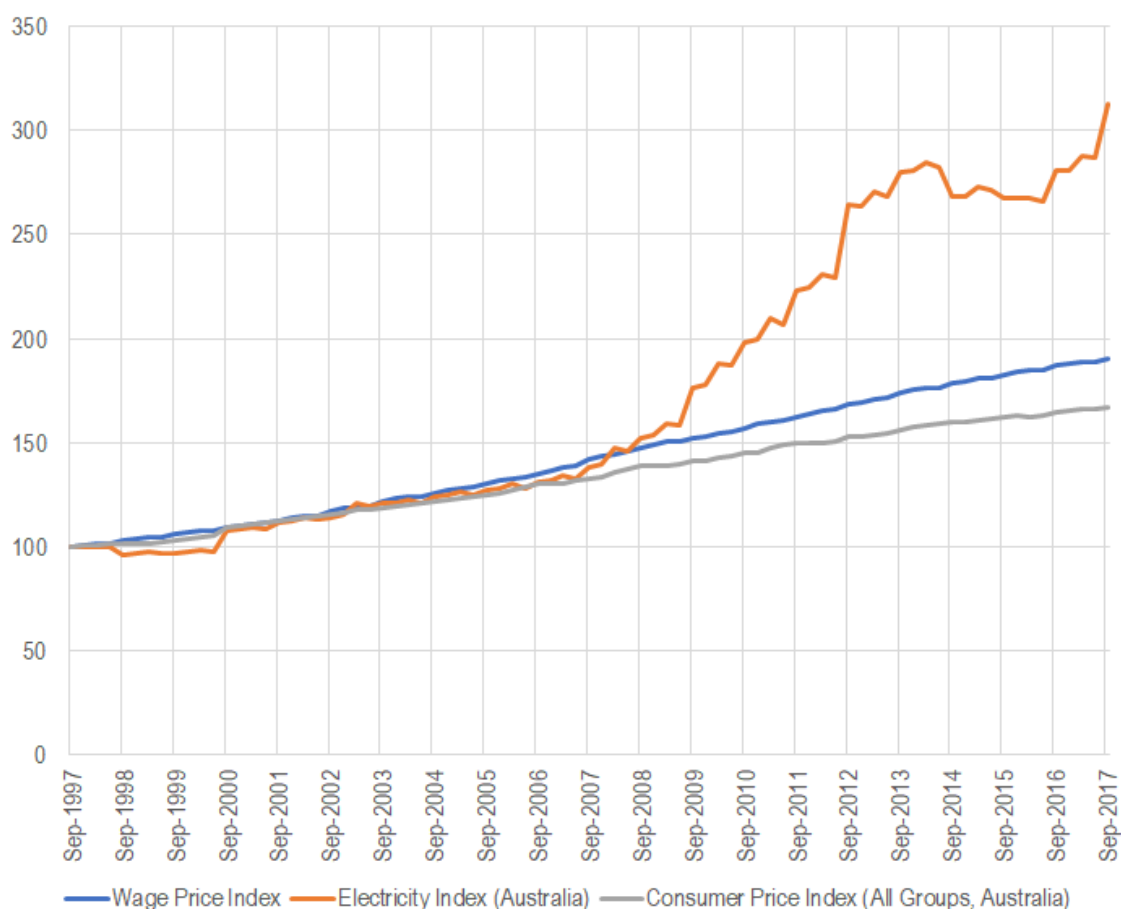


Figure 1: Electricity price growth in Australia compared to all consumer sector prices and wage growth 10 years to September Quarter 2017 (Source: ABS Consumer Price Index 6401.0, Wage Price Index 6345.0 September 2017 release)

However, climate policy is far from the only pressure on energy markets – a technology-driven transition is occurring anyway. The ability of the electricity system to deliver ongoing security and reliability through this transition has increased in importance since the ‘system

¹ ABS Consumer Price Index 6401.0 Table 9, June 2007 to September 2017

black' event in South Australia of September 2016. These three related issues – energy security, affordability, and decarbonisation – are the 'energy trilemma'. The interaction of the elements of the trilemma, and the balance of achievement across them, is receiving significant policy attention. The grand policy challenge is to solve for all three and a new body, The Energy Security Board, was established in 2017 to coordinate efforts of the key energy market institutions. The Board's first Annual Report *The Health of the National Electricity Market 2017* identifies gaps in the market's safety net (Energy Security Board, 2017, p. 40):

... recent high price rises have been difficult for some customers and increased numbers of consumers are falling behind on their bills, being disconnected, and struggling to complete hardship assistance programs. This raises serious questions about the effectiveness of consumer protection programs and the adequacy of the consumer protection safety net.

Energy policy is inherently reliant on social policy settings to ensure households have a minimum capacity to pay their electricity bills. However, while statements of energy policy in Australia have explicitly expected social policy to keep pace with market reforms and preserve access and affordability, no governance arrangement has ever been put in place to ensure that these expectations can be effectively met.

The research question that this thesis seeks to answer is:

- When considering a consumer safety net for consumers in a liberalised electricity market, what is an appropriate analytical framework for policy and practice that can be used by stakeholders to improve governance and consumer outcomes?
- Subsequently, what priorities emerge from this framework that could be advanced through the policy cycle?

This Chapter first outlines the methodology adopted for the research and introduces the five key policy outcomes that have been distilled from the literature to represent the market's safety net. A short history of electrification is then presented to highlight the intertwined nature of energy policy and social policy during the 20th century before economic rationalism oversaw their divergence in the century's final decades. Market reforms in energy and social policy have created organisations outside of government that have key roles to play in the provision of a safety net and these are introduced before the rest of this introductory chapter outlines the contemporary context for the research.

1.1 Methodology

This thesis represents the first attempt to develop a coordinated national policy framework

for the consumer safety net of Australia's National Electricity Market. This thesis combines the researcher's foundation discipline, Electrical Engineering, with Policy Analysis, Applied Economics and aspects of Social Science. The multi-disciplinary nature of the topic is a defining and positive feature of the work that must also be acknowledged as a limitation: this thesis does not necessarily conform to the academic conventions of any of the disciplines traversed. A further limitation is the dynamic nature of the material covered. Energy issues are developing at a significant pace and keeping all of the sources as up to date as possible has been a substantial challenge. These limitations though could be overcome in future work that builds on the framework herein, the nature of the topic is well suited to a research collaboration rather than a single researcher's thesis. The unique contribution is the foundational nature of the approach. Despite these limitations, at every opportunity the analysis has followed Charles Lindblom's advice (Lindblom and Woodhouse, 1993):

Targeting analysis toward helping actual partisans interact with each other would increase the chances that research will have some impact on social problem solving

Energy market regulation is dynamic and highly complex and the need for a simple analytical framework for consumer advocates and policymakers has been reinforced by the process of trying to develop one: over the 8 years that this thesis was developed, the researcher has been engaged by a range of organisations on vulnerable energy consumer related research and advocacy projects including the South Australian Council of Social Service, the Australian Council of Social Service, The Climate Institute, the South Australian Financial Counsellors Association, Uniting Communities, the South Australian and New South Wales Governments, South Australian Power Networks and Energy Consumers Australia. Common to each of these projects was a challenge to locate individual issues in a repeatable and easy to understand frame.

This research has relied heavily on *Content Analysis* of regulatory and academic publications as well as submissions from stakeholders (Lindblom's *partisans*) into regulatory processes (Krippendorff, 2004):

Content analysts who start with a research question read texts for a purpose, not for what an author may lead them to think or what they say in the abstract.

In the Australian context there is substantial regulatory and policy material (so called *grey literature*) but limited academic publications on the relationship between energy policy and social policy. Internationally, academic publications related to 'energy poverty' and/or 'fuel poverty' are much more plentiful. Beyond the analysis of documents, the concepts described

have been refined over several years through various discussions and debates with colleagues in the Community Sector and staff from the various Regulators and Government agencies involved in energy and water regulation – particularly in the researcher’s home state of South Australia. The majority of material used has been from regulatory consultations – the consultation and decision documents of the AEMC and AER in particular – and the submissions made to these processes by consumer organisations and energy businesses. These documents are considered to provide a rich source of views on the relationship between social policy and energy policy as high level statements are intermingled with commentary on detailed issues.

Alternate frames were tested but subsequently abandoned. An example was early efforts to appropriate the term *energy security* at the household level as a unifying objective for the energy policy, social policy nexus (see Appendix B for discussion of an earlier model). *Energy security* is often defined in terms of *adequate, affordable* and *reliable* supplies of energy (Sovacool, 2010). Historically applied to nations, the term and concepts had begun appearing in the context of poverty and sustainable development. Slay for example argued the need to “ ... disaggregate concerns about energy security ... from the nation-state to the households, and particularly to poorer households...” in discussions of transitioning economies of the former Soviet Union (Slay, 2009). However, given the semantic issues already existing with this subject matter – energy poverty compared to fuel poverty for example (Chester and Morris, 2011; Li et al., 2014) - this framing of *energy security* for households gained little traction when presented to community sector stakeholders and was not pursued.

A significant amount of time was also spent analysing unit record files from Australian Bureau of Statistics surveys (2009-10 Household Expenditure Survey and the 2012 Household Energy Consumption Survey). The aim of this was to deepen understanding of energy affordability – particularly in relation to housing costs - and to see if ‘energy poverty’ could be measured in an Australia context in a similar way to the measurement of Fuel Poverty in the UK. The report, *Relative Energy Poverty in Australia* is attached as Appendix A. Ultimately, the analysis reinforced the merits of considering energy affordability in the context of housing affordability and household size. The comprehensive statistical analysis required to do this justice though was beyond the scope of this thesis and is therefore reflected in the recommendations from the thesis rather than contained within it.

A model of the factors that influence the related objectives of “access to” and “affordability of” energy was also developed, tested and refined as part of the project. **Figure 2** illustrates a

disaggregation into key influences:

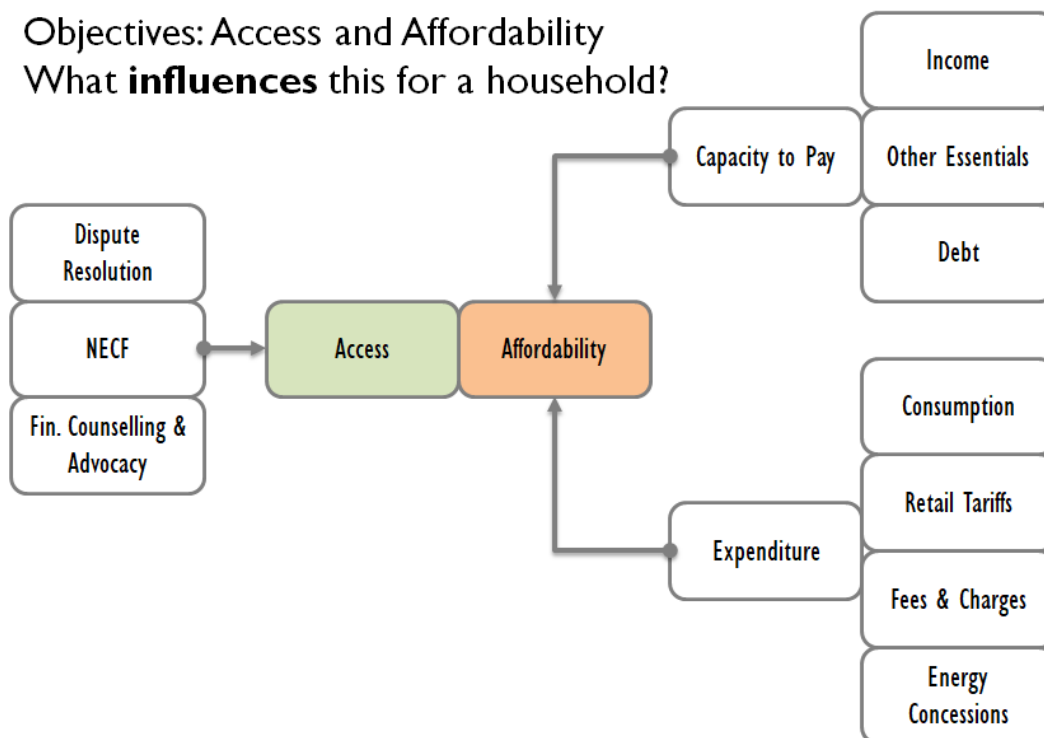


Figure 2: Influencers of access to, and affordability of energy in the NEM

In relation to ongoing *access*, an energy specific set of consumer protections exist. The National Energy Customer Framework (NECF) is the set of laws and other instruments that complement the general consumer protections of Australian Consumer Law (ACL). Independent dispute resolution is provided through an Ombudsman scheme in each state and territory. The community sector has a direct role through the provision of Financial Counselling and advocating for individual consumers to energy retailers, Ombudsman schemes and private debt collection agencies.

In relation to *affordability*, this will always be a function of some measure of a household's capacity to pay and the size of their energy bills (expenditure). Capacity to pay for energy is represented by a combination of disposable income, obligations to meet other cost of living essentials (such as housing, transport and healthcare) and other debts that need to be serviced. Expenditure is driven by consumption and prices (retail tariffs) as well as other fees and charges collected via energy bills. The provision of energy concessions – generally paid directly to retailers – has the effect of lowering expenditure for eligible households and hence appears there rather than on the income side of the ledger.

The objective of this research has been to develop, and then apply, a simple analytical

structure for the relationship between social policy and energy policy, and with electricity market policy in particular. A model of this policy space has been developed that represents a spectrum of responsibility between the traditional domains of energy policy and social policy. Along this spectrum, key categories of policy activity have been identified and framed in terms of their intended outcomes. A repeated process of categorisation and distillation has reduced the number of policy outcomes down to five as listed below and illustrated in **Figure 3**:

Outcome 1: Stable and Efficient Pricing

Outcome 2: Informed and engaged consumers

Outcome 3: Energy consumed efficiently and productively

Outcome 4: Robust consumer protections

Outcome 5: All households have a capacity to pay their energy bills

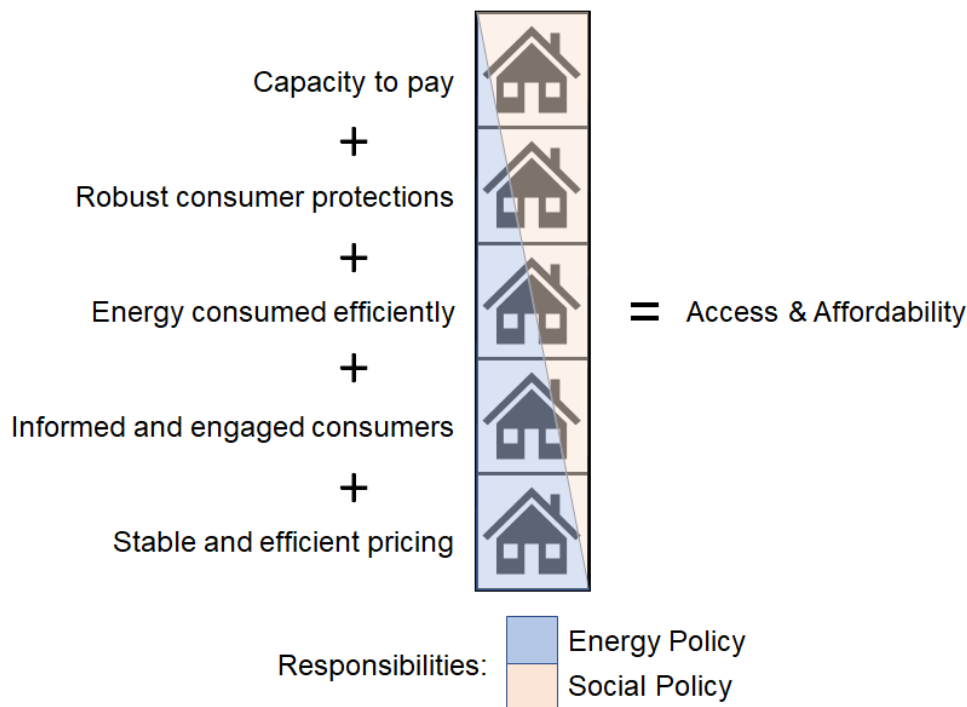


Figure 3: Illustration of the combination of energy policy and social policy responsibilities required to achieve access and affordability of energy for households

The shading of the blocks depicting the five outcomes in **Figure 3** represents a broad estimate of the sharing of responsibilities between energy policy and social policy domains. For example, stable and efficient pricing is a primary responsibility of energy policy, yet social policy has a valid role in advocating for supportive policies. Similarly, at the other end,

ensuring a capacity to pay is primarily a social policy domain yet energy policy has a role in ensuring policies reflect the needs of providers of essential services such as energy. In the middle is an outcome related to how efficiently and productively energy is used. This outcome arguably relies on both energy and social policy given the central role of the energy performance of housing alongside access to efficient appliances and an understanding of consumer behavior. The prevailing market model relies on consumers being informed and sufficiently engaged to avoid the highest prices and a robust consumer protection regime is vital for a non-discretionary essential service.

These five outcomes can also be considered as representing the main elements of the National Electricity Market's consumer *safety net*: the combined effect of energy policy and social policy at both state and Commonwealth levels of government. Other policy domains such as Consumer policy and Climate policy add further dimensions to these outcomes and are included in the analysis presented in the later chapters. However, it is contended that these other domains interact with the five outcomes presented rather than add additional outcomes.

For the majority of the 20th century, public policy in Australia and elsewhere held a focus on electrification: the pursuit of near-universal access to the electricity grid in each state and territory. An open question is whether electrification should be considered social policy or energy policy or both? The following section will retrace some of the history of electrification in Australia in order to highlight the clear divergence of energy policy and social policy in the last decades of the 20th Century.

1.2 Electrification

The ubiquitous availability of electricity in the 21st century makes it easy for many of us to take electricity for granted. In order to highlight the sometimes forgotten significance of electrification Booth's *History of Power Development in Australia* (Booth, 2003) opens with reference to the US National Academy of Engineering (NAE) and their list of the 20 engineering achievements that had the greatest positive impact on society in the twentieth century. In a speech to the US National Press Club, Engineer and Astronaut Neil Armstrong emphasised links between engineering and 'quality of life' as he announced that top of the list was 'electrification' (Armstrong, 2000):

Electrification changed the country's economic development and gave rural populations the same opportunities and amenities as people in the cities... If anything shines as an example of how engineering has changed the world during the twentieth century, it is clearly the power that we use in our homes and businesses.

Electrification in Australia was undertaken by State and Territory Governments during the 20th Century. Privately owned electric companies were common in the early parts of the century but evolved into state ownership by the 1950's (Booth 2003). Various state-owned statutory authorities operated as vertically integrated monopolies until the 1990's (Industry Commission, 1991a):

- Electricity Commission of New South Wales;
- Queensland Electricity Commission;
- State Electricity Commission of Victoria;
- State Energy Commission of Western Australia;
- Electricity Trust of South Australia;
- Tasmanian Hydro-Electric Commission;
- Northern Territory Power and Water Authority;
- Snowy Mountains Hydro-Electric Authority; and
- ACT Electricity and Water Authority.

As one example, nationalisation of the electricity industry in South Australia was, according to Spoehr (2003), a result of the political imperative of industrialising the state in the wake of the 1930s Depression. The nationalisation of the Adelaide Electric Supply Company (AESC) in 1946 by Premier Tom Playford formed the Electricity Trust of South Australia (ETSA). A pivotal issue was the development of SA's indigenous coal reserves at Leigh Creek as an alternate to the continued importation of NSW black coal (Booth 2003; Spoehr ed. 2003). Prior to the 1945 Royal Commission into the AESC, a Parliamentary Committee of Inquiry into Electricity Supply in South Australia was formed in 1943 to determine if a new power station at Port Augusta was in the public interest. As cited in Spoehr (2003, p. 20), public interest in relation to electricity supply was defined as:

- a. Security – In the form of reliability, continuity and sufficiency of supply; and
- b. Economy – In the form of the cheapest supply to consumers

Premier Playford also used the relatively slow pace of rural electrification in the argument to nationalise. At the time stating that (Spoehr, 2003, p. 21):

... the service has not extended appreciably to many rural districts ... Scant regard seems to have been paid to approximately half of our population which is resident outside the metropolitan area

However, by the 1980s, public policy in Australia was embracing neoliberalism and attention turned to the potential benefits of a more competitive electricity sector as was being pursued elsewhere, including the UK and New Zealand (Booth, 2003; Chester and Morris, 2011).

Neoliberalism, or *economic rationalism* as it is often referred to in Australia (Pusey, 2003), also recast the provision of welfare services at around the same time by transferring many services from provision by government to provision by 'private welfare agencies' from the 1990s (Jamrozik, 2009). Electricity Policy and Social Policy can therefore be seen to have been placed on similar paths towards a more market-based provision of service to households. Importantly this has shifted many frontline responsibilities away from governments to community sector organisations and, particularly in the case of energy, spawned a number of statutory regulatory agencies. These are introduced next.

1.3 The main stakeholders

Policy development often relies on the competition of ideas between stakeholders and Charles Lindblom, as a prominent example, argued strongly that good policy is whatever the key interests can agree on (Lindblom and Woodhouse, 1993). With this in mind, it is constructive to introduce the key stakeholders operating in the energy policy domain.

1.3.1 Community Sector

Vulnerable consumers are often represented in policy debates by community sector organisations. As mentioned, many welfare services historically provided by governments have been outsourced to community sector organisations (Jamrozik, 2009). These organisations, largely but not entirely not-for-profit, provide a range of services relevant to energy markets. These include the assessment and distribution of emergency relief, housing services, aged care, financial counselling, advocacy (for individuals to debt recovery agents, utilities etc), legal representation and community education programs. The sector has national *peak bodies* including the Australian Council of Social Service (ACOSS), National Shelter and Financial Counsellors Australia (FCA). A number of other organisations are active advocates for the interests of vulnerable energy consumers including the St Vincent de Paul Society, Uniting Care Australia, state-based Councils of Social Service (SACOSS, QCOSS, VCOSS, ACTCOSS, NCOSS, NTCOSS, WACOSS, TASCROSS) and Brotherhood of St Laurence (BSL). Some prominent advocacy organisations are informed by their legal case-work including Victoria's Consumer Action Law Centre (CALC) and NSW's Public Interest Advocacy Centre (PIAC). Resourcing for this advocacy work, which often involves written submissions to policy and regulatory processes, tends to come from Energy Consumers Australia (previously the Consumer Advocacy Panel) and/or state governments.

1.3.2 Energy retailers

The Retail Energy Industry is represented by the Australian Energy Council (AEC). This includes retailers of electricity and gas and also generators of electricity. The dominant business model in electricity is the combined generator and retailer, discussed in section 3.4.1. Historically, vulnerable consumer policy work was driven by the Energy Retailers Association of Australia (ERAA). The ERAA merged into the AEC on 1 January 2016 and combines both generators and retailers. The ERAA published a policy on hardship in 2013 that outlined the (limited) role seen by the industry:

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.

Energy retailers are responsible for the direct contact with energy customers and have obligations under The National Energy Retail Law (NERL) Clause 47 to ensure that disconnection for unpaid bills is a 'last resort':

47—General principle regarding de-energisation (or disconnection) of premises of hardship customers

A retailer must give effect to the general principle that de-energisation (or disconnection) of premises of a hardship customer due to inability to pay energy bills should be a last resort option.

1.3.3 Energy networks

Energy Networks Australia (ENA) represents the interests of the regulated electricity and gas network owners. There is a natural tension between the interests of the AEC and the ENA as they, in effect, compete for shares of the total electricity market. Ring-fencing of the regulated network businesses from 1 January 2018 to prevent cross-subsidisation of competition with AEC members on metering and services such as solar and storage is exposing conflicts evident in submissions to the accompanying regulatory processes.

The ENA published an options paper by consultants HoustonKemp titled 'Supporting Vulnerable Energy Customer's in 2015 and hosted a series of roundtables in 2015 (ENA, 2015; Kemp et al., 2015). Network businesses have little direct contact with household energy consumers as this is the domain of electricity retailers. However, context for the ENA work was provided by rules requiring the network businesses to develop more 'cost reflective tariffs' and concerns that this may exacerbate hardship for some households. South Australian Power Networks (SAPN), the regulated monopoly electricity distributor in South Australia

proposed a 'social tariff' as part of its 2015-10 Regulatory Proposal that offered lower network tariffs to customers participating in a retailer hardship program. The social tariff was opposed by the South Australian Council of Social Service (SACOSS, 2016a, p. 34) and rejected by the Australian Energy Regulator under the National Electricity Rules. The rejection was appealed by SAPN but ultimately the proposal was dismissed by the Federal Court (*CKI Utilities Development Pty Ltd v Australian Energy Regulator [2016] FCA 17*). Anecdotally, an appetite for such a tariff still exists within some network businesses.

1.3.4 Commonwealth Government

The Commonwealth Government is a significant stakeholder in this policy space and chairs the Council of Australian Governments (CoAG) Energy Council. The Australian Constitution is silent on electricity and responsibility rests with the states. An Intergovernmental Agreement underpins the governance arrangements for electricity and gas markets (the Australian Energy Market Agreement or AEMA) but the issues relevant to vulnerable consumers overlap with other Intergovernmental Agreements for Housing, Energy Efficiency, Consumer Law and Federal Financial relations.

1.3.5 State and Territory governments

State and Territory governments historically lead electrification but have passed substantial parts of energy policy over to national institutions. They remain responsible for politically sensitive local issues such as concessions and reliability standards. Some governments continue to own network and/or generation assets – South Australia and Victoria are the only two to have effectively privatised their industries (although New South Wales is close after asset sales in 2016 and 2017). A number of states have implemented or are considering, state-based renewable energy targets and accompanying mechanisms (ACT, NT, VIC and QLD). These schemes sit alongside state-based energy efficiency mechanisms.

1.3.6 Energy Consumers Australia

Energy Consumers Australia (ECA) is a not for profit company established under the *Statutes Amendment (Energy Consumers Australia) Act 2014* (South Australia) funded through a levy on electricity sales. The entity commenced operating in January 2015 with a clear mandate to represent 'all consumers' and to include, but not to focus solely on, vulnerable consumer issues. So, while vulnerable consumers are very much in scope for ECA (evidenced by work on disconnections and energy efficiency for low-income and vulnerable customers through the *Power Shift* initiative) a strategic approach to interactions with social policy settings is still

maturing.

1.3.7 Australian Energy Market Commission

The Australian Energy Market Commission (AEMC) is the market institution responsible for assessing changes to the National Electricity Rules and National Energy Retail Rules. These rules are the general statutory framework under the National Electricity Law and National Energy Retail Law regulating operation of the NEM. The AEMC is also responsible for market development and design and provides advice to the COAG Energy Council (Energy Security Board, 2017). The AEMC has been a strident defender of the primacy of economic efficiency over social welfare issues (see section 2.4 for examples of this) but has acknowledged limitations of competition in recent reviews (AEMC, 2016a, 2017a; Newgate Research, 2016).

1.3.8 Australian Energy Regulator

The Australian Energy Regulator (AER) is responsible for the economic regulation of the non-competitive sectors of the NEM, essentially distribution and transmission networks. The AER is also responsible for the enforcement of compliance with the National Electricity Law and Rules and the National Energy Retail Law and Rules and for providing information to consumers. (Energy Security Board, 2017). As enforcer of the rules, the AER also gathers data and reports on retailer performance in areas such as disconnections, payment plans and hardship programs. The AER's annual performance reports on the retail energy industry include commentary around affordability as context (AER, 2017a).

1.3.9 Australian Energy Market Operator

The Australian Energy Market Operator (AEMO) operates the power system and gas and electricity spot markets. AEMO is the body that keeps the electricity system operating. Like all market participants and the AER, AEMO is responsible for implementing changes to the rules that impact on its operations and importantly is also responsible for the provision of information to market participants, for long term planning of the interconnected power system, including forecasting demand and supply and network development (Energy Security Board, 2017). AEMO has little direct influence on specific market outcomes for vulnerable consumers, rather its functions impact on outcomes for consumers at large.

1.4 Contemporary Context

This section presents the contemporary policy context for the interaction between energy policy and social policy. Climate policy exerts a strong influence over energy policy.

Australia’s international commitment to the Paris Climate Agreement provides some guidance on future directions even though details of policy mechanisms remain in development at the time of writing.

This chapter also introduces the building block components of a typical electricity bill in order to explain the myriad of influences on household electricity costs. An introduction to energy consumer vulnerability is provided by considering the range of typical electricity costs for households segmented by disposable income. This is then taken further by considering how changes to the structure of electricity prices now appearing in the Australian electricity market may exacerbate or relieve energy bill pressures on different households.

1.4.1 Trends in residential electricity prices

Figure 4 is based on ABS Consumer Price Index data (Electricity Price Index) from the September Quarter of 1992 as an index number of 100 in each capital city as well as the national weighted average result. The results are presented in real terms (i.e. adjusted for movements in the All Groups Consumer Price Index in each capital city) and cover a period of 25 years over which energy market restructuring has occurred.

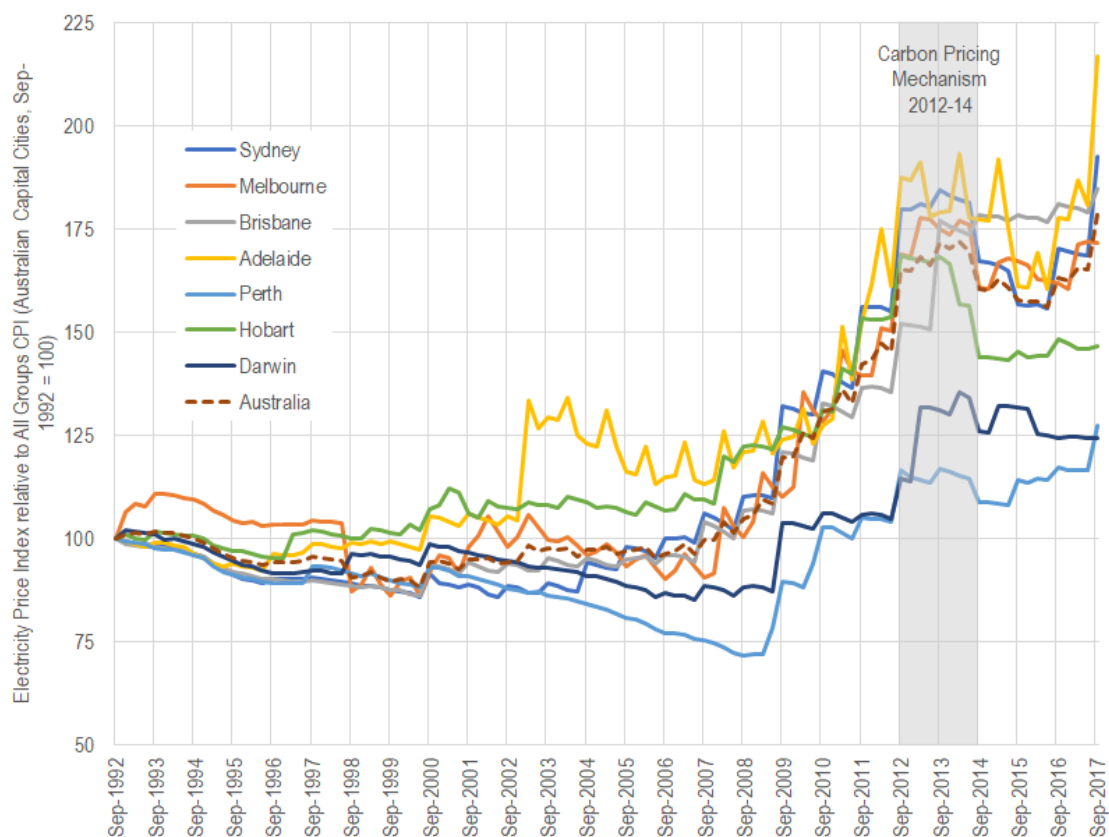


Figure 4: Real electricity price movements since 1998, Australian Capital Cities (Source: ABS Cat No. 6401.0 Table 9)

The chart illustrates that:

- Electricity prices have risen at rates well above inflation in most locations, especially since 2007 but significant differences exist between jurisdictions
- The five-year period to mid-2012 saw the strongest growth in prices in all locations.
- The national carbon pricing mechanism applied from July 2012 until June 2014 and is shown in the shaded area. This represented the high-tide mark in prices until the price rises apparent from July 2017.
- Price growth has been markedly lower in Tasmania, WA, ACT and NT where there is effectively no retail competition and prices remain regulated by jurisdictional regulators and/or Governments. Government ownership prevails in each of these jurisdictions.

1.4.2 Climate Change

In December 2015, 195 countries, including Australia, adopted an international climate deal to bind all countries to take action to reduce emissions, referred to as the Paris Agreement (UNFCCC, 2015). The core element of the agreement is to limit global warming to well below 2°C above pre-industrial levels, and pursue efforts to limit warming to 1.5°C. The agreement also obliges signatories to consider children, persons with disabilities and other people in vulnerable situations when taking action to address climate change.

There is increasing recognition that people experiencing poverty and inequality, even in developed countries such as Australia, are more vulnerable to the adverse impacts of climate change (including increasingly frequent and intense extreme weather events) than the general community, having the least ability to cope, to adapt, to move and to recover (Mallon et al., 2013). The impacts of climate change on people experiencing poverty and inequality in Australia also include the way that public policy responses influence the cost of essential services – especially household energy costs.

To achieve the objectives of the Paris Agreement the 195 countries are required to submit comprehensive national climate action plans and to review them every 5 years to enable more ambitious targets to be set as required. The Australian Government has a 2030 greenhouse gas emissions reduction target of 26-28% below 2005 levels and undertook a review of climate change policies in 2017 to ensure this target and the international commitments are achieved. Under the terms of the Paris Agreement Australia is required to update and resubmit its 2030 target by 2020.

The electricity sector generates around one-third of Australia's total Greenhouse Gas Inventory and will be required to make a substantial contribution to Australia's international commitments to reduce emissions. Electricity sector emissions are dominated by the combustion of coal (around 62% of electricity generated and around 88% of emissions) (CCA, 2016, p. 15).

The Council of Australian Governments (CoAG) held an extraordinary meeting on 7 October 2016 and launched an Independent Review into the Future Security of the National Electricity Market. The expert review panel was chaired by the Chief Scientist and had the task of addressing the so called 'energy trilemma' (Finkel et al. 2016, 10):

... policies that simultaneously provide a high level of energy security and reliability, universal access to affordable energy services, and reduced emissions.

This thesis considers existing and future policies related to energy access and affordability for low-income and vulnerable people in Australia in the context of needing to rapidly reduce electricity sector emissions. This is not an issue unique to Australia. In the UK, Europe and elsewhere, energy affordability for vulnerable households is generally referred to as *fuel poverty*. The 2012 Hills Fuel Poverty Review commissioned by the UK Government put a climate policy perspective to this quite succinctly (Hills, 2012, p. 2):

Some argue there is a tension between fuel poverty and climate change policies. Certainly, some people live in homes that are too cold and making them warmer could increase their carbon emissions. But any tension cuts both ways. The continuing existence of fuel poverty, especially on the potential scale we outline in this report, is an obstacle to delivery of our carbon objectives as well as a source of health problems and a compounding of the problem of poverty. This does not mean that low carbon efforts should be put on hold while fuel poverty is tackled. Quite the reverse. But it is clear that the impact of policies on those in fuel poverty must be considered so that they are not left behind as we make the changes needed to meet our carbon emission obligations.

[p8]: ... fuel poverty also acts as a barrier to the implementation of other policies to mitigate climate change, since those on low incomes are least able to afford any increase in prices that may result from them.

1.4.3 Australia's International Emissions Reduction Commitments

In 2016 Australia ratified the Paris Agreement on climate change, which entered legal force on 4 November 2016. The objectives of the Paris Agreement are to limit global average temperature rise to "well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change" (Article 2). A further objective is to achieve global net zero emissions in the second half of this century (Article 4), with

developed countries required to do more of the effort. The Agreement's temperature goals imply a deadline for net-zero emissions from developed countries of 2045-55 (Hare et al., 2016; Höhne et al., 2014).

Australia has committed to reduce emissions by 5% below 2000 levels by 2020 and 26-28% below 2005 levels by 2030. The Australian government is to consider a longer-term emission reduction target as part of its 2017 review of climate policies, and under the Paris Agreement is required to update and resubmit its target by 2020. It is important to note that some observers argue that Australia's current targets are inconsistent with the target of "well below 2°C" and achieving net-zero emission by between 2045 and 2055².

As at the end of 2017, it is not clear just what the electricity sector's eventual emission reduction requirements will be as part of the Paris commitment. However, a range of public policy responses have been proposed to decarbonise Australia's electricity sector including the recently announced National Energy Guarantee (NEG). Some have been modelled and their impact on electricity prices compared (see Appendix C). The modelled options, even the option of 'no new measures', suggest there will be upward pressure on electricity prices as a result of:

- how and at what pace Australia responds to the risks of climate change;
- the technologies used to produce electricity;
- the market designs used;
- how we manage significant increases in the price of natural gas;

However, the *price* of electricity is only part of the story. What really hurts vulnerable households is the total *cost* of securing their energy needs, and this is influenced by;

- how much energy is consumed and when;
- other price pressures across the supply chain, including network and retail charges;
- fixed charges and eligibility for concessions;
- housing circumstance (including number of people in a dwelling, tenure, condition and design).

The following sections add to the context by giving a sense of scale to Australia's residential

² As examples, see Climate Action Tracker at <http://climateactiontracker.org/countries/australia.html>, Climate Change Authority Observations on Australia's 2030 target – Statement by the Chair August 2015 "However it is viewed, the reduction in emissions embodied in the government's target is substantially weaker than that recommended by the Authority." Available from <http://climatechangeauthority.gov.au/node/366>

energy consumption.

1.4.4 Australia's residential energy market – Estimate of Expenditure

The Australian Bureau of Statistics Survey of Income and Housing (SIH) 2013-14 estimates total occupied dwellings with a mains electricity connection at 8,766,400.

The Australian Energy Market Commission publishes estimates of typical electricity bills in each National Electricity Market jurisdiction. Applying the 2016 estimates to the household numbers provides an estimate of national market turnover of around \$12,500 million (\$12.5 billion) including an estimated \$1,135m in Goods and Services Tax (GST).

Residential gas consumption in Australia was 162PJ in 2014-15 (OCE, 2016). Average Residential Gas price has been estimated (Oakley Greenwood, 2016) to be approximately \$28/GJ in 2015 (ex GST) indicating a total market spend of \$5 billion and raising approx. \$450m in GST receipts.

Combined, household expenditure on electricity and gas was approximately \$17,500 million and generated approximately \$1,600 million in GST receipts in 2015-16.

1.4.5 Australia's residential energy market – Greenhouse Emissions

Australia's Greenhouse Emission Information System (AGEIS) allocates just over 180Mt CO₂-e of greenhouse gas emissions in 2014 to the electricity sector (latest inventory year data year in AGEIS at time of preparation). This is 34.5% of the National Inventory Total (523Mt) and the single largest sector of the inventory.

Household consumption is responsible for 23% of electricity sector emissions and therefore 8.1% of the National Inventory Total (42.5 Mt, 2014). Households are also responsible for direct emissions from stationary energy use (mainly natural gas for heating, hot water and cooking) and transport (mainly private cars). The trend in these emissions categories can be seen from 1990 in Figure 5:

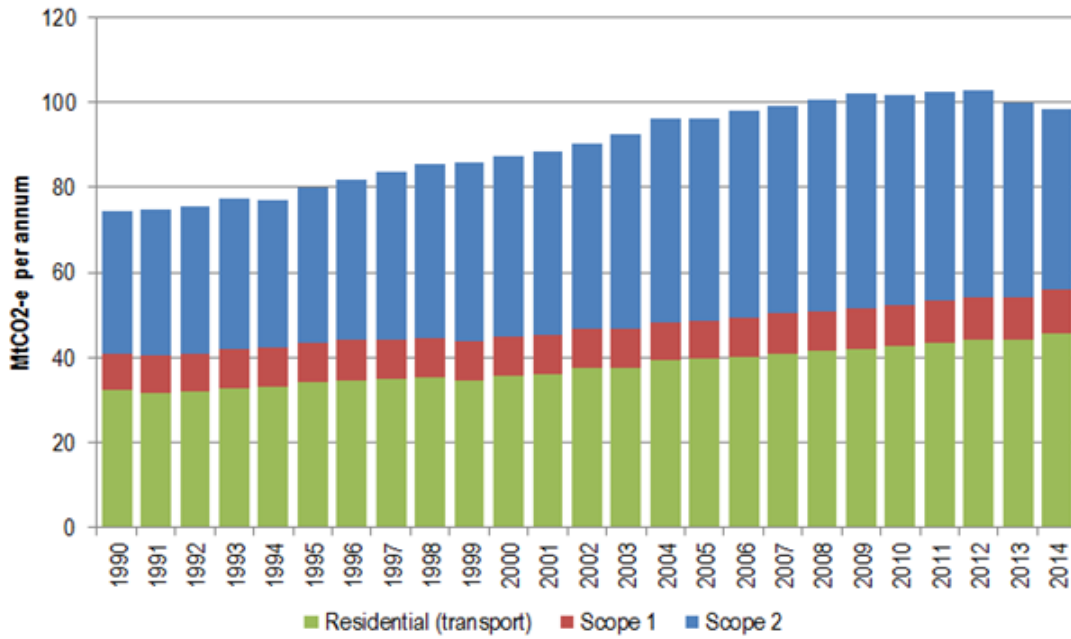


Figure 5: Total residential sector greenhouse emissions – 25 years from 1990 to 2014 (Source: AGEIS)

Stationary energy (labelled as Scope 1) and Transport can be seen to rise steadily. Emissions from electricity (labelled as Scope 2) peaked around 2009-10. The 2014 inventory year was the first time since 1990 that transport emissions exceeded electricity emissions, as shown in Figure 6:

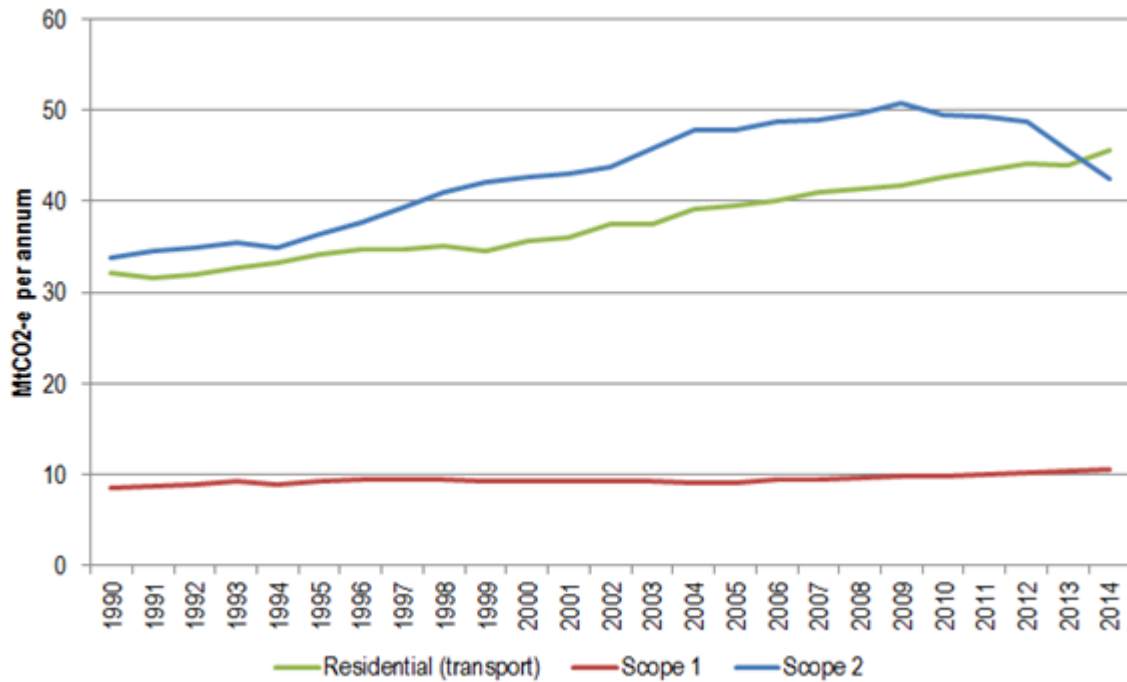


Figure 6: Residential sub-sector emissions – 25 years from 1990 to 2014 (Source: AGEIS)

1.4.6 Components of a typical electricity bill

It is important to understand the ‘building blocks’ that comprise a typical electricity bill, as each block is subject to change in different ways and has different implications for affordability. Figure 7 provides estimates of the key components of the national average residential electricity bill in 2015-16 (noting that state-by-state breakdowns show clear differences in proportions (AEMC, 2016b), however the differences are not germane to the analysis presented in this thesis).

- Network costs – the transmission of electricity from large generators and distribution to and between customers - represent around 45% of the average bill.
- Retailer controlled costs – the cost of wholesale electricity including risk management and the costs of billing and administration of customer accounts – represent around 38% of costs. Of the total bill, around 20-25% is attributable to wholesale electricity costs – the cost of electricity generation. This is the component that will be most impacted by climate policies that seek to change the mix of generation sources.
- Australia’s renewable energy target, state-based feed-in tariffs and energy efficiency schemes represent around 8% of the average bill.
- GST adds 10% to the above costs and therefore represents around 9% of the final bill.

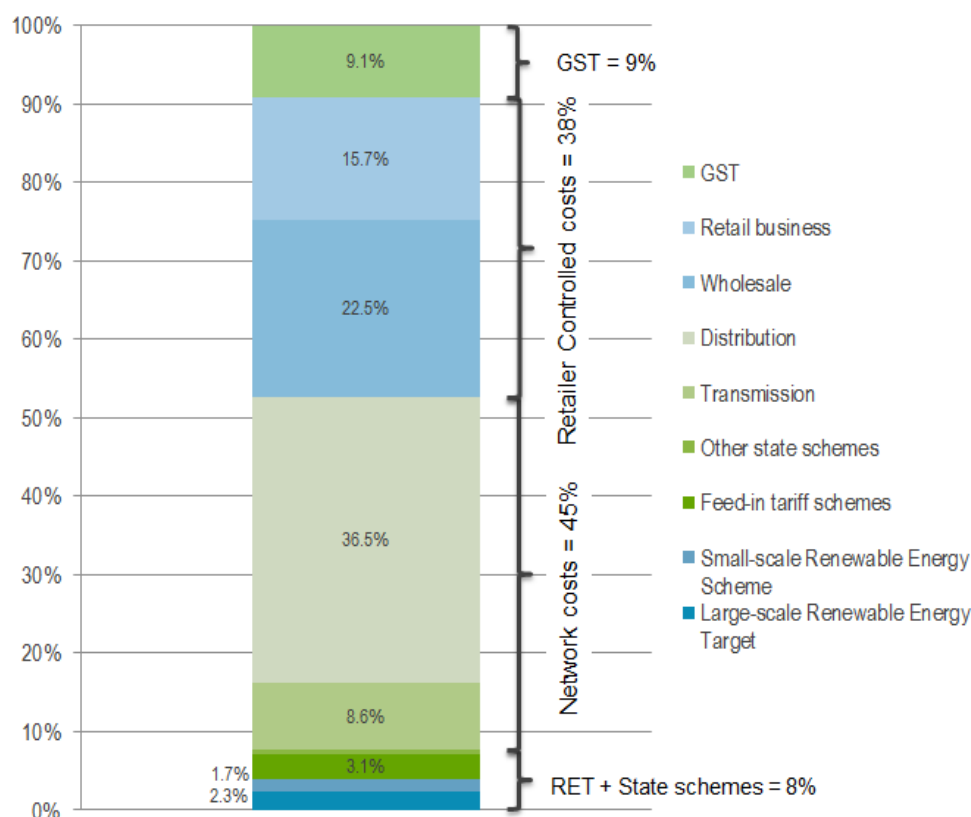


Figure 7: Breakdown of average national residential electricity price, 2015-16 (Source: Based on Climate Change Authority Electricity Research Report 2016 Figure 8 (CCA, 2016), (AEMC, 2016b))

1.4.7 Beyond averages

The previous section presented average residential electricity prices from across Australia's electricity sector. This section goes beyond average prices to consider the distribution of electricity costs between different households and then explains why changes in pricing structures and energy technologies are important to understanding vulnerability to future electricity prices.

A number of different presentations of energy related vulnerability are apparent; they include:

- Households who have difficulty paying their energy bills, accrue debt with their retailer and are subsequently on retailer energy hardship programs or are disconnected from supply.
- A small but significant proportion of these households that are unable to afford to pay the ongoing costs of the energy they need with no room to repay debt.
- Households who require emergency relief provided by governments and the Community Services sector.
- Households who may pay their energy bills but suffer detriment in other areas of their lives including rationing their energy usage in a way that is detrimental to their health or well-being, or trading off energy usage for other basic needs such as food or education (Chester, 2013).

Chester and Morris produced an early study of the consequences of rising prices on low income and vulnerable households in the Australian context (Chester and Morris, 2011). That study concluded Australia was yet to explicitly recognise energy poverty as a distinct social problem and was without a substantive evidence base to inform policy making. A number of studies have subsequently sought to identify demographic attributes of households considered most vulnerable to rising energy costs. Overall, these studies have painted a complex picture of measurement from which there is no universally accepted measure or indicator of household energy affordability in Australia. These have been summarised in Section 7.4.1.

Analyses of historic income and expenditure suggest that a diverse range of household types are represented in the vulnerable household cohort although some are at much higher rates than their proportion of the wider community. Further, close relationships to the costs of other essentials – such as housing and transport – regularly recur. Housing circumstances are clearly a key indicator of vulnerability since the cost of housing determines how much room

exists in the household budget to pay energy bills and tenure determines the scope of actions available to change consumption.

A summary perspective is that vulnerable households are very diverse, but two common factors are:

- a. they need to respond to electricity cost pressures, and;
- b. they can't

Any measure of affordability would need to relate energy expenditure to a measure of capacity to pay. The ABS Household Expenditure Survey (HES) is a key source of information in this regard. The HES was last conducted in 2015-16 as part of the Survey of Income and Housing. Figure 8 illustrates that, in 2015-16, the expenditure category *Domestic Fuel and Power* represented 2.9% of the average Australian household's expenditure on goods and services.

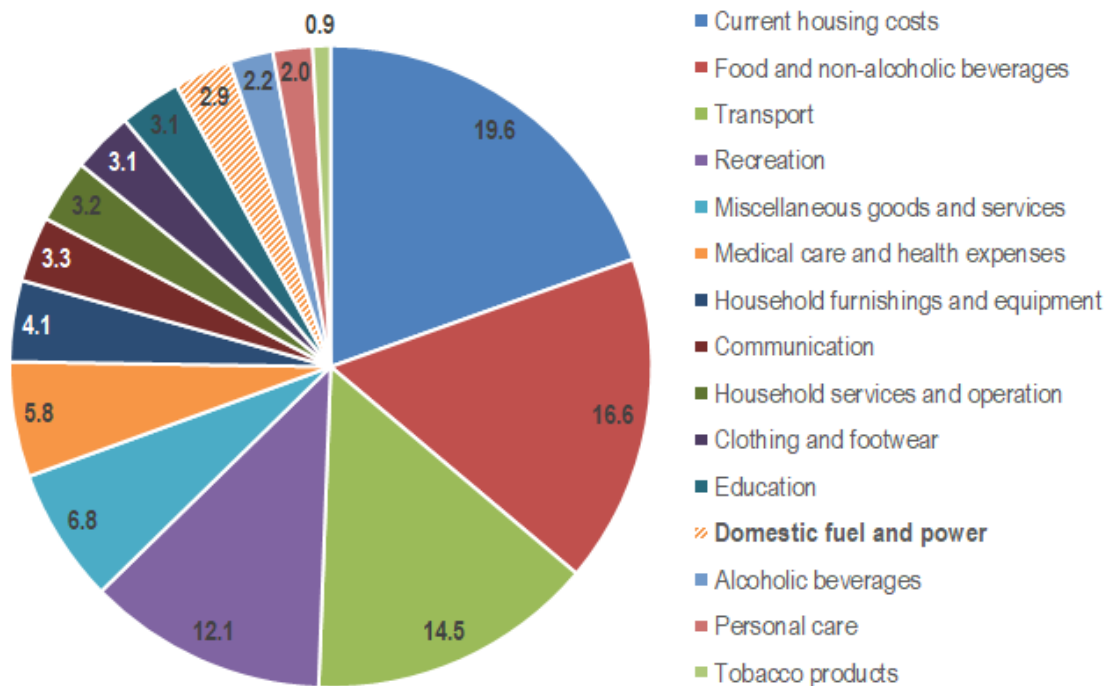


Figure 8: Average Household, proportions of goods and services expenditure. Source: (ABS, 2017a)

Figure 9 shows the relative proportion of expenditure on energy (*Domestic fuel and power*) by households based on their equivalised disposable income from the 2015-16 HES. The proportion is clearly higher for those on lower incomes. The adjusted lowest income quintile is the lowest income quintile excluding the first and second percentiles since these tend to exhibit expenditures comparable to households with higher incomes (ABS, 2017b).

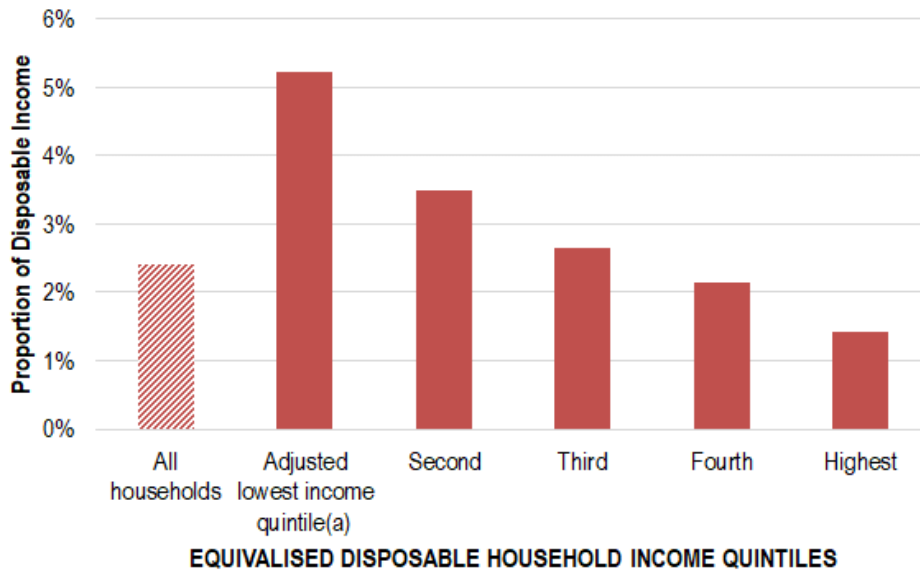


Figure 9: Proportion of household income spent on stationary energy by equivalized disposable income quintiles.
Source: (ABS, 2017a)

The largest expenditure items for most households is housing costs – either rent or mortgage payments. The UK’s official indicator of Fuel Poverty (the Low Income High Cost or LIHC indicator) uses an after housing cost income measure (DECC, 2013a). The ACOSS Poverty in Australia series uses after housing cost disposable income (i.e. after income tax and Medicare levy) in the consideration of capacity to pay for goods and services (Saunders et al., 2016). Further, the methodologies in both of these take account of household size when considering income). Equivalisation provides a comparison of income that takes into account the economies of scale of household size. Per person expenditure is not as precise as equivalence scales³ but can be used to illustrate the effects (Hogan and Salt, 2017).

When considering capacity to pay electricity bills, it is therefore appropriate to consider not just gross income but housing costs and, where possible, household size as well. Figure 10 shows household expenditure on housing and energy as proportions of equivalised disposable income and illustrates the much greater incidence of these costs on those with the lowest incomes.

³ The modified OECD equivalence scale assigns a value of 1.0 to the first adult in the household, 0.5 to each additional adult and 0.3 to each dependent child. For example, a household with two adults and one child would need $(1.0 + 0.5 + 0.3 =)$ 1.8 times the income to achieve the same material wellbeing of an adult living alone.

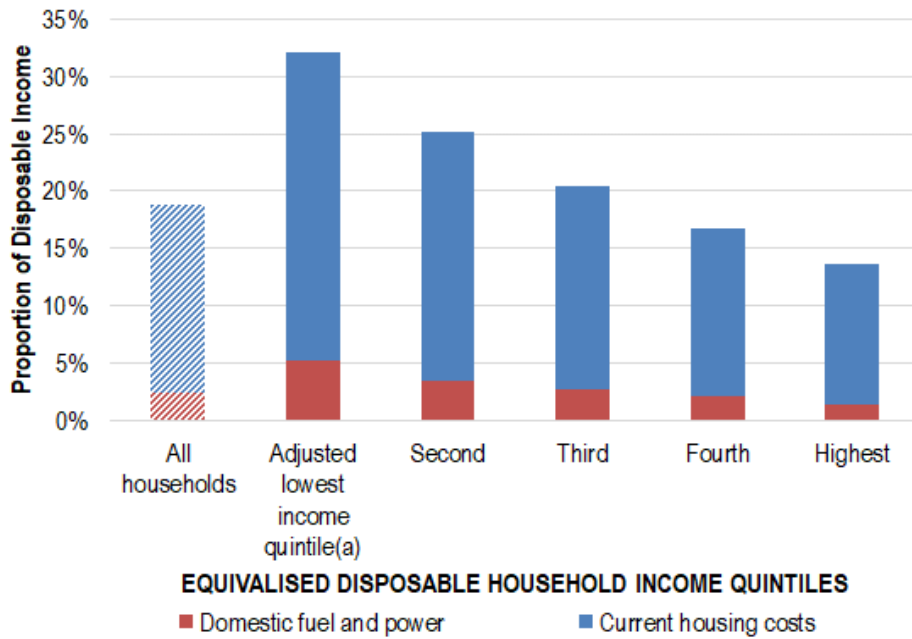


Figure 10: Proportion of household income spent on housing and stationary energy by equivalent disposable income quintiles. Source: (ABS, 2017a)

Recent research by The St Vincent De Paul Society (SVDP, 2016a) analysed and mapped approximately 200,000 electricity disconnections for non-payment raised by AGL in South Australia, Victoria, NSW and South East Queensland between July 2012 and July 2015. This analysis identified 6 broad categories of households correlated to high disconnection rates. Four of the six categories were households in housing stress (spending more than 30% of income on housing costs) while the other two categories had lower housing costs but higher transport costs. In all cases though, disconnection rates were correlated with high expenditure on other key items in the household budget. Figure 11 reproduces Figure 10 but adds expenditure on transport, medical care and health. The relative capacity to pay for energy of these low-income households is clearly compromised by their expenditure on other necessities.

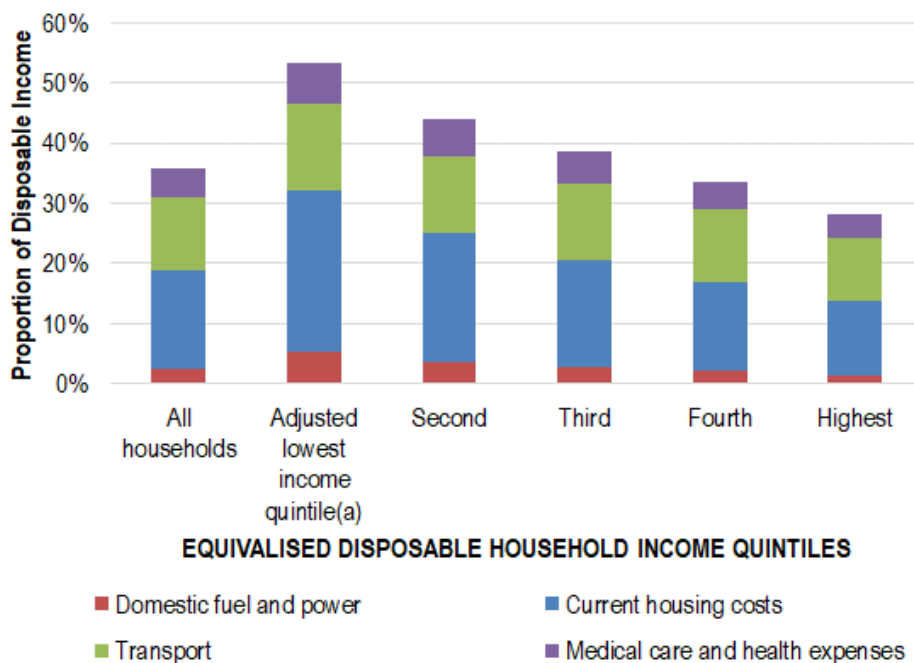


Figure 11: Proportion of household income spent on housing, stationary energy, transport and health by equivalised disposable income quintiles. Source: (ABS, 2017a)

The following chart (Figure 12) has been derived from unit record files for the 2009-10 HES to illustrate the range of relative energy expenditures by households of different incomes. The horizontal axis divides the households into 5 equal-sized groups (quintiles) based on after-housing-cost disposable income (only households whose main source of income was reported as wages, salaries or benefits were included in the sample). The vertical bars show the median result (the central marker in each one) as well as the spread of the results with markers for the 5th and 95th percentile (i.e. 90% of individual results lie within these limits for each group).

The standout result is the 20% of households with the lowest disposable incomes. This group reported a median value of 7% of disposable income on energy. 25% of this group spent 11% or more, 5% spent 30% or more. A broad estimate then of the scale of vulnerable household is the 5-10% of households for which energy costs are 10% or more of after housing cost disposable income: in the order of 400,000 to 800,000 households nationally.

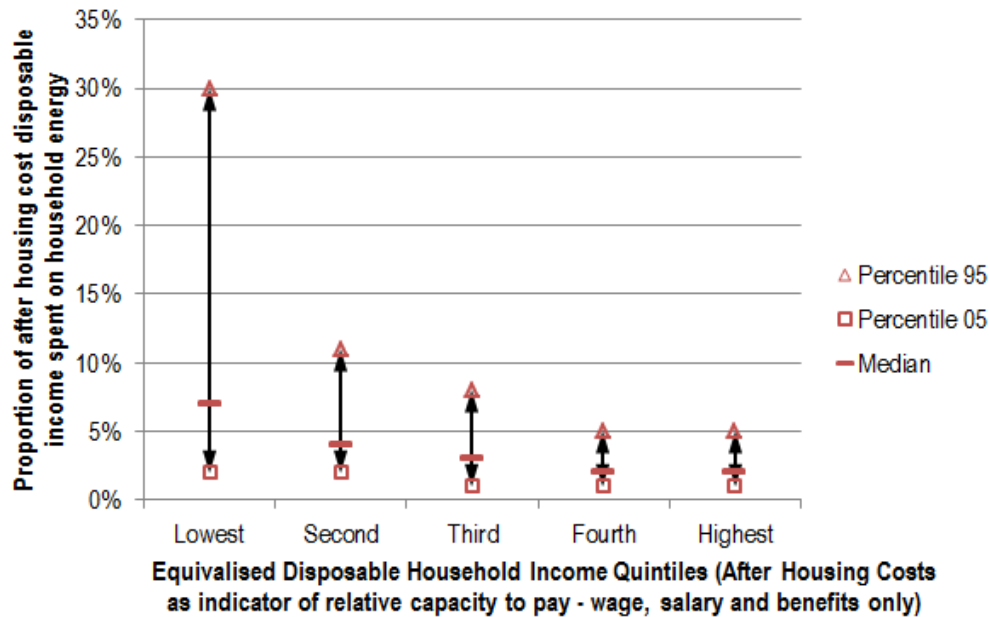
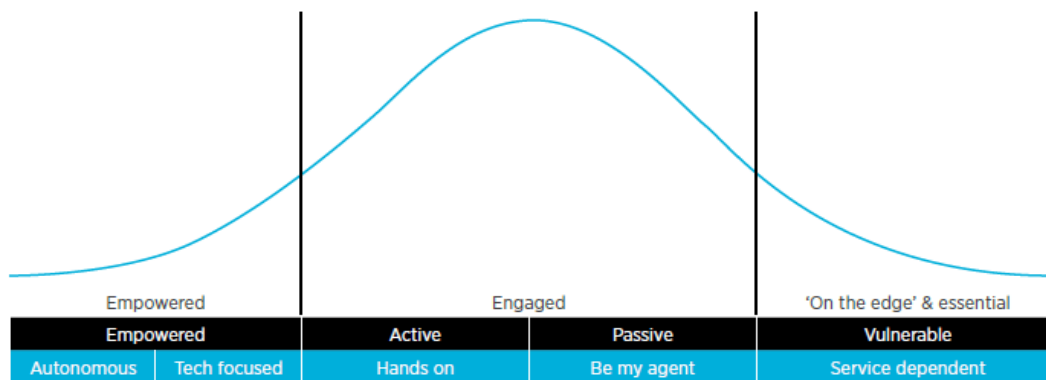


Figure 12: Average expenditure on household energy as a proportion of relative capacity to pay (after housing cost disposable income) by equivalized disposable income (Source: author’s analysis of ABS 6530.0 Household Expenditure Survey, Australia 2009-10)

1.4.8 Understanding vulnerability to future prices and costs

The Network Transformation Roadmap work by the CSIRO and Energy Networks Australia (CSIRO, 2017) has provided a useful conception of the vulnerable consumer in their vision of the future grid. In their work, vulnerability is used to describe customers who are unable to take up opportunities that would enable them to save on electricity bills. Vulnerability is further characterised as being ‘service dependent’ and being at the opposite end of an empowerment spectrum to the autonomous, independent, tech-focused and empowered customers (see Figure 13).



Source: Plausible 2027 customer segments were informed by an international literature review, commissioned expert papers and structured stakeholder workshops. In particular, Rosemary Sinclair of Energy Consumers Australia is acknowledged for employing the market curve device to graphically represent customer segments (adapted with permission).

Figure 13: Example of market segmentation curve for residential customers in 2027 (CSIRO, 2017)

Newgate Research undertook segmentation analysis of the electricity market as part of the AEMCs 2016 Retail Competition Review. This research conceived of a spectrum of vulnerability from 'secure higher income' to 'vulnerable low income' as illustrated below:

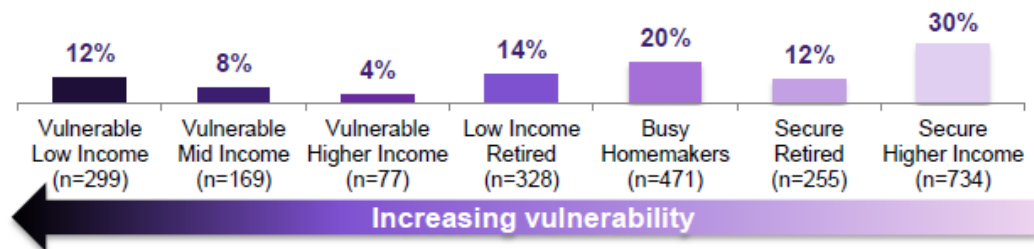


Figure 14: Newgate Research market segmentation estimates (Newgate Research, 2016)

Historically, expenditure on energy has been driven by a simple combination of total consumption and average prices plus a fixed supply charge. Looking forward though, changes to the structures of electricity tariffs and the uptake of technologies such as solar, storage, efficient appliances and energy management systems are expected to drive a redistribution of electricity costs. It is not yet clear whether this will introduce new households to the cohort of vulnerable customers or simply worsen the situation of those already considered vulnerable or both.

Three trends redistributing costs are identified and discussed below.

1.4.9 Access to technology and capacity to invest

The ability to generate and store electricity is a defining characteristic of the energy market transition underway. It is therefore also worth distinguishing between expenditure on energy 'from the grid' vs energy generated 'behind the meter'. However, for the purposes of this analysis and to borrow terms from business, a more useful alternative may be to consider energy costs as either an operational expense (or 'opex') or a capital expense ('capex') for households.

Solar, with or without storage, is largely a capex item for households. This technology allows a household to purchase the capability to meet a part of their future energy needs (i.e. using capex to lower future opex). Other energy capex includes major appliances such as hot water systems and fixed heating and air-conditioning systems as well as structural elements of housing such as insulation and high-performance windows. These technologies are all long-lived and can generally be considered to be fixed to the dwelling rather than portable with the occupant.

Household energy opex refers to the more regular outgoings for electricity and gas – the monthly or quarterly bills from the energy retailer or the fortnightly payment plan.

As in the case in business, there is usually a capex vs opex trade-off – this is where prudent capex can reduce opex. Examples include capex on a solar system, or more efficient air-conditioner to reduce grid electricity costs. Capex often also provides a degree of insurance against future electricity prices for many years whereas a household reliant on opex is often completely exposed to future prices (albeit able to fix prices for a period of time in some electricity market contracts).

Access to technology is clearly emerging as the key driver of a redistribution of electricity expenditure between households. And, clearly, the ability to take advantage of these developments pivots on access to and affordability of these technologies.

1.4.10 Network pricing reform

Historically, all households in a state paid the same fixed and per-unit prices for their electricity. Substantial reforms to the National Electricity Market (NEM) are underway following recommendations to the state and federal governments in November 2012 by the AEMC's *Power of Choice review – giving consumers options in the way they use electricity* (AEMC, 2012a). The AEMC received a number of rule change requests from the COAG Energy Council and other parties in response to these recommendations. The *Distribution Network Pricing Arrangements Rule Change* was a key one of these changes (AEMC, 2014).

Network costs average 45% of the final electricity bill of households in the NEM (AEMC, 2016b). The *Distribution Network Pricing Arrangements Rule Change* requires the structure of electricity tariffs for residential and small business customers to commence a transition to better reflect the efficient costs of providing services to each consumer. This is often referred to as '*cost reflective pricing*'. In general terms this means pricing must reflect that future costs are related to providing network capacity at times when electricity demand peaks.

All other things being equal, the pursuit of cost-reflective pricing will mean that some consumers will be able to pay less than they currently are while others will pay more. The significance of these changes on individual customers has been acknowledged since the Ministerial Council responsible for Energy Policy (the Standing Council on Energy and Resources, SCER at the time has been replaced by the COAG Energy Council) initiated the tariff reform [(AEMC, 2014) SCER Rule Change Request (p3)]:

“The changes implied by this reform package point to a significant shift in the way customers use, purchase, interact with and are charged for, electricity. Electricity however is an essential service, and major changes to its provision are not to be taken lightly.”

The diversity of consumption patterns amongst residential electricity consumers is what will drive the redistribution of costs foreshadowed in the originating Rule Change Request. The expanded use of advanced metering infrastructure (also referred to as smart meters) necessitated by the rule change allows for segmentation of the market based on consumption patterns and can be expected to reveal even greater diversity in prices.

As at March 2017, the first round of tariff proposals from the NEM Distribution businesses have been developed and all are to be offered as opt-in. Most businesses have developed tariffs based on the maximum demand recorded in a half-hour interval during peak times. The majority of tariff structures include a peak demand charge window during the late afternoon / early evening peak consumption periods. The NSW businesses are the only ones not to propose an opt-in demand tariff, preferring to offer time-of-use or flat tariff structures. These tariffs are discussed further in a case study included in Chapter 5.

1.4.11 Increasing fixed charges in retail offers

The Victorian Electricity Retail Market is considered to be at the forefront of market reforms in the National Electricity Market in many ways (the first to privatise, the first to de-regulate electricity prices, the first to mandate advanced metering, highest number of active retailers, highest switching rates). However, Figure 15, below, illustrates a clear trend of increasing fixed supply charges in residential retail electricity contracts since the deregulation of prices in 2009:

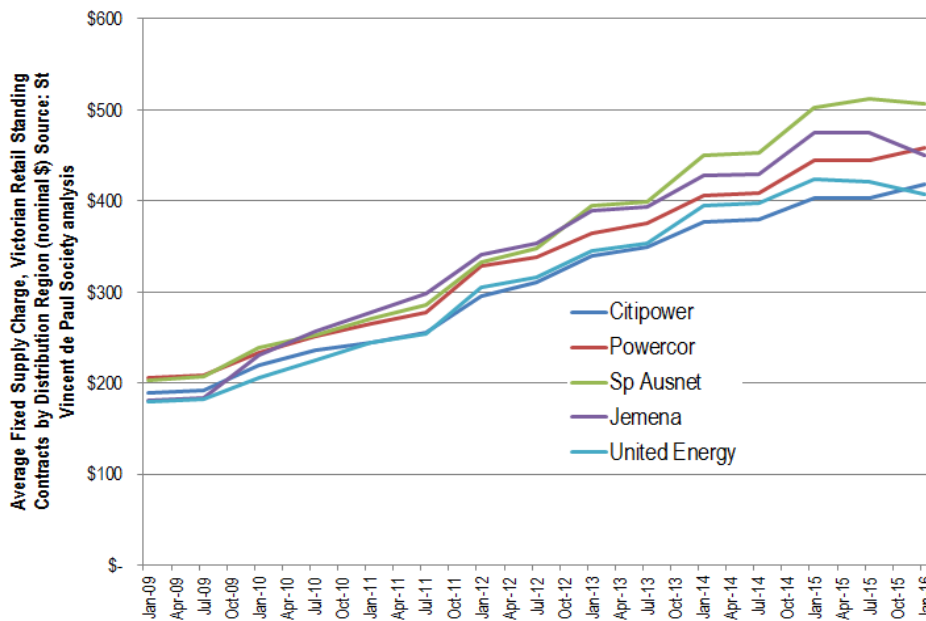


Figure 15: Average fixed supply charges, Victorian retail standing contracts. Source: (SVDP, 2016b)

This trend is also cited as a symptom of a market that is not operating efficiently (Ben-David, 2016, 2015, 2012, Mountain, 2016, 2015) despite being judged as having effective competition by the Australian Energy Market Commission (AEMC, 2017a)

The critique of the retail energy market outlined in Mountain’s (2015) report to the Brotherhood of St Laurence, posits that the market is failing to deliver lower prices for many consumers, rather the potential savings are being captured by the energy retailers. While there is limited data on the actual contracts households are on, research by Newgate Research for the AEMC found that those on low incomes, older people and people with less internet access were over-represented in those who reported they would not switch in the next 12 months (Newgate Research, 2016). The Victorian government initiated a review of the retail market in late 2016 that reported in 2017 (Thwaites et al., 2017). The Commonwealth Government referred an inquiry into retail electricity pricing to the ACCC in March 2017 that will report progressively over 2017 and 2018 (ACCC, 2017). These developments are discussed further in Chapter 3.

1.5 Chapter Summary

This chapter has set out a policy context for this research.

Australia committed to an emissions reduction target in 2015 that is expected to require net-zero emissions from the electricity sector by mid-century. The current policy cycle is seeking to align energy policy and climate policy and pursue the energy trilemma of lower emissions

and lower prices from a stable and secure market. Various mechanisms have been proposed.

Household expenditure on electricity and gas in Australia is estimated at \$17,500 million in 2014-15, including approximately \$1,600m in GST revenue. Historical trends in residential electricity prices show a rapid rise from around 2007 to 2012 and then again from mid-2017.

Beyond average price outcomes, simple analysis of results from the 2009-10 Household Expenditure Survey (HES) illustrates the potential for some low-income households to have very high relative expenditure on energy. Using after housing cost disposable income as a proxy for *capacity to pay*, some households spend 10% or more of this capacity on energy bills. This expense is competing with other essentials such as transport and health care.

A summary perspective is that vulnerable households are very diverse, but two common factors are:

- a. they need to respond to electricity cost pressures, and;
- b. they can't

Recent work by CSIRO and Newgate Research (for the AEMC) gives further insight into vulnerability in a changing market. Three trends redistributing costs were identified and discussed. These are:

- Access to technology and capacity to invest
- Network pricing reform
- Increasing fixed charges

Looking forward, changes to the structure of pricing enabled by the increasing prevalence of interval metering and rising fixed charges is expected to redistribute costs between consumers and generate winners and losers over coming years.

With this as the contemporary context for a review of policies, the following chapter presents a literature review in order to locate the research in the gaps that exist in public policy and the NEM's consumer safety net.

2 Literature Review

The literature review enables the researcher to demonstrate knowledge of previous work in the field and to situate the research in the context of this work (University of Sydney, 2017). This chapter presents relevant history, locates the research questions within gaps in existing knowledge and highlights the interdisciplinary nature of the research questions.

Restating, the research questions that this thesis seeks to answer are:

- When considering a consumer safety net for consumers in a liberalised electricity market, what is an appropriate analytical framework for policy and practice that can be used by stakeholders to improve governance and consumer outcomes?
- Subsequently, what priorities emerge from this framework that could be advanced through the policy cycle?

This chapter starts with a review of literature related to the analysis of public policy and introduces the concept of the policy cycle. Next, the governance context for energy policy and social policy in Australia is presented. Australia's federal system of government means that responsibilities for relevant parts of energy policy and social policy are shared between two layers of government as well as usually two or more different Ministerial portfolios in each of the seven jurisdictions that make up the NEM (five states, one territory and the national government). Intergovernmental agreements form the basis of co-operative federalism on these issues.

It is shown that energy market reform has its origins in National Competition Policy from the 1990's. Social policy areas relevant to the interaction with energy policy are the tax and transfer system (social welfare policy), Housing Policy and Consumer Policy. Historically, statements of energy policy tend to reinforce the primacy of the efficiency objectives over equity concerns and imply a "keep up!" message for social policy's role. This highlights the gaps between the policy domains.

The review then outlines the historic need for governments to provide a consumer safety net and how this has become a shared responsibility with energy businesses and community sector welfare organisations. International case studies are drawn from the UK and New Zealand. Both examples reiterate that energy and poverty are important connected policy areas and the community sector has important roles to play. Policy responses in both the UK and NZ have gravitated towards efforts to improve the energy performance of housing as well as financial subsidies. With their long histories, both cases also highlight the persistent

nature of the problem. The formalisation of *fuel poverty* as a distinct and important policy issue in the UK has led to evolving approaches to measurement that allow for estimates of the size of the issue and the level of expenditure necessary to tackle it.

The shared responsibility approach to the provision of a consumer safety net has been acknowledged by many stakeholders but a gap clearly exists in providing a structure for its analysis and development. This is the unique contribution of this thesis.

2.1 Public policy and its analysis

2.1.1 What is meant by Social and Energy Policy?

The literature presents a range of definitions for the term *public policy* depending on the context in which the term is used. There is general agreement at least that policy relates to the choices made in solving complex problems or managing complex issues; and that these choices are a result of decisions and the influence of one decision on another. Much of the theoretical literature draws on decision making theory. Howlett, Ramesh and Perl, in their popular text *Studying Public Policy*, begin from Thomas Dye's simple definition of public policy as '*... anything a government chooses to do or not to do*' (Dye, 1972) and emphasise that a policy is a conscious choice of government (Howlett et al., 2009). In the context of social policy, Titmuss defined policy as '*... the principles that govern action directed towards given ends*' and emphasised use of the word in an *action-oriented* and *problem-oriented* sense (Titmuss, 1974).

This thesis has been written from a perspective of energy policy practitioners seeking to integrate social policy issues and so the preface *energy* in the term energy policy is relatively self-evident in meaning. This thesis is primarily concerned with a subset of broader energy matters (which more broadly includes primary energy such as oil, coal and gas) related to the provision of electricity to end-users. The preface *social* in the term social policy is likely to be less clear to energy policy practitioners. The following extract provides some guidance (Dalton et al., 1996):

But when is a personal issue a social issue? And when is a social issue a social policy issue? The process of policy making begins when people come together to identify and name an issue of common concern, and to seek a collective or social solution to concerns in their everyday lives – or in the wider world in which they live. The concern may be about their housing, jobs or childcare, a wider issue in the environment, human or civil rights, or, as in the case of protests over war, about actions their government has taken which they don't support. When a plan of action is developed, the people have a 'policy proposal'. If this is adopted by a level of government it is likely to be called 'policy' or 'public policy'. If it is widely recognised to be about quality of life, then it may be called 'social policy ...

It is important to acknowledge that the term social policy does not have a precise or necessarily agreed definition. However, for the purposes of this research it is perhaps most important to recognise that social policy is largely about the non-economic factors in human relations (Titmuss 1974, p139) and hence a precise definition of the full scope of Social Policy or Energy Policy is not necessary in order to examine the relationship between them.

The next section accepts these broad definitions and then considers how public policy is developed and reflects on perspectives of how policies are developed and analysed.

2.1.2 Policy Analysis

A significant academic literature exists on the development and analysis of public policy. The term *policy science* was coined by Harold Lasswell and refers to an approach to understanding and solving problems. A critical emphasis is on placing problems and potential solutions in context “... *in order to develop recommendations that are both realistic and desirable*” (Policy Sciences Center, 2016).

Harold Lasswell is also often quoted for his interpretation of politics as “*who gets what, when and how*”. Both aspects, politics and policy, are relevant to this research. From Lasswell’s work in the 1940’s and early 1950’s, the literature traces the analysis of policy, the role of politics in policy and debates the relative merits of each dimension.

Herbert A. Simon appears in the literature in the 1950’s as the first to articulate the limits to rationality in decision making through his enduring terms *bounded rationality* and *satisficing* (a blend of satisfy and suffice) (Hogwood and Gunn, 1984). Charles Lindblom’s *The Science of ‘Muddling Through’* built on Simon’s observations of the limits to rational decision making and pioneered an approach to analysing policy referred to as ‘incrementalism’. In this model, decision makers move from the status quo ‘*step-by-step and by small degrees*’ (Lindblom, 1959).

According to Hogwood and Gunn (1984), while both Lindblom and Simon (and their collaborators and supporters) saw limits to rationality they differed in their stance on what should be done. For Simon, it was for decision makers to become more rational. For Lindblom, it was to accept the ‘reality’ of incrementalism as both what is and what should be.

Other scholars held a less binary view of the options and proposed a middle ground. Etzioni (1967) introduced “*Mixed Scanning: A “Third” Approach to Decision Making*” as combining elements of both to overcome limitations of each (Etzioni, 1967). His approach sought to distinguish fundamental decisions from incremental ones. Etzioni also distinguished the

rationalistic and incrementalist models in terms of the “... *degree of control over the decision-making situation on the part of the decision-maker*”; with the rationalistic model assuming a high degree of control and the incrementalist model much less (1967, p385). John Forester’s contribution was to emphasise the importance of context in considering the “boundedness” on rationality for any given problem or issue (Forester, 1984).

A large part of the literature that followed can be seen to debate the relative merits of rationalism versus incrementalism while making a distinction between description and prescription: how policies *are* made compared to how they *should* be made (Hogwood and Gunn, 1984; Lindblom and Woodhouse, 1993; Wildavsky, 1987).

Another critical and inescapable element of policy making that limits rationality is that of values. The values of the decision maker, the community and the analyst will influence how policies are made, analysed and evaluated. In his paper *The Place of Principles in Policy Analysis*, Charles W. Anderson (1979) used energy policy as an example of the range of perspectives and values that must be reconciled when assessing a policy initiative (Anderson, 1979):

In such a field as energy policy, for example, the policy maker or citizen must somehow decide what to make of the various arguments and analyses presented by economists, environmentalists, engineers, scientists, lawyers, and so on, each claiming to be authoritative for a specific aspect of the problem, each justified by its own premises of inquiry and rigorous logic of analysis, each containing imperatives for definitive public action.

Anderson also provided an alternative model of *rational* policy making that was more a process of reasoned deliberation and debate rather than a “pragmatic calculus” (1979, p722). Consistent with this view, Wildavsky (1987, p xviii) wrote:

I would like to return to a (by now) ancient verity of policy analysis: economic analysis by itself is insufficient; complete analysts place their studies and their search for organizational support within a broader political and organizational context.

Charles Lindblom’s blunt assessments of the realities of policy making in the US highlighted the influential role of business in policy making as not just trying to influence solutions but also creating some of the problems needed to be addressed (Lindblom and Woodhouse, 1993):

Public policy making by business, in other words, helps create significant pieces of the agenda for public policy making by government

Emphasising the inherent limitation on objectivity this implies, he interpreted this as further supporting the incrementalist model (Lindblom and Woodhouse, 1993)

Political interactions and flawed human judgments play a primary role in making policy
...

Lindblom strongly emphasised the importance of tailoring analysis to an understanding of the inevitable primacy of politics over policy (Lindblom and Woodhouse 1993, p127):

In other words, analysis should aim to improve the quality of political interaction, not try to substitute for it.

Lindblom's emphasis on the limits of analysis are as important as his observations on "agreement in lieu of complete understanding". By being clear on these limitations, the view was that there is no way to calculate a "correct" approach to a complex policy issue. Lindblom liked to encourage the competition of ideas between key stakeholders and felt that good policy is whatever the key interests can negotiate and agree on⁴. Inequities in power and influence are often highlighted in his writing as stifling this competition of ideas.

Hogwood and Gunn (1984) and Wildavsky (1987) have expressed similar views on the role of policy analysis as a supplement to, not substitute for, political advocacy. Hogwood and Gunn were also explicit of their bias to the prescriptive aspect of policy analysis for the purpose of improvement of policies. They emphasised clarity of terminology; what is meant by policy and what type of analysis is being performed (1984, p31) and being alert to the analysts potential to introduce subjectivity with their own views. Importantly, they encourage careful consideration of how analysis is *consumed* as well as how it is *produced*.

The preceding discussion has significant implications for this research. An option would have been to assume a 'clean slate' and attempt to form a prescriptive assessment of how electricity, as an essential service in modern society, could be provided to meet economic, social and environmental goals given the opportunity to start again. Alternatively, the work could deconstruct and critique the path taken in Australia as an example, given the evident high prices and high disconnection rates, of how *not* to restructure electricity provision. Instead, the work has followed Lindblom's incrementalist approach and seeks to provide a basis for advancing the situation of households at risk of losing access to electricity supply based on the contemporary situation in Australia.

This undoubtedly presents a limitation on the application of this research as it assumes that a market-based supply of electricity (and welfare services for that matter) can eventually meet the needs of these households and that meeting their needs is worthy of collective pursuit. The option of more radical change should not be dismissed.

⁴ The concept of '*partisan mutual adjustment*' appeared in several of Lindblom's works.

In the case of this thesis, the research and analysis aim to provide practical, useful contributions to the evolution of this specific policy territory. To do so, the research aims to be consumed by Lindblom’s *partisans*⁵ - in this case; households, community sector providers of welfare services, electricity businesses and governments (Lindblom and Woodhouse 1993, p130):

Targeting analysis toward helping actual partisans interact with each other would increase the chances that research will have some impact on social problem solving

2.1.3 The policy cycle

Contemporary texts aimed at students, such as *Studying Public Policy* (Howlett et al. 2009) or *The Australian Policy Handbook* (Bridgman and Davis 2004), tend to focus on understanding common elements of the policy process and often depict the process as a cycle of between 5 and 10 key steps. While orderly sequential steps are not necessarily an accurate portrayal of how the policy process actually works, such a depiction is considered useful for structuring analysis and providing rigour. This has inspired the adoption of a *policy cycle* as the basic framework for the policy analysis components of this thesis.

This approach compels the analysis to be grounded in contemporary evidence and cognisant of the need to contain recommendations to the scale of policy evolution that is politically achievable – consistent with Lindblom’s incrementalist approach as discussed above.

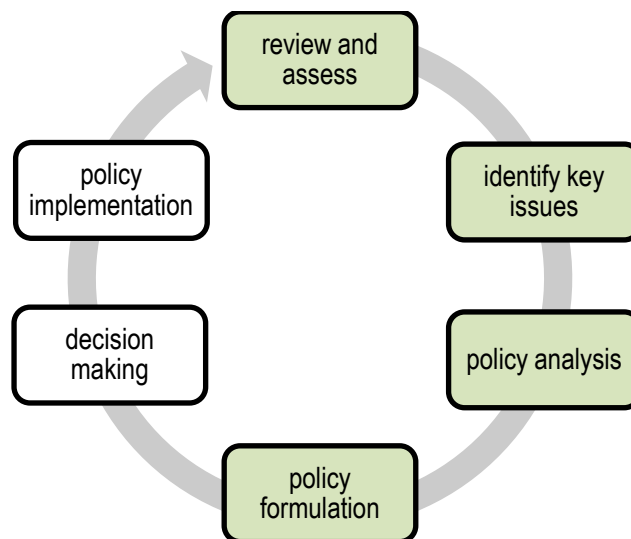


Figure 16: Depiction of a policy cycle

This *cycle* framing for analysis is useful as it reminds the analyst of two things:

⁵ Partisans are prejudiced in favour of a particular perspective that reflects their self-interests

- Firstly, that analysis can be applied as part of continuous improvement of policy – for good analysis to provide practical recommendations, the idea of the cycle acknowledges that it is impractical to start from scratch and that context changes over time.
- Secondly, the *cycle* also acknowledges the political context of public policy and is pragmatic about the difference between what is rational policy and what is likely to attract consensus. In this way the cycle will allow for the issues to be revisited at some point in the future and refined further in another reform cycle. Any practical changes will be iterative in nature.

In order to provide a consistent structure, the key chapters of this thesis follow four generic stages of a policy cycle:

1. Policy Review – an outline of current policy settings
2. Agenda Setting – identification of the key issues
3. Policy Analysis – empirical analysis of key issues
4. Policy Formulation – recommendations for reconciling social/energy policy objectives

Australia’s form of government provides vital context for this thesis. In order to understand the public policy approach to electricity markets in the Australian context, it is necessary to obtain an understanding of public policy governance – the roles and responsibilities of different actors and institutions. This is the subject of the next section.

2.2 The Governance Context for Energy Policy

Responsibilities for key parts of energy policy and for parts of social policy are scattered between two layers of government and usually two or more different Ministerial portfolios in each of the seven jurisdictions that make up the NEM (five states, one territory and the national government).

2.2.1 Form of government

Australia is governed via a federation of state governments and a national government (sometimes referred to as the *Commonwealth* or *federal* government) that are bound together under Australia’s Constitution. The Constitution is the fundamental law of Australia that binds the parliaments of the Commonwealth and States – an Act of any Parliament is in fact invalid if it is contrary to the provisions of the Constitution.

The Constitution took effect on January 1st, 1901 at a time when Australia’s markets for

electricity and gas were very much in their technical and economic infancy. The Constitution brought together six self-governing British colonies as States in a Federation. The Constitution lays out the roles and responsibilities of the Commonwealth Parliament and establishes the matters over which the Commonwealth has exclusive powers. Section 51⁶ of the Constitution lists the powers specifically vested in the Commonwealth parliament (CoA, 2003). Due to the infancy of the technologies (at this time electricity and gas were mainly used for lighting city streets) downstream energy issues receive no explicit mention in the Constitution and therefore default to being the responsibilities of the States.

Of note is the inclusion of specific reference in section 51 to telecommunications services (s51 (v) *postal, telegraphic, telephonic, and other like services*) which, by the nature of the technologies involved and service provided, did cross state borders. Arguably, had electricity or gas been traded between colonies at the time of Federation, they too may have been included in the list of Commonwealth powers. One of the main reasons cited for pursuing federation was that of a nationwide 'common market'⁷ and Section 92 of the Constitution provides that trade between the states shall be 'absolutely free'⁸.

In the case of electricity, the first 'cross border' electricity trade came with the Snowy Mountains Scheme in 1959 (supplying both New South Wales and Victoria). Thirty years later, in 1990, the state-owned electricity businesses of South Australia and Victoria commissioned the 'Heywood' interconnector between the two states. The interconnector operated under an Operating Agreement between the states (Industry Commission, 1991a). The eastern states subsequently added several interconnections to form the National Electricity Market (NEM) of Queensland, NSW, Victoria, South Australia and, in 2006, Tasmania.

However, the pursuit of 'free' interstate trade of energy has not been as significant an issue in the recent move towards harmonised national electricity and gas laws as has been an economy wide push towards a more "competitive Australia" - the Competition Policy Reforms of the 1990's (Parer, 2002).

⁶ s51 Legislative powers of the Parliament

The Parliament shall, subject to this Constitution, have power to make laws for the peace, order, and good government of the Commonwealth with respect to: ...

⁷ Chapter IV of the Constitution (sections 81–105A) contains provisions regulating, among other things, trade and commerce throughout Australia. The desire to have a single trade area throughout Australia was one of the main reasons for the movement by the Australian people towards federation.

⁸ 92 Trade within the Commonwealth to be free

On the imposition of uniform duties of customs, trade, commerce, and intercourse among the States, whether by means of internal carriage or ocean navigation, shall be absolutely free.

The 'liberalisation' of electricity and downstream gas markets in Australia has been underway since the 1990's. Initial activity occurred as part of a period of competition reforms that included a focus on Government owned monopolies. All state-based electricity markets were owned and operated by government owned entities and this attribute alone ensured that electricity would be included in the reform process.

National Competition Policy is discussed briefly in the following section and this is followed by a discussion of how Australia's Energy Policy has continued to follow the direction set by competition policy reforms.

2.2.2 National Competition Policy

The internationalisation of the Australian economy – represented most notably by the floating of the Australian Dollar in 1983 – foreshadowed an economic reform program that focussed on productivity and competition. A key event in this process was a Ministerial Statement to Parliament on March 12th, 1991 by Labor Prime Minister Bob Hawke entitled "Building a Competitive Australia". The following extract from PM Hawke's speech highlights the situation at the time (Kain, 2003):

The Trade Practices Act is our principal legislative weapon to ensure consumers get the best deal from competition. But there are many areas of the Australian economy today that are immune from that Act: some Commonwealth enterprises, State public sector businesses, and significant areas of the private sector, including the professions.

This patchwork coverage reflects historical and constitutional factors, not economic efficiencies; it is another important instance of the way we operate as six economies, rather than one. The benefits for the consumer of expanding the scope of the Trade Practices Act could be immense: potentially lower professional fees, cheaper road and rail fares, cheaper electricity. (emphasis added)

The importance of competition policy was restated by PM Hawke's successor Mr Paul Keating as he launched what was to become known as the "Hilmer Review" (The National Competition Policy Review). The Review committee's report was delivered to government in August 1993 and recommended, amongst other things, extending the reach of the Trade Practices Act to apply to all business activity in Australia, competitive neutrality and restructuring for government owned monopolies and a policy of providing third-party access to "nationally significant infrastructure". Many of the Hilmer recommendations underpin the Energy Market Reform process still underway in Australia today, 25 years later.

By way of background, the Trade Practices Act (TPA) was implemented by the Whitlam Labor Government in 1974 and has continued to be the central legislative instrument for market

liberalisation and competition reform. The *head of power* for the TPA was the ‘corporations power’ at section 51 (xx) of the Constitution⁹. The TPA has been revised and expanded numerous times and from January 2011 was recast as the *Competition and Consumer Act 2010* and includes, as a schedule, a new Australian Consumer Law (ACL) that consolidates and replaces provisions from the TPA and 20 pieces of State and Territory Legislation (CoA, 2010a).

2.2.3 Electricity Market liberalisation

Competition reforms had influenced the Electricity and Gas sectors during the 1990s – ‘unbundling’ the previous vertically integrated businesses and introducing a degree of competition between retailers and between generators while ensuring access and price regulation of the *natural monopoly* energy networks (Parer, 2002). The National Electricity Market (NEM) comprising the states of Queensland, New South Wales, Victoria and South Australia was launched in 1998.

The next wave of reform followed from a Council of Australian Governments (CoAG) meeting in 2001 (CoAG, 2001a). CoAG was established in 1992 as the peak intergovernmental forum in Australia. CoAG is chaired by the Prime Minister and includes the Premiers of each state and first ministers of the ACT and NT. CoAG prefaced subsequent announcements by stating (CoAG, 2001b):

The energy sector, both stationary and transport, provides an essential underpinning of Australia's economic, environmental and social goals. Competitively priced and reliable energy services are a key to our international industry competitiveness and standard of living ... Energy is a shared responsibility among the Commonwealth, State and Territory Governments. The Commonwealth has a national leadership role to ensure overall prosperity and that Australia's international obligations are met. States and Territories have particular responsibilities within their jurisdictions, including in relation to the provision of energy services to the communities they serve.

All Australian Governments recognise that effective operation of an open and competitive national energy market contributes to improved economic and environmental performance, and to delivering benefits to households, small business and industry, including in regional areas.

The CoAG meeting established a new Ministerial Council on Energy (MCE, comprising federal, state and territory energy ministers and a pre-cursor to today’s COAG Energy Council) and initiated an Energy Market Review headed by Mr Warwick Parer (the Parer

⁹ s51 [with respect to] ... (xx) foreign corporations, and trading or financial corporations formed within the limits of the Commonwealth

Review) that tabled a report in December 2002 entitled “Towards a Truly National and Efficient Market” (Parer, 2002). The Review concluded that despite progress in the 1990s:

Australia’s energy sector had confused governance arrangements and excessive regulation [p10];

There remained a ‘regionalised’ NEM, with five markets rather than one, and a severe limitation on trading interstate and market liquidity in general [p9], and;

Some prices to consumers are (or will soon become) higher than necessary [p9]

These findings spawned a focus for the Energy Market Reform agenda on regulation from a *national* perspective and the establishment of new national institutions to carry out these functions. Relevant to maintaining momentum in the reform agenda was industry pressure to harmonise regulation across jurisdictions.

2.2.4 Co-operative Federalism for a National Market

Energy Market Reform is not the first instance of a national approach being adopted for a sector of the economy that has been constitutionally performed by the States. Other examples include Corporations Law, Industrial Relations, Air Transport and Family Law. The referral of powers from a State to the Commonwealth is provided for in Section 51 (xxxvii)¹⁰ of the Constitution. However, rather than outright referral, it has been stated that much of Australia’s economic success is, at least in part, a consequence of Commonwealth-State *cooperation* on competition policy in the 1990’s (Twomey, 2000).

This notion of cooperation has flowed into the downstream energy sector via an intergovernmental agreement established in 2004 and referred to as the Australian Energy Market Agreement (AEMA). The AEMA provides the basis of a cooperative legislative framework auspiced by what is now known as the CoAG Energy Council.

The AEMA has led to the establishment of four key institutions (introduced in section 1.3):

- The Rule Maker (Australian Energy Markets Commission, AEMC)
- The Rule Enforcer (Australian Energy Regulator, AER)
- The Market Operator (Australian Energy Market Operator, AEMO)
- Energy Consumers Australia (ECA)

As the Commonwealth had very limited powers in this area, the states have established these

¹⁰ s51 (xxxvii) [The Parliament shall have power ... with respect to] ... matters referred to the Parliament of the Commonwealth by the Parliament or Parliaments of any State or States, but so that the law shall extend only to States by whose Parliaments the matter is referred, or which afterwards adopt the law;

organisations (and assigned their roles, functions and powers) under virtually identical pieces of legislation enacted by the participating states' parliaments. South Australia has been designated as the lead legislator and legislation is prepared collaboratively between Commonwealth and State officials and tabled in the South Australian parliament.

The legislative packages (major elements of the new framework are prepared and progressed in blocks) generally comprise new or amended statutes, regulations and rules. This includes the National Electricity Law (NEL, a schedule to the National Electricity (South Australia) Act 1996), National Electricity Rules and Regulations. For gas there is the National Gas Law (NGL, which is a schedule to the National Gas (South Australia) Act 2008) which is applied in different ways via statutes in each participating jurisdiction. There is also the National Gas Rules and Regulations.

A legislative package, known as the National Energy Customer Framework (NECF), was presented in 2010. The key component, the National Energy Retail Law was passed by the South Australian parliament and received assent into Law from the Governor in March 2011. Once enacted by a jurisdiction this package transfers a number of retail and distribution regulation functions to the AER in an effort to harmonise the rights of customers and obligations on Energy Retailers around the country. The AEMA was amended in October 2011 to reflect the passage of the Australian Consumer Law, the National Energy Retail Law and the subsequent allocation of new retail market responsibilities to the energy market institutions.

Central to the new arrangements that followed the initial AEMA was the establishment of the AER as a single, national energy market regulator on July 1st, 2005. The legislative foundation for the AER is contained within an amendment to the Trade Practices Act (now the Competition and Consumer Act, CCA). The amendment inserted a new Part IIIAA into the CCA to establish the AER as a Commonwealth body. The AER's functions and powers have been conferred through the application of the National Electricity Law, National Gas Law and associated Regulations and Rules by the Commonwealth, States and Territories.

The AER amendments to the CCA included content designed to overcome Constitutional issues with the re-allocation of powers. The Bills Digest published by the Parliamentary Library's Information and Research Services for this legislation discussed previous cases that had challenged the 're-assignment' of powers between the states and Commonwealth (CoA, 2004). Particular attention was paid to the High Court decision in *R v Hughes (2000)*. Mr

Hughes had challenged the conferral of state functions and powers on Commonwealth bodies and officials under the Corporations Law scheme of the time (Govey and Manson, 2000) – a scheme based on Commonwealth legislation enacted in the Australian Capital Territory and then applied in the other states and Northern Territory in an arrangement not dissimilar to the legislative framework for Energy Market Reform. His case was not successful but the Court’s reasoning had significant implications for Corporation Law at the time and similar Commonwealth-State cooperative agreements into the future (Govey and Manson, 2000).

After *R v Hughes*, a new Corporations Law scheme was established via a formal referral of powers from the States to the Commonwealth and a degree of review was undertaken on a number of other cooperative legislation schemes (SCLACA 2006).

While the Hughes case seemed to instil doubt over the validity of the re-allocation of powers from State to Commonwealth, the literature also refers to earlier High Court comments that spoke positively about the notion of ‘cooperative federalism’. The example quoted by Govey and Manson (2000) of Chief Justice Gibbs in *R v Duncan* (1983) is particularly relevant:

“There is no express provision in the Constitution, and no principle of constitutional law, that would prevent the Commonwealth and the States from acting in cooperation, so that each, acting in its own field, supplies the deficiencies in the power of the other... [to achieve] a uniform and complete legislative scheme”,

and;

“... cooperation between the Parliaments of the Commonwealth and the States is in no way antithetic to the provisions of the Constitution: to the contrary, it is a positive objective of the Constitution.”

Clarity over the re-allocation of powers is often raised as an area of potential Constitutional amendment although there is often reluctance to pursue such a change due to the cost and historically low success rate in the referenda required for Constitutional changes (Govey and Manson, 2000; SCLACA, 2006; Twomey, 2000; Williams, 2005). Constitutional law expert Professor George Williams (2005) argues that while Constitutional amendment to provide a simpler and unambiguous regime of cooperation is an ideal, the referral of powers is not necessarily a preferred end result over a cooperative legislative scheme. Professor Williams has stated that a scheme based on “applied legislation” is:

“... arguably the best model because it does not depend upon a transfer of power, allows for change over time and is built upon Commonwealth-State cooperation.”

“Applied Legislation” or “Cooperative Legislation” refers to legislation enacted by one jurisdiction and then applied in others. This was the case with Corporations Law from 1991

to 2001 - prior to the Hughes case. It is also the model employed for the Energy Market legislative framework albeit with special consideration given to the implications of the Hughes case (CoA, 2004).

Twomey has written a relevant paper on cooperative legislation schemes in the context of infrastructure in which she concludes that (Twomey, 2007):

“The centralisation of power in the Commonwealth is not the only way of achieving a level of consistency and co-ordination in the provision of national infrastructure. There are other co-operative means ... [which] utilise the existing expertise of the states and ensure better coordination ... “

This is very relevant to the case of electricity and downstream gas. A comprehensive referral of powers under s51(xxxvii) seems likely be unworkable at present due to the complexity of the reforms, the limited experience of the Commonwealth in such matters and the rather strained relationship between the Commonwealth and the states and territories on energy policy. However, it is possible to imagine that at some point in the future that a referral might be possible.

In summary, Electricity Market reform is a working example of Cooperative Federalism that has evolved with the underlying technology and markets. It has also incorporated lessons from other parts of the economy. Part of the original objectives of federalism was that of a ‘common market’ premised on the idea that the whole could be greater than the sum of its parts. However, despite the national energy market institutions having been established for over 10 years (since July 1st, 2005) the transferral or harmonisation of functions from the states is still progressing incrementally and does not include Western Australia (except for aspects of gas pipeline regulation) or the Northern Territory (although a transition process is underway). Victoria remains outside the National Energy Customer Framework.

2.3 Governance Context for Social Policy

Social policy in Australia incorporates a progressive tax and transfer system that aims to provide a capacity to pay for most goods and services. For the purposes of this research, social policy includes income support, energy specific concessions and rebates as well as interactions with housing affordability policy. Uniform tariff policies (postage stamp pricing) are also an important feature of most state and territory regimes.

2.3.1 Welfare Policy context

In 2014, 3 million people (13.3% of the population) including over 730,000 children (17.4% of all children under the age of 15) were living below the poverty line after taking account of housing costs (ACOSS, 2016). Having such low incomes risk vulnerability to disconnection in the energy market.

The Australian Government initiated a review of Australia's Welfare System in 2014 "... to identify improvements to ensure the social support system is sustainable, effective and coherent, and encourages people to work" (DSS, 2014a). The review stated (DSS, 2014b):

Australia's social support system includes cash transfer payments to individuals and families, and a range of support services funded or provided by all levels of government and by civil society (commercial and community organisations). The system is intended to help meet the costs of daily living, increase participation in work and social activities, and build individual and family functioning.

According to the review, in 2012-13, the Australian Government provided more than \$110 billion in cash transfer payments (DSS, 2014b). From a population of over 23 million, almost 5 million Australians receive some form of "income support"; a term that refers to a range of pensions, allowances, family payments and other supplements. The review also distinguishes some of the different short-term and long-term purposes of income support (DSS, 2014b):

- long-term support to meet basic costs of living for those such as older people and people with severe disability who cannot work and have no access to other resources.
- transitional payments as support during a period between jobs, the transition from education to work, a period of re-skilling or temporary incapacity.
- partial support such as those only able to work part-time due to a disability or low-paid working families who need additional assistance to provide for themselves and/or their children

Unlike the case for energy, Section 51 of the Constitution makes explicit reference to the Commonwealth's obligations in this regard:

Legislative powers of the Parliament

(xxiii) invalid and old-age pensions;

(xxiiiA) the provision of maternity allowances, widows' pensions, child endowment, unemployment, pharmaceutical, sickness and hospital benefits, medical and dental services (but not so as to authorize any form of civil conscription), benefits to students and family allowances;

In the Australian context, distinction has been made between 'tied' and 'untied' supports. The final report of the 2009-10 Review of Australia's Taxation System (Henry Tax Review) covers the Transfer System and explains 'tied' vs 'untied' transfers (Henry, 2010):

“While transfers are usually thought of as cash payments, governments also provide transfers such as concessions and payments that are ‘tied’ to the purchase, or supply, of a particular good or service.”

The economic argument for ‘tied’ transfers lies in the concept of a *merit good* that is, a good that people should consume regardless of their preferences for other things (Ver Eecke, 1998). At a time when energy market liberalisation was gaining momentum in the UK, Dilnot and Helm concluded that energy for households was both an absolute and a participation *merit good* (Dilnot and Helm, 1987): that there is both an absolute requirement for survival and a relative requirement for ongoing participation and inclusion in society¹¹.

The Henry Tax Review made a number of wide-ranging observations about the eligibility for and distribution of the various concessions at the different levels of government. State and Territory Governments are responsible for energy specific concessions and rebates. Henry’s Recommendation 107 called for a review by the Productivity Commission for report to COAG. As at January 2018, this has not occurred. The 2014 Review of Australia’s Welfare System “A new System for Better Employment and Social outcomes” Final Report continued to support concession cards and pointed to the Federation White Paper for implications on how concessions might be funded and delivered in the future (DSS, 2015, p. 16). The Federation White Paper process was terminated in April 2016 and the state-federal funding issues remain unresolved

Most NEM jurisdictions offer a fixed rebate for electricity and gas as well as allowances for medically-defined heating and cooling needs. The structures, values and eligibility criteria vary between jurisdictions, but each is generally paid by governments directly to energy retailers for crediting against customer accounts. In addition, each jurisdiction operates an emergency payment scheme where access to additional funds is available on a more ad-hoc basis but under strict eligibility criteria¹².

According to the Australian Bureau of Statistics (ABS)¹³, around one in four households have government pensions and allowances as their main source of income. 64% of these (15% of all households) report that government pensions and allowances made up 90% or more of their

¹¹ 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.

¹² Home Energy Emergency Assistance Scheme (Queensland), Energy Accounts Payment Assistance Scheme (NSW), Utility Relief Grant Scheme (Victoria), Emergency Electricity Payment Scheme (South Australia)

¹³ ABS 6523.0 Household Income and Wealth, Australia, 2015–16 Table 7.3: 2,171,800 out of 8,963,300 = 24.2%

household income (ABS, 2017c). The eligibility criteria for energy concessions and rebates in each jurisdiction are largely aligned with eligibility for specific Australian Government concession cards (such as the Pensioner Concession Card, Health Care Card, Department of Veteran's Affairs Gold Card). By implication, social policy settings are a key determinant of capacity to pay electricity bills for somewhere between 15% and 25% of households.

In summary, the social policy context is that a combination of income support and energy specific concessions is made available to households. The Australian government is responsible for providing the income while the state and territory governments are largely (but not entirely) responsible for providing the energy specific aspects. There is little doubt that household energy costs would constitute one of the 'costs of daily living' referred to in the 2015 Welfare Review but there is an obvious dilemma. The adequacy of the Australian Government's income to cover the cost of energy is heavily influenced by the adequacy of state-level concessions to keep energy bills affordable. The states and territories rely on the Commonwealth for around 45% of their revenue and are not often in a budget position to extend the value or reach of concessions (CoA, 2015, p. 9).

Other aspects of the broader social support system are also relevant to this policy area. Housing in particular is both a driver of energy demand as well as a key variable in a household's capacity to pay their energy bills. This is discussed further below as well as in Chapters 5 and 7. Consumer policy is also relevant as outlined below and in Chapter 6. All three domains involve a federal structure and are governed through COAG processes.

2.3.2 Housing Policy Context

Surveys of household income and expenditure reveal housing costs as the largest expenditure category for all household income segments as presented in section 1.4.7. The relative capacity to pay for energy of these low-income households is clearly compromised by their expenditure on housing and other necessities.

Housing affordability is a complex public policy objective that is strongly researched and debated in Australia. The housing policy agenda, similar to energy policy, also fractures over federal lines. State and Territory Governments provide public housing but significant funding is provided from the Commonwealth. The Commonwealth also provides Rent Assistance to those renting privately as a non-taxable income supplement to eligible recipients of allowances and benefits whose rental costs exceed pre-determined thresholds. Rent Assistance is provided for in Australia's Social Security Law (*Social Security Act 1991* and

subordinates).

Housing policy in Australia, as a subset of the broader domain of social policy, has governance similarities to those of energy markets. An overarching intergovernmental agreement similar to the AEMA exists. The first Commonwealth-State Housing Agreement (CSHA) was finalised in 1945 (CoA 2001) and was triggered by reported housing shortages. The Commonwealth has made financial allocations to the states ever since. The CSHA was replaced in 2009 by the National Affordable Housing Agreement (CoAG 2012b) and a number of National Partnership Agreements on homelessness, social housing and remote Indigenous housing (CoAG 2012a).

2.3.3 Consumer Policy Context

The nexus of energy policy and social policy also overlaps with consumer policy. The *essential* nature of electricity supply justifies a consumer protection regime beyond that of the general consumer marketplace.

The AER and AEMC have echoed the Productivity Commission view that (PC, 2008, p. Vol II 108):

Energy is an essential service, necessary to provide a basic standard of living

The AER has stated (AER, 2013, p. 6):

In developing the Retail Law, the Ministerial Council on Energy¹⁴ Standing Committee of Officials (MCE SCO) considered the 'essential service nature of energy supply for the health, safety and well-being of the citizens of Australia.'¹⁵ It noted that customers should be able to access a basic supply that meets their need. Moreover, because energy is an essential service, energy consumers require comprehensive protections beyond those offered under generic consumer protection legislation."

Australia's Consumer Policy Framework was comprehensively overhauled in 2010 with the implementation of the Australian Consumer Law in 2011. These reforms were informed by a preceding Productivity Commission Review of Australia's Consumer Policy Framework (PC 2008). The Productivity Commission made specific reference to energy markets in establishing the context for the Inquiry and to explain why energy consumers warrant explicit protection beyond the generic provisions of the broader consumer policy framework, the Commission stated (PC 2008):

¹⁴ The MCE is the body now known as the COAG Energy Council

¹⁵ Ministerial Council on Energy, Standing Council of Officials, A National Framework for Regulating Electricity and Gas (Energy) Distribution and Retail Services to Customers – Policy Response Paper, June 2008, p. iv

“There are good reasons to supplement the generic consumer law with specific measures to protect and empower energy consumers. They are essential services, with disconnection having potential harmful effects; billing is lumpy increasing the risk of financial stress for low income households; price menus and product bundling can be complex; and some areas of supply are not yet fully competitive.”

Reference was also made to the heterogeneous pace of reform amongst the states and territories as being further reasons why national Consumer Law would not be appropriate for energy markets. Energy markets therefore featured in the Productivity Commission’s considerations of *Industry specific* consumer regulation.

Highlighting governance similarities to energy market reform, the ACL is a cooperative reform of the Australian Government and the States and Territories, through the Council of Australian Governments (COAG). An Intergovernmental Agreement (IGA) signed by the Council of Australian Governments underpins the establishment of the ACL.

The electricity market’s industry specific consumer regulation approach is known as the National Energy Customer Framework (NECF) and comprises the National Energy Retail Law (NERL), Rules and Regulations. The National Energy Retail Law was passed by the South Australian parliament and received assent into Law from the Governor in March 2011. The NECF is being adopted progressively by the NEM jurisdictions. As at January 2017, only Victoria had not adopted the framework.

Reference was also made to the different pace of reform amongst the states and territories as being further reasons why national Consumer Law would not be appropriate for energy markets. Energy markets therefore featured in the Productivity Commission’s considerations of *Industry specific* consumer regulation. The PC recommended: (Recommendation 5.3):

... Australian Governments should agree to the longer term goal of a national consumer protection regime for energy services, with a single set of requirements to apply in all jurisdictions participating in the national energy market. Those requirements should be enforced by the Australian Energy Regulator.

This recommendation precipitated the National Energy Customer Framework (NECF). The NECF complements the generic consumer protections provided by Australian Consumer Law. The NECF is a package of legal instruments centred on the National Energy Retail Law (NERL) and includes a set of Rules that complement the National Electricity Rules and National Gas Rules. Consumer Law is supplemented by state-specific provisions in Victoria, Western Australia and the NT.

2.4 The Energy Policy perspective on Social Policy

It is not uncommon for energy policy and regulatory statements and publications in Australia to acknowledge concern over matters of energy affordability for households and the existence of *vulnerable* consumers. However, policy and regulatory frameworks tend to emphasise a limited obligation for energy markets in this regard.

Australian Governments have used a White Paper process as the primary statement of national energy policy. The 2004 Energy White Paper by the Howard government (conservative Liberal-National Coalition) was the first economy wide energy policy statement since the productivity reform process built momentum in the late 1980s. The frequency of publication subsequently increased. An update was commissioned by the Rudd government (Labor) in 2008. The process was suspended in early 2010 following the stalling of the Rudd government's Carbon Pollution Reduction Scheme (CPRS) emissions trading framework and the subsequent 2010 Federal Election. The process was restarted in mid-2011 by the Gillard government (Labor) with a Draft released in December 2011 and a final document released in November 2012. Following the 2013 Australian federal election, the Abbott government (conservative Liberal-National Coalition) produced a new White Paper in April 2015.

The energy policy perspective on social policy outcomes is well summarised in a quote from the 2012 Energy White Paper: energy vulnerability is an important public policy issue but alleviation through pricing controls is not the answer (CoA, 2012, p. 10):

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.

The 2012 Energy White Paper dedicated a lot of space to the 'vulnerable' customer. In summary, the 2012 EWP position was:

- Energy policy is seeking to pursue economic efficiencies through price de-regulation, smart meters and more cost reflective tariffs
- Distributional impacts are more efficiently dealt with by social policy settings
- The evidence base for detailed responses to these distributional impacts is weak

The 2015 Energy White Paper stated:

Our guiding principle is that markets should be left to operate freely, without unnecessary government intervention. Competition, productivity and investment will deliver reliable and cost competitive energy to households and business.” (Minister’s foreword)

It identified the Australian Government’s priorities in energy market reform to include:

rollout of cost-reflective tariffs to reduce cross-subsidies between consumers and drive better uptake of enabling technologies (particularly advanced metering) that allow consumers to respond to price signals (p6)

The 2015 EWP made very little mention of ‘vulnerable consumers’ and did not refer to any links to social policy. However, it did signal the introduction of a National Energy Productivity Plan (NEPP) that was subsequently released in December 2015. The NEPP includes a workstream focussed on vulnerable consumers.

These policy positions are consistent with the intergovernmental agreement between the Commonwealth and States and Territories. The *Australian Energy Market Agreement (AEMA)* was implemented on 30th June 2004 and replaced the *National Electricity Market Legislation Agreement* of May 1996. The AEMA has explicit objectives outlined at Section 2 (CoAG, 2013). Overall, the objective is:

“2.1 (a) The promotion of the long term interests of consumers with regards to the price, quality and reliability of electricity and gas services”

Further, the agreement seeks to establish a framework for further reform in order to:

2.1 (b)(i) strengthen the quality, timeliness and national character of governance of the energy markets, to improve the climate of investment;

(ii) streamline and improve the quality of economic regulation across energy markets to lower the cost and complexity of regulation facing investors, enhance regulatory certainty, and lower barriers to competition;

(iii) improve the planning and development of electricity transmission networks, to create a stable framework for efficient investment in new (including distributed) generation and transmission capacity;

(iv) enhance the participation of energy users in the markets including through demand side management and the further introduction of retail competition, to increase the value of energy services to households and businesses;

(v) further increase the penetration of natural gas, to lower energy costs and improve energy services, particularly to regional Australia, and reduce greenhouse emissions; and

(vi) address greenhouse emissions from the energy sector, in light of the concerns about climate change and the need for a stable long-term framework for investment in energy supplies.

As can be seen, the agreement places strong emphasis on the climate for investment [(b)(i),

(ii), (iii) and (vi)] as well as the interests of end users [(a) and (b)(iv)].

The AEMA makes explicit the allocation of various Distribution and Retail functions (Section 14.7 and Annexure 2) between the Commonwealth and the States and Territories. Of particular relevance to this thesis are the inclusions:

States and Territories retain responsibility for

community service obligations ... which are to be clearly specified and transparently publicly funded [AEMA 14.7(a)]; and,

... social welfare and equity objectives will be met through clearly specified and transparently funded State or Territory community service obligations that do not materially impede competition. [AEMA 14.14]

The intent to separate social and environmental policy objectives from the energy market frameworks has been explicitly stated on numerous occasions, particularly in relation to what is known as the National Electricity Objective (NEO): the *single market objective* that seeks to provide clear decision making guidance to regulators, rule makers and policy makers in the National Electricity Market. The NEO is to be found at section 7 of the National Electricity Law (A schedule to the National Electricity (South Australia) Act 1996):

7–National electricity objective

The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to –

(a) price, quality, safety, reliability and security of supply of electricity; and

(b) the reliability, safety and security of the national electricity system.

The Second Reading Speech that accompanied the amendments to the legislation (as recorded in South Australian Parliaments Legislative Assembly Hansard p1452, 9th February 2005) clarified the intended interpretation:

National electricity market objective

An important feature of the new National Electricity Law is that it defines the scope of the national electricity market which is regulated under the new National Electricity Law and Rules, and provides a single clear national electricity market objective.

... The national electricity market objective in the new National Electricity Law is to promote efficient investment in, and efficient use of, electricity services for the long term interests of consumers of electricity with respect to price, quality, reliability and

security of supply of electricity, and the safety, reliability and security of the national electricity system.

The market objective is an economic concept and should be interpreted as such. For example, investment in and use of electricity services will be efficient when services are supplied in the long run at least cost, resources including infrastructure are used to deliver the greatest possible benefit and there is innovation and investment in response to changes in consumer needs and productive opportunities.

The long term interest of consumers of electricity requires the economic welfare of consumers, over the long term, to be maximised. If the National Electricity Market is efficient in an economic sense the long term economic interests of consumers in respect of price, quality, reliability, safety and security of electricity services will be maximised.

The Second Reading Speech by then South Australian Energy Minister the Hon PF Conlon (27th September 2007) upon the introduction of amendments to the same legislation provided further guidance:

The National Electricity Objective is to promote efficient investment in, and the efficient use of, electricity services for the long term interests of consumers of electricity with respect to price, quality, reliability and security of supply of electricity, and the safety, reliability and security of the national electricity system.

Just as the Australian Energy Market Commission must test changes against the objective of the law when making rules, the Australian Energy Regulator must perform its functions in a manner that will or is likely to contribute to achieving the objective of the law.

It is important to note that the National Electricity Objective does not extend to broader social and environmental objectives. The purpose of the National Electricity Law is to establish a framework to ensure the efficient operation of the National Electricity Market, efficient investment, and the effective regulation of electricity networks. As previously noted, the National Electricity Objective also guides the Australian Energy Market Commission and the Australian Energy Regulator in performing their functions. This should be guided by an objective of efficiency that is in the long term interest of consumers. Environmental and social objectives are better dealt with in other legislative instruments and policies which sit outside the National Electricity Law.

These speeches commit to the public record that the objective of the electricity market is to pursue economic efficiency in the long term interest of end-users (LTIE) and that social and environmental objectives were to be dealt with elsewhere. This concept of LTIE builds on substantial experience in the economic regulation of the telecommunications industry by the Australian Competition and Consumer Commission (ACCC). The 'long-term interests of end-users' objective is the basis of operation of Part XIC of the Australian Consumer Law (*Competition and Consumer Act 2010 (Cth)*) and its predecessor, the Trade Practices Act. It is also used in the objects of the *Telecommunications Act 1997 (Cth)*.

In order to further characterise the interface from an energy policy perspective, the following quotes from publications of the Australian Energy Market Commission are provided as representative of the Commission's approach to assessing the competitiveness of energy market's in states and territories:

"It is also important to distinguish between competition issues and non-competition issues. Where concerns arise regarding issues going beyond the operation and performance of the competitive energy market, such as the affordability of energy for low income households, these issues need to be addressed through appropriately targeted policies rather than by intervening to distort the efficient operation of the market." (AEMC, 2008a)

"The Commission recognises the importance of ensuring the affordability of energy for low income households but considers these issues go beyond the operation and performance of the competitive energy market. As such, they should be addressed through appropriately targeted policies rather than by intervening to distort the efficient operation of the market." (AEMC, 2008b)

"Ultimately, energy subsidies (including adjustments to indexation) and associated programs to address fuel poverty are matters for consideration by the South Australian Government." (AEMC, 2008b)

The issue and approach is of course not just restricted to electricity and gas. It is also apparent in the industry reform process for the supply of another *essential service* or *utility*: water, through the National Water Initiative (NWI). the following quote is indicative (CoA, 2010b):

"The selection of appropriate and 'affordable' water supplies, and addressing social and equity issues are better addressed via specifically targeted and transparent subsidies and appropriate social policies such as community service obligations. These policies may then apply in conjunction with NWI best practice pricing."

So, just as has been the case for energy market reform, there is explicit intent in water market reform to separate economic efficiency from equity considerations. However, as is also the case with energy, this separation is not as clear-cut in detail as it appears in policy statements.

The matter of relevance to this thesis is not so much that a focus on economic efficiency and cost reflective pricing may reduce affordability for many vulnerable consumers but that the reform agenda fails to ensure that a formal public policy link between market outcomes and ‘social and equity issues’ is preserved. It is perhaps the breaking of this linkage – or the lack of a formal structure for the linkage - that lies at the heart of the issue. Both the Australian Energy Market Agreement (AEMA) for energy and the NWI for water – intergovernmental agreements relating to the economic reform of utility markets – seek to elevate economic efficiency to primacy in regulation and pricing and are clear that matters of affordability are better addressed by social policy settings. And while the governments that are parties to these agreements are also those obliged to deliver these complementary measures, there is little evidence that this attracts the same policy attention or implementation resources.

To summarise, public policy statements in relation to energy policy tend to reinforce the primacy of economic efficiency objectives over equity concerns and imply a “keep up!” message for social policy.

2.5 A Consumer Safety Net

The research questions presuppose the need for a “consumer safety net” for household energy supplies. It is important to acknowledge that the provision of energy concessions, rebates, efficiency advice and emergency relief payments pre-date the liberalisation of energy markets in Australia and elsewhere. However, as will be shown, the process of energy market reform exposed how intertwined energy and social policy were in the 1990s and then ultimately unravelled this relationship.

The relevant aspect of the reform process was what has been referred to as the ‘Community Service Obligations or CSO debate’ that can be traced to the late 1980s and early 1990s and reform of the telecommunications industry (Economic and Budget Review Committee, 1991).

The Economic and Budget Review Committee of the Victorian Parliament conducted a Community Service Obligations (CSOs) Inquiry that reported in November 1991 (Economic and Budget Review Committee, 1991):

(p20) Committee recommendation 2.1: A Community Service Obligation should be defined as arising when the Parliament or the executive government expressly

requires a government business enterprise to carry out an activity which it would not elect to provide on a commercial basis, or which would only be provided commercially at a higher price.

Of specific relevance was the consideration of the CSOs provided by the Victorian Government Business Enterprise (GBE) known as the State Electricity Commission (SECV). These CSOs included a 'Home Energy Advisory Service', the provision of concessions and rebates to pensioners, those requiring life-support equipment and others in financial difficulty as well as state-wide uniform tariffs.

Importantly, the timing of the Victorian review was at the early days of energy market liberalisation:

The possibility of corporatisation and privatisation of GBEs now also provides a reason to review the continuing relevance of CSOs provided by Victorian GBEs. (p2)

There is now an urgent need to clarify Government objectives for CSOs as these monopoly suppliers of essential services are corporatised (and then privatised?). (p19)

The subject was also on the national agenda: The Committee report acknowledges links to social policy that were articulated around the same time (1989) by the Commonwealth Treasury (Economic and Budget Review Committee, 1991):

Ideally community service obligations should be precisely specified in the light of clearly identified social policy objectives. Once this is done, the cost effectiveness of alternative means of achieving those objectives can be considered.

The Industry Commission (the precursor to today's Productivity Commission) inquiry into *Energy Generation and Distribution* proposed a model for GBE corporatisation that also made recommendations regarding CSOs (Industry Commission, 1991b):

(p61) If governments wish to assist disadvantaged groups and/or rural residents, it would be more efficient and more equitable to provide assistance by means of social welfare programs or, in the case of rural users, through the taxation system (eg zone rebates) rather than by subsidising the consumption of electricity and gas.

(p81) ... abolishing requirements for utilities to undertake CSOs. If, however, some residual CSOs remain, they should be individually identified and costed, and directly funded by government.

The Victorian Inquiry reflected the Industry Commission position but acknowledged concerns by some stakeholders about the abandonment of CSOs, quoting the Victorian Council of Social Service (VCOSS) submission (Economic and Budget Review Committee, 1991):

VCOSS has a number of serious concerns as to how the rights of all Victorians will be maintained as public utilities are commercialised. In particular, will access to, and equity of, essential goods and services be maintained?

According to the Industry Commission, assistance for pensioners and other 'social equity' programs were in existence in all states and territories prior to the 1990's (Industry Commission, 1991a):

In New South Wales, for example, the Electricity Councils provide welfare agencies (eg the Salvation Army) with \$30 electricity vouchers for distribution amongst the poor. In South Australia, ETSA is involved in a similar program, whereby it assists in the payment of electricity bills for people in acute, short-term financial difficulty.

In some cases, these were funded by Government (with the utility often bearing the administration costs), in other cases the obligation fell on the utility. South Australia provided examples of both:

(p75) ... as part of its licensing arrangement, Sagasco offers pensioner rebates of \$6.60 per annum. Despite similar rebates offered by ETSA being funded by the Government, Sagasco is required to fund and administer these rebates internally.

(p75) ... Reflecting Government policy, Sagasco introduced an Emergency Payments Scheme to provide one-off assistance to customers in severe financial crisis.

Beyond welfare related CSOs, the Industry Commission was also strongly critical of uniform tariff policies (also known as 'postage stamp pricing') arguing that such cross-subsidies compromised allocative efficiency. Submissions from state governments however defended the practice (Industry Commission, 1991a). The Commission, reflecting the economic efficiency objectives of the Inquiry's terms of reference, responded by concentrating on the method of provision more than the intent or rationale for their provision (Industry Commission, 1991a):

The Commission does not dispute the importance of these [CSO] objectives, but rather seeks their implementation in the most efficient manner possible ... Where a strong equity case is identified for the maintenance of particular CSOs, direct subsidies are the preferred funding method. Alternatively, levy systems can be introduced. Both of these funding methods have the advantage of being efficient, transparent and compatible with competitive market operation.

If electricity and gas utilities were freed of the need to implement CSOs, they would be able to focus on commercial objectives and the provision of electricity and gas in the most efficient manner possible.

The reference to 'competitive market operation' is of particular relevance to this thesis. The energy market liberalisation agenda of 'unbundling' (the separation of previously vertically integrated monopolies into generation, transmission, distribution and retailing), corporatisation, privatisation and competition had commenced in the United Kingdom (firstly gas from 1985, then electricity from 1988) and was being watched closely from Australia (Booth, 2003; Industry Commission, 1991a). Corporatisation of electricity provision was also underway in New Zealand from the mid-1980's (Industry Commission, 1991a). The election

of the conservative Kennett Government in Victoria in 1992 lead to an acceleration of energy market restructuring in that state and represented the frontier of energy market liberalisation in Australia. The reforms took many cues from the UK experience (Booth, 2003).

In *A Dictionary of Public Health*, the entry for 'social safety net' highlights that provision is not just the domain of government but a combination of services (Last, 2007):

social safety net

A combination of tax-supported, voluntary, and charitable community agencies that provide services for many kinds of disadvantaged people in most liberal democratic nations, as well as in socialist nations such as Cuba. The disadvantaged people include single-parent, mostly mother-led families who are dependent on welfare for financial support, unemployed and unemployable people, elderly and shut-in people, people with chronic impairments, and those with disabilities or handicaps.

This notion is often referred to by the term 'shared responsibility' in the policy literature and this is discussed further in the following section.

2.6 A Shared Responsibility

The *Hardship Inquiry* conducted by the Victorian Essential Services Commission in 2016 (ESCV, 2016) and the subsequent *Payment Difficulties Safety Net* project can be regarded as the frontier of vulnerable customer policy development as at 2017. The Inquiry was triggered by a spike in disconnections in 2013-14 and a spike in the number of 'wrongful disconnection' cases being investigated by the Energy and Water Ombudsman (Victoria). In the words of the ESC (ESCV, 2017):

These trends indicated that more people were being disconnected, and more appeared to be disconnected for the wrong reasons.

The AER's Sustainable Payments Plans Framework ('A good practice framework for assessing customers' capacity to pay') was released in July 2016 and is a voluntary arrangement that retailers can adopt (AER, 2016a). However the new ESCV framework for Victorian households moves away from 'capacity to pay' assessments by retailers to an entitlement to 'Tailored Assistance' as a 'more outcomes-based approach' (ESCV, 2017).

In October 2017, the Victorian Essential Services Commission released its final decision on a new Payment Difficulty Framework (PDF) that will apply from 1 January 2019 (ESCV, 2017). The new framework follows the rejection by consumer advocates and retailers of the ESC's first draft and is claimed to be 'vastly simpler' (ESCV, 2017) in its pursuit of disconnection as a last resort.

Both reviews (AER and ESCV) identified a cohort of customers who are unable to afford

ongoing consumption let alone being able to repay existing debt. This group is considered particularly vulnerable. The AER framework refers to this as 'Option C' and suggests:

The customer and retailer should try to agree on an affordable repayment amount that is as close as possible to the amount required to cover the customer's ongoing usage. This limits the growth of the customer's debt, keeps their energy supply connected and encourages their engagement.

Payment plans that are less than ongoing usage should be reviewed at least once every 3 months.

The customer and the retailer should work together to try to close the gap between the current repayment amount and the amount required to cover ongoing usage and reduce debt. This might include (but is not limited to): reviewing the customer's tariff, checking that they are receiving available concessions, providing tailored energy efficiency advice, offering incentive payments, and referring the customer to a financial counsellor or government assistance schemes.

It is difficult to not retain some scepticism though. The notion of a 'shared responsibility' between Energy Retailers, Governments and the Community Sector for customers at risk of disconnection has been promoted by the energy industry for a long time but has remained an unstructured arrangement. The Committee for Melbourne's Utility Debt Spiral Project of 2004 is one of the very first collaborations in the era of competitive energy markets:

A joint community, government and business initiative designed to explore the relationship between utility debt and poverty, and to identify social and regulatory frameworks and policies to assist people at risk

A triangular *shared responsibility* model between the Energy industry, governments and the community also underpinned the Energy Hardship Memorandum of Understanding (MoU) formed over a number of years in South Australia from 2004 between energy retailers, the South Australian Government and the Community Services Sector (represented by the South Australian Council of Social Service, SACOSS)¹⁶ (ECC, 2006).

Engagement by industry is critically important to progress in this area. AGL Energy Ltd and Origin Energy Ltd are the only two publicly listed, vertically integrated energy businesses in Australia and have a combined NEM market share of around two-thirds of all retail customers. Origin Energy was a sponsor of, and contributor to, the Utility Debt Spiral Project and AGL has supported a significant proportion of the published research in this area in Australia.

¹⁶ The MoU is not a public document, but references are available in the Annual Reports of the South Australian Energy Minister's Energy Consumers Council. The 2005/6 Annual report (see Section 6.3 'Social Responsibility' page 16-18) provides background and further details

The peak body for the Energy Retail Industry is now the Australian Energy Council. Historically, vulnerable consumer policy work was driven by the Energy Retailers Association of Australia (ERAA). The ERAA merged into the AEC on 1 January 2016. The ERAA published a hardship policy in 2013 that characterised the role seen by retailers in this space:

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 was placed on differentiating *temporary* and *chronic* hardship. In relation to chronic hardship, the ERAA policy also stated:

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 was 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.

The Australian Energy Council recently published a factsheet on retail energy bills that also refers to the community sector (AEC, 2017a):

Specialised assistance for vulnerable consumers

Retailers provide specialised assistance to residential consumers who need support in paying their energy bills. This support comes in a number of forms, such as extensions of time to pay, and payment plans that allow a consumer to repay debt over a long period and remain on supply. Retailers have hardship programmes to support consumers in particular need, where payment plans may grant additional flexibility and in some cases even provide for some or all of the debt to be waived. Retailers also have connections with welfare agencies and financial counsellors, so that consumers may receive additional support and advice.

The matter of how to best assist residential consumers who are struggling to pay energy bills has been at the heart of retailers’ policy and operational agendas for some years. However, bill affordability is a complex issue and about much more than energy bills Policy to assist consumers who are in financial hardship needs to be based on a system-wide approach that also accounts for consumers’ income and other sources of household debt.

AGL Energy has long championed a *shared responsibility* model between industry, governments and the community sector. The first reference to the model appears to be AGL’s submission to the Australian Energy Regulator’s review of Hardship Indicators in June 2010:

AGL believes a ‘shared responsibility’ model (where energy retailers, energy appliance manufacturers and retailers, government and community groups all have responsibility for customers in financial hardship) is the most effective way to prevent the continuation and escalation of customer hardship and ensure access to essential energy services. Under this model, energy appliance manufacturers and retailers, energy retailers, the government, community groups and customers should all share responsibility for assisting customers in financial hardship ... A shared responsibility model which seeks to prevent the continuation and escalation of customer hardship and ensure access to essential energy services is paramount.

From the AGL Energy Ltd 2011 Sustainability Report:

*... AGL will continue to refine and review its approach to customer hardship and energy affordability, working with stakeholders to improve the service provided to hardship customers. AGL is concerned, however, that realistic expectations are set with respect to the extent to which retailers’ hardship programs can assist customers facing long-term and chronic hardship. AGL will therefore continue to promote the ‘**shared responsibility**’ model in policy advocacy.*

This continues to the present day. The following extract is from a 2017 media release “AGL announces A Fairer Way package for vulnerable customers” that announced the removal of late fees for concession card holders and hardship program customers as well as other initiatives and community partnerships (AGL, 2017a):

*We believe this sort of collaborative engagement and awareness raising activity is a **shared responsibility** across industry, government and the community sector to ensure our most vulnerable customers are supported to engage and navigate the energy market.... We will continue to work with governments and the community sector during this significant time of market transformation to ensure we have a vibrant market that innovates for all Australians*

In what appears to be the first time Energy Consumers Australia had made written representation into what would be considered the social policy domain rather than energy policy ECA made a written submission to the Commonwealth Department of Social Services (DSS) in April 2017 (ECA, 2017a). The submission was in response to a DSS proposal for redesigning the Financial Wellbeing and Capability (FWC) funding activity. The Commonwealth Government invests around \$100m per annum under the FWC activity to fund services including Emergency Relief and Financial Counselling (DSS, 2017). The submission informed the DSS of ECA’s work on disconnections and that:

In the course of this work, Energy Consumers Australia has encountered repeated evidence of the critical role which emergency relief organisations and financial counsellors play, and of the importance of early intervention.

The DSS proposal attracted numerous other submissions, many of which were from community service organisations and peak bodies that are also active in energy policy debates. Another submission of direct relevance was from electricity retailer Momentum

Energy who acknowledged the importance to the energy market of financial counsellors and emergency relief providers (Momentum, 2017):

While Momentum's direct involvement in the FWC sector is limited, we are required as a term of our National Retail Authorisation and Victorian Retail Licence to develop and maintain hardship policies to assist financially vulnerable customers. We are also acutely aware that energy supply is one of the many factors leading to cost of living pressure and financial hardship. Because of this, we value the work undertaken in the FWC sector and have an interest in ensuring that this review delivers positive outcomes for organisations within sector and by extension, the individuals and communities who rely on them.

... Momentum values the services provided by the FWC sector and while we recognise that appropriate steps must be taken to ensure that funding is used as effectively as possible, we consider that broader social policy reforms are required to ease cost of living pressures and to assist individuals and families in entrenched poverty.

These examples illustrate the relevance of social policy to energy market outcomes but there is no evidence of a comprehensive or systematic approach. The following section considers two international examples: the UK and New Zealand. The UK pioneered the formal acknowledge of the phenomenon they call fuel poverty - perhaps the first 'joined up' approach to the energy policy / social policy nexus.

2.7 Some International Perspectives

This section considers social policy interactions with energy markets in the UK and New Zealand. These jurisdictions are considered relevant comparators to the Australian experience due to similarly 'liberalised' electricity markets as well as close historic and cultural ties. This is not a comprehensive review and is an area of prospective further research and application of the analytic model developed for this thesis.

2.7.1 UK

The concept of *fuel poverty* is well developed in public policy in the UK. The contemporary understanding of *fuel poverty* emerged over 20 years ago¹⁷ and distinguishes those households whose poverty is either due to, or made worse by, high required spending on energy to keep warm. The history of policy work on the concept of fuel poverty can be traced to the 1970s and the oil price shock (Hills, 2011, p. 25; Owen, 2001, p. 293). Brenda Boardman's 1991 book *Fuel Poverty: From Cold Homes to Affordable Warmth* was the analytical basis that cemented the

¹⁷ 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.

concept and lead to the original '10% of income being required to maintain a prescribed level of warmth' that was the official definition for many years (Hills, 2011, p. 26).

Dr Gill Owen summarised the role of social policy in energy regulation during the final decades of the 20th century (Owen, 2001):

- Oil price increases in the mid-1970s lead to community organisations campaigning for controls on the (nationalised) electricity and gas industries to disconnect customers having payment difficulties.
- The Labour Government of the time introduced an 'Electricity Discount Scheme' to reduce bills for low-income households and fuel bill subsidies were introduced for those in 'hard to heat' properties via the social security system
- Grants for home insulation were introduced around the same time and then increased by the Conservative government in the early 1980s
- Privatisation of gas in 1986 and electricity from 1990 led to concerns that without a specific mandate from the regulator profit motivated companies would be *even less* sympathetic to the plight of disadvantaged households than the public entities they replaced
- Subsidies for 'hard to heat' homes via the social security system were abolished in 1988
- Introduction of competition in the 1990s lead to price falls that benefited all customers
- The introduction of 'coin-less' prepayment meters (for both electricity and gas) lead to large falls in 'supplier initiated disconnections' but introduced the problem of 'self-disconnection' and suppliers charged more for energy via pre-payment meters than through traditional billing.
- A specific responsibility was introduced to the *Utilities Act* and in 2000 the Energy regulators introduced a 'Social Action Plan' that contained a mix of immediate actions, further research and pilot programs in recognition of the diversity of characteristics and circumstances of disadvantaged households.

The *Warm Homes and Energy Conservation Act* (WHECA) was passed by parliament in 2000 to provide the legislative basis for responding to fuel poverty in England and Wales and the Housing (Scotland) Act 2001 did the same for Scotland (Hills, 2011, p. 26). The bi-partisan 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.

The UK Government released a new approach to tackling Fuel Poverty in England in July 2013. 'Fuel Poverty: A Framework for Future Action'. The framework built on policies that targeted the identified drivers of fuel poverty: energy efficiency, incomes and energy prices (DECC, 2013b, p. 31). Further, the new policy confirmed the need for bill subsidies to complement the extensive energy efficiency efforts (p33). The new policy followed the conclusion of the independent Review of Fuel Poverty Hills 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 Hills Review also confirmed the concept of *fuel poverty* as a distinct and serious problem. The new policy largely adopted the recommendation of Professor Hills for a new way of measuring the breadth and depth of fuel poverty: the Low Income, High Cost (LIHC) indicator.

An annual report of Fuel Poverty Statistics is published to track progress and a Committee on Fuel Poverty (CFP) has been established to review the effectiveness of policies. Combined, this can be seen to keep the issue alive in the public domain, motivate ongoing action and allow for estimates of funding gaps (CFP, 2017, p. 5). Public policy in Australia has not embraced the concept in anything like the same way (Chester and Morris, 2011). The AER publishes 'affordability' indicators as a part of its annual reports of the retail energy markets but there is no 'headline' indicator that can hold policy measures to account.

Policy responses include a strong focus on improving the energy performance of dwellings and Winter Fuel Payments and the Warm Home Discount are the key financial assistance measures. The CFP highlighted the challenge of targeting financial assistance (CFP, 2017, p. 6):

We continue to recommend significantly improving the focus of the circa £1.8 billion per year Winter Fuel Payment (WFP) budget and the circa £0.27 billion per year Warm Home Discount (WHD) budget on helping those in fuel poor households. Currently, less than 10% of this money is received by fuel poor households. The majority is received by pensioners who have a median equivalised after housing cost income of twice the level of those in fuel poverty.

Another difference to Australia's approach is the application of a lower rate of Value Added Tax (VAT, the equivalent tax of Australia's GST) to energy bills for residential use (and 'non-business' use by a charity) and to energy-saving materials (such as insulation and solar panels). For household electricity use, the standard rate of 20% is reduced to 5% for the first 1000kWh per month (GOV.UK, 2016). Australia's standard rate of 10% GST is applied to all energy bills as well as energy efficiency products and services.

2.7.2 Measuring Fuel Poverty: Translating to the Australian Context

When considering how the UK approach might be applied 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 in the provision of housing. Yet there are of course important 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. A report for the Consumer Advocacy Panel (the predecessor of Energy Consumers Australia) on translating the measurement approach to the Australian context was delivered as part of the research for this thesis and is attached as Appendix A (Nance, 2013).

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 change its approach to measuring fuel poverty (Hills, 2012, p. 8):

...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 new indicator (Figure 17) 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 17, 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.

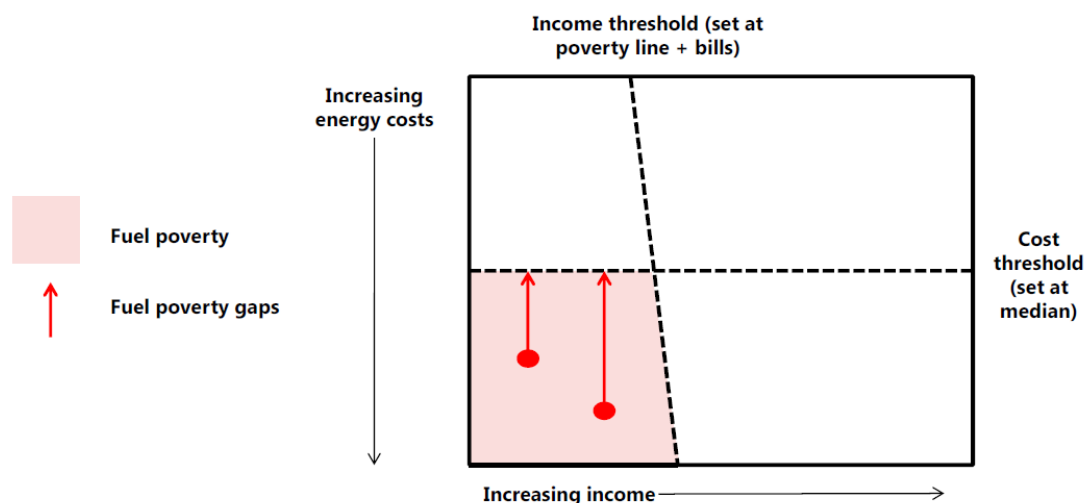


Figure 17: The low income high costs definition (DECC, 2013a)

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.

Historically, the main fuel poverty numbers reported have always used Before Housing Costs (BHC) income (DECC, 2013a, p. 14). 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.

When considering 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 would necessarily be 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.

Relative Energy Poverty in Australia analysed actual income and expenditure data from the ABS 2009-10 Household Expenditure Survey and Survey of Income and Housing in order to identify those households that have the biggest energy bills and the least capacity to pay for them. Five alternative definitions of *relative energy poverty* were considered. The cohorts of households formed by these five alternative definitions were then compared across a range of attributes such as income, housing status, household size and family structure. The key findings were that:

- Housing costs and the number of people in the household should be primary inputs in any measurement approach
- There is no need to select a single definition of ‘energy poverty’ in order to inform policy: all five alternative definitions considered 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.

Other publications relevant to measurement are reviewed in section 7.4.1.

2.7.3 New Zealand

Liberalisation of the New Zealand electricity market preceded Australia's and contributed experience to the restructuring agenda being advanced in Victoria in the 1990s (Booth, 2003, pp. 49-50). Free-market think tanks *The Tasman Institute* and the *Institute of Public Affairs* have been attributed as the source of ideological and personal connections (Beder and Cahill, 2005; Booth, 2003, p. 49).

From 93 electricity supply authorities in 1945, 61 remained in 1985 to become a target of micro-economic reforms aimed at increasing New Zealand's overall economic performance (MBIE, 2015). Electricity supply authorities were corporatized from 1990 and energy sector reform legislation enacted in 1992. Competition for supply to all consumers (*full retail contestability* as it referred to in Australia) was implemented across 1993 and 1994 – several years before full retail contestability first appeared in the Australian market in 2002 in Victoria and NSW (ACCC, 2017, p. 96). Further unbundling of distribution from retail & generation was legislated in the late 1990s (the Electricity Industry Reform Act 1998) and privatisation of state-owned generator/retailer Contact Energy was completed in 1999 yielding \$NZ2.3 billion (MBIE, 2015).

The Electricity Authority (EA) is the overall regulator of the NZ electricity market. Energy Retailers are guided by a set of industry obligations that they must follow as well as voluntary guidelines in relation to medically dependant and vulnerable customers (EANZ, 2017). Compliance with the guidelines for medically dependent and vulnerable customers was last reviewed by the EA in 2012 and assessed as 'satisfactory overall' with no intention to mandate compliance (EANZ, 2012). This contrasts to Australia's NEM where hardship and payment difficulty measures are mandated under the NECF and Victoria's Energy Retail Code.

NZ has around 1.7 million households (StatsNZ, 2017) and market data published by EA indicates residential electricity disconnections of around 22,500 pa in the two years to June 2017 giving a rate of around 1.3% of households per annum disconnected from electricity. There was also an estimated 40,000 households using a pre-payment meter (Consumer NZ, 2015), around 2.3% of households. This compares to around 117,000 electricity disconnections per annum in Australia (KPMG, 2016) or around 1.4% of Australia's 8.2 million occupied dwellings (ABS, 2017d). Tasmania is the only Australian jurisdiction in the National Electricity Market to offer pre-payment meters and approximately 23,670 customers use this service (OTTER, 2017). This equates to approximately 10% of Tasmanian households or around 0.3% of households in Australia.

The NZ climate and concerns about winter morbidity and mortality are similar to the UK with policies targeting 'hard to heat' homes as has been the case in the UK. The NZ Government's Energy Efficiency and Conservation Authority (EECA) estimates that, of NZ's 1.8 million privately owned residential dwellings, over one-third are under-insulated or un-insulated and that these expose occupants to increased risk of illness related to cold, damp living conditions (EECA, 2016). As at the end of 2017, grants of 50% of the cost of insulation for home owners and landlords are available under the *Warm Up New Zealand: Healthy Homes* program. The program, managed by the EECA, has been around (in different incarnations) since 2009 and has assisted around 300,000 households in that time (EECA, 2016).

The term *fuel poverty* has gained some traction in policy debates and research from a public health perspective (including in relation to pre-payment meters) has been published in a number of articles (Howden-Chapman et al., 2012; Howden-Chapman and Chapman, 2012, p. 415; Lawson et al., 2015; O'Sullivan et al., 2013). Unlike the UK, but as is the case in Australia, no agreed approach to measurement or targets exists in New Zealand.

From 1 July 2018, a Winter Energy Payment is being made available to NZ households under an election commitment from the incoming Labour Government (MSD, 2017). The payment will be available to the aged, jobseekers, young parents, sole parents and those receiving emergency benefits.

As is the case in Australia, the community sector forms part of the energy market safety net through the National Debt Helpline, Salvation Army, Community Action NZ, Sustainability Trust and others. Consumer, a not-for-profit consumer rights organisations, has also been active in policy debates.

2.8 Conclusions

Neoliberalism, or *economic rationalism* as it is often referred to in Australia (Pusey, 2003), not only radically changed the provision of electricity from the 1990s but recast the provision of welfare services at around the same time by transferring many services from provision by government to provision by 'private welfare agencies' (Jamrozik, 2009). Electricity Policy and Social Policy can therefore be seen to have been placed on similar paths towards a more market-based provision of service to households. Importantly this has shifted many frontline responsibilities away from governments to energy retailers and community sector organisations.

The UK and NZ examples reiterate that energy and poverty are important connected policy areas and that responses have gravitated towards efforts to improve the energy performance of housing as well as financial subsidies. With their long histories, both cases also highlight the persistent nature of the problem.

A *shared responsibility* approach to the provision of a consumer safety net for the NEM has been acknowledged by many stakeholders but a gap clearly exists in the form of a structure for its analysis and development. The primary research question is therefore a valid one:

- When considering a consumer safety net for consumers in a liberalised electricity market, what is an appropriate analytical framework for policy and practice that can be used by stakeholders to improve governance and consumer outcomes?

Chapter 1 presented a model of the consumer safety net that represents a spectrum of responsibility between the traditional domains of energy policy and social policy. Along this spectrum, key categories of policy activity have been identified and framed in terms of their intended outcomes. The number of policy outcomes has been distilled down to five as listed below:

Outcome 1: Stable and Efficient Pricing

Outcome 2: Informed and engaged consumers

Outcome 3: Energy consumed efficiently and productively

Outcome 4: Robust consumer protections

Outcome 5: All households have a capacity to pay their energy bills

Each of the next five chapters is dedicated to the analysis of each of these five policy outcomes. In each case, the chapter is presented through four stages of a theoretical policy cycle in order to identify the key issues in each case. The final chapter concludes with a summary and presents recommendations for responses to these issues.

3 Policy outcome: Stable and Efficient Pricing

3.1 Introduction

This policy outcome contributes to access and affordability by ensuring consumers are paying no more than necessary for an electricity system that is viable in the short term and sustainable in the long term. Further, by including stability, this policy outcome seeks to ensure *bill shocks* are minimised.

The overall aim of the national electricity market has been stated as “... to provide a reliable, secure energy supply at the best price for consumers” (AEMC, 2017b). This chapter analyses policies aimed at revealing this ‘best price’ in the context of energy affordability for vulnerable households. As is the case for each of the five policy outcomes in this and subsequent chapters, this chapter is presented as four key stages in a theoretical policy cycle. Section 3.2 presents the *Policy Review* stage of the policy cycle. Here, the prevailing approach to pricing is presented. This is reflected in the National Electricity Objective (NEO) and its three limbs of economic efficiency. This section also discusses potential implications for electricity pricing from Australia’s international commitments to reduce greenhouse emissions alongside a number of other policy issues that are placing pressure on energy prices.

Section 3.3 presents the *Identify Key Issues* stage of the policy cycle. These are based on the potential impact on elements of typical electricity bills.

Section 3.4 presents the *Policy Analysis* stage of the policy cycle. This section introduces the components of a typical electricity bill in order to analyse the impacts of climate policies on household expenditure.

Section 3.5 presents the *Policy Formulation* stage of the policy cycle. Four policy priorities related to the interests of vulnerable consumers are identified and actions discussed.

- Wholesale energy costs
- Effectiveness of retail competition
- Network charges and tariff reform
- Other charges recovered from energy bills

3.2 Policy Review

3.2.1 Efficient pricing – the NEM approach

The approach of the National Electricity Market has been to regulate the natural monopoly

elements (the network itself) and promote competition for the other elements of generation and customer interaction (wholesale and retail).

As described in section 2.4, the NEM has explicitly pursued a separation of pricing and economic efficiency objectives from social policy objectives.

The National Electricity Objective (NEO) is found at section 7 of the National Electricity Law (A schedule to the National Electricity (South Australia) Act 1996) and states:

7—National electricity objective

The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to—

(a) price, quality, safety, reliability and security of supply of electricity; and

(b) the reliability, safety and security of the national electricity system.

The NEO is an economic efficiency objective and the regulatory literature has expanded on this to discuss static (productive and allocative) as well as dynamic efficiencies in the context of electricity markets.

The pursuit of **productive** efficiency in the network and generation / retail sectors should mean that consumers have their demands met at “least cost”. Productive efficiency of electricity supply has been advanced through competitive markets for wholesale and retail activity and pursued through national, incentive-based regulation of monopolies in the network sector. However, the effectiveness of wholesale and retail competition is being questioned as evidence of high margins emerges.

The pursuit of **allocative** efficiency should ensure that consumers face prices that inform an efficient choice between ‘more supply’ and ‘managing demand’. The major reform program to advance allocative efficiencies is known as *Power of Choice – giving consumers options in the way they use electricity*. Network tariff reform is progressing on an opt-in basis until at least 2020. The advanced metering required is to be deployed on a market-led basis.

The pursuit of **dynamic** efficiency through incentive regulation and wholesale market settings should mean that this “least cost” also takes account of future needs. The need to replace or refurbish ageing coal-fired generation assets and / or increase generation from renewables or natural gas is providing a test for the market’s dynamic efficiency.

There have been a number of calls to change the NEO to reflect climate policy objectives. A recent example is from the Senate Environment and Communications References Committee

inquiry into the *Retirement of coal fired power stations* (2017). The Committee's interim report of November 2016 included the following recommendation:

Recommendation 3

The committee recommends that the Australian Government, through representation on the COAG Energy Council, put in place a pollution reduction objective consistent with Australia's obligations under the Paris Agreement in the National Electricity Objectives.

Energy Consumers Australia on the other hand called for a 'Statement of Policy Principles' to be supplied by the COAG Energy Council to require that the AEMC 'have regard to Australia's national emissions reduction policy'. The ECA view is that this is a timelier way of embedding the emissions reduction task than seeking to amend the NEO (ECA, 2017b, p. 16).

There are no current proposals to incorporate social policy objectives in the NEO, however, on 1 January 2016, Victoria's energy industry legislation was amended to include a new objective for the ESC:

To promote protections for customers, including in relation to assisting customers who are facing payment difficulties.

The ECA has articulated a vision for the energy market transition of (ECA, 2017b, p. 3):

"... ensure consumers pay no more than is necessary for the energy services they need as we transition to a cleaner economy, with no one left behind, while maintaining a secure and reliable system."

The reference to 'no one left behind' aims to reflect the risk that increased costs will be passed through to already vulnerable households or that access to technology results in a 'two-tier' energy market. The four other policy outcomes discussed in this report – besides 'stable and efficient pricing' – should be considered as the policy outcomes required to achieve an objective of 'no one left behind'.

Decarbonisation commitments represent a substantial driver of future electricity prices but there are other strong drivers of higher prices. These include a range of energy market reform priorities, increases in the price of gas and the role of gas in the electricity market; the tighter supply resulting from the exit of coal-fired generators; and the impact on investment of climate policy uncertainty. Other price pressures that could increase or reduce prices include jurisdictional support schemes for renewable energy and energy efficiency; changes to utilisation of the grid; and ongoing energy market reform. These are discussed further in the following sections.

3.2.2 Ongoing Energy Market Reform

COAG Energy Council operates an expansive work program that is categorised into a list of priorities:

- Empowering Consumers (including through the operation of Energy Consumers Australia)
- Energy Market Transformation including four key areas of: Enhanced Competition and Innovation; Consumer Protections for new products and services in the electricity market; Ongoing Power System Security, and; the Flexibility of Economic Regulation of Networks in a more decentralized system.
- Australian Gas Markets Reform Package
- Energy and Carbon Policy, including the National Energy Productivity Plan (NEPP)
- Improving Institutional Performance, including numerous projects under the Governance Review Implementation Plan (GRIP)
- Security, Sustainability and Stability of the National Energy Market, focused on the independent review led by Australia's Chief Scientist Dr Alan Finkel.

Relevant COAG Energy Council priorities for this policy outcome are:

- Energy Market Transformation
- Australian Gas Markets
- Energy and Carbon Policy
- Improving Institutional Performance
- Security, Sustainability and Stability of the National Energy Market

The AEMC Strategic Priorities for Energy Market Development 2015 outlined three strategic priorities:

- Consumer priority - enabling consumers to make informed decisions in competitive retail markets.
- Gas priority - promoting the development of efficient gas markets.
- Markets and network priority - market and network arrangements that encourage efficient investment and flexibility.

Each of these reform priorities is relevant to the efficiency of energy markets and, ultimately, the ability of these markets to contribute to national emissions reduction targets. Successful implementation can reasonably be expected to put downward pressure on costs for

consumers.

3.2.3 The price of natural gas

The development of an export industry for Australia’s east coast natural gas resources as Liquefied Natural Gas (LNG) has delivered a substantial shift in the price and availability of gas for electricity generation. The role of gas-fired generation as marginal producer and new entrant means that wholesale electricity prices are strongly impacted by wholesale gas prices. This result was foreseen (Simshauser and Nelson, 2015a, 2015b).

Figure 18 illustrates data from AEMO’s 2016 National Gas Forecasting Report (NGFR). The relative scale of LNG development highlights why gas for electricity generation has become a price taker in the market. By 2018, gas for LNG exports are expected to be over 10 times the consumption of gas for electricity generation and over twice the entire domestic market:

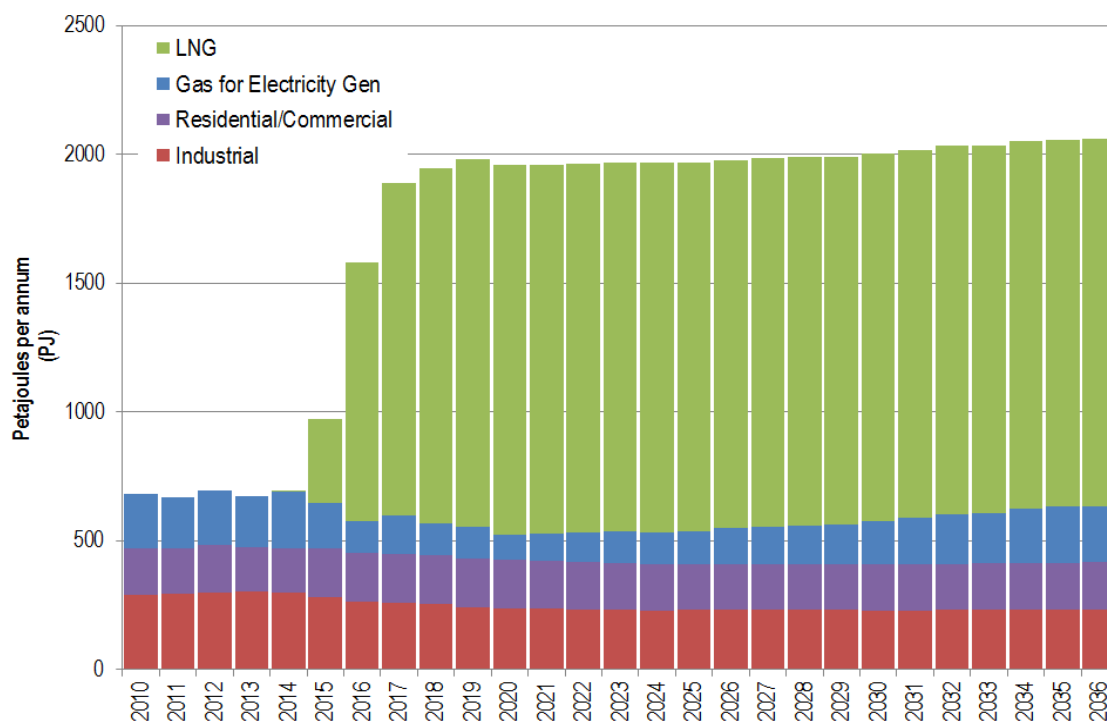


Figure 18: Annual Natural Gas Consumption by sector, actual from 2010-2015, projections from 2016 (Source: AEMO 2016)

An Inquiry into East Coast Gas conducted by the Australian Competition and Consumer Commission ACCC highlighted an “unprecedented change” in the ability of domestic gas users to contract gas supplies (ACCC, 2015). COAG Energy Council has recognised the major policy challenge but has articulated a vision of a more efficient market rather than any prescription for affordability (CoAG, 2015a, 2016).

Recent analysis by the Australian Industry Group found wholesale gas prices have increased steeply from historic levels of \$3-4/gigajoule to \$11-12/GJ by the end of 2016. This translates into a short-run cost for gas-fired electricity generation of about \$120/MWh (roughly three times the average wholesale price of a few years ago). The electricity market's design means that gas generators often set the price for the whole market, resulting in significant increases in average wholesale electricity prices (AIG, 2017).

Significant debate exists around state-based moratoria on gas development and the need for more supply to be developed. The impact of this and international developments¹⁸ on gas prices and electricity generation is unclear, but in the near term it is likely that gas prices will remain high with consequential upward pressure on electricity prices (Bethune, 2017).

3.2.4 Sudden closure of generation capacity

The closure of South Australia's Northern Power Station in May 2016 and the closure of Victoria's Hazelwood Power Station in March 2017 have highlighted the impacts of withdrawing significant lumps of generation capacity from the NEM. Northern's 546MW of capacity represents 16% of SA's maximum demand of 3,397MW (Summer 2010/11). Hazelwood's 1600MW capacity represents 15% of Victoria's maximum demand of 10,490MW (Summer 2008/9).

The AEMC projected that the impending retirement of Hazelwood power station would increase wholesale prices by 55 per cent in Victoria and Tasmania, and 40 per cent in South Australia (AEMC, 2016b). AEMO has projected that Victoria and South Australia may suffer energy shortages by summer 2017-18, unless NSW coal generators increase their output and withdrawn gas generation is returned to service.

3.2.5 Jurisdictional Schemes

A number of states and territories are implementing or planning to implement schemes to promote decarbonisation of their electricity sector. The Australian Capital Territory (ACT) has pioneered the Australian use of Feed-in tariffs with Contracts for Difference. A similar mechanism (the Victorian Renewable Energy Auction Scheme, VREAS) will drive Victoria's renewable energy target of 25 per cent by 2020 and 40 per cent by 2050 and is being considered for Queensland's 50% target (DEWS, 2017; DWELP, 2017). The costs of the ACT scheme are

¹⁸ For example: the support given to US exports of LNG under the Trump Administration's *America First* energy policy

recovered from consumers via the ACT electricity distributor (ActewAGL Distribution). The ACT Government states that total costs per household of achieving 100% renewables are expected to peak in 2020 at around \$5.50 per household per week (\$286 pa). The AEMC projects the scheme will represent approximately 11% of a typical residential standing offer customers bill (inc GST) by 2018/19 (AEMC, 2016b).

The impact of these schemes on electricity prices is dependent on the emergence or absence of a national scheme. To some extent, the entry of new renewable generation may reduce wholesale electricity prices in these jurisdictions by increasing supply and competition; however, the costs of the scheme if recovered through other bill components may outweigh this impact for some or all residential consumers. Moreover, these schemes may be integrated into future national climate policies and their contribution to national targets remains unclear.

3.3 Key Issues

This section distils key issues from stakeholder publications and the preceding Policy Review into four key issues.

The following is a summary of recommendations from stakeholder literature relevant to vulnerable households and the efficiency of pricing. The recommendations for advancing this policy outcome can be categorised into those that:

- Maximise downward pressure on energy prices; and those that
- Influence the redistribution of costs by changing pricing structures

Maximise downward pressure on energy prices

- Minimise climate policy uncertainty. Stable climate policy is considered a precursor to stability in wholesale electricity markets
- Reconsider the extent to which decarbonisation costs are taken 'off market'
- Accelerate reform of Australia east coast gas markets
- More aggressively pursue the efficiency of retail markets
- Promote greater competition where possible
- Encourage a shift of vulnerable households away from standing offer tariffs
- Promote improved grid utilisation (productivity) to lower unit prices

Influence the redistribution of costs by changing pricing

- Encourage vulnerable consumers who would be better off to opt-in to smarter metering and more cost reflective tariffs

- Implement agreed Consumer Impact Principles for tariff reform – including a specific focus on fixed charges (see Section 1.4.11)
- Consider incorporating broader policy objectives into the National Electricity Objective
- Consider GST as a funding source for measures to support vulnerable consumers

These can be grouped into four priority areas for further analysis by considering the electricity supply chain and the elements of the typical bill presented in Section 1.4.6:

- Wholesale energy costs
- Effectiveness of retail competition
- Network charges and tariff reform
- Other charges recovered from energy bills

3.4 Policy Analysis

The ongoing energy market reform and development agenda led by COAG Energy Council is expansive and complex. For consumers, this program has elements aimed at lowering costs for all consumers as well as elements that will redistribute costs. For vulnerable consumers, there are opportunities for costs to reduce but also risks that redistributions could exacerbate existing vulnerabilities. Advanced metering is recognised as a critical component of pricing changes and efficiency pursuits for all households but the impact on vulnerable households is still being revealed (SVDP, 2016b).

The issues are described below with reference to the four main categories of the ‘cost stack’ illustrated in Chapter 1 and reproduced here as Figure 19:

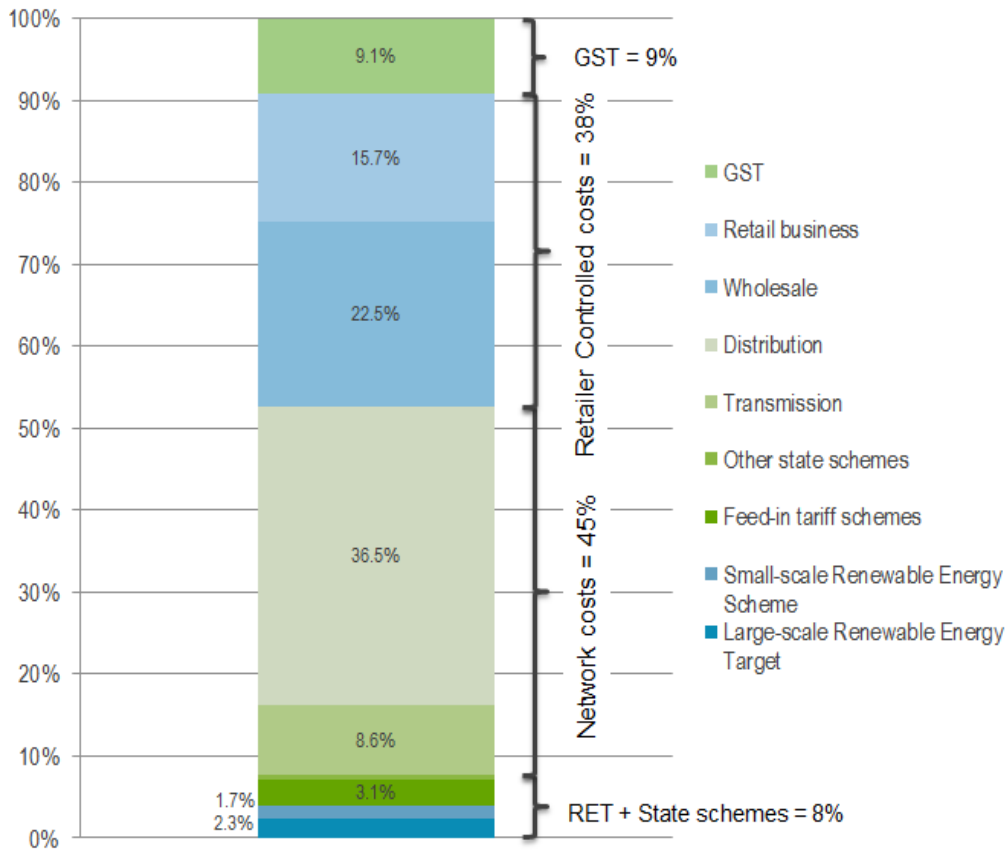


Figure 19 Breakdown of average national residential electricity price, 2015-16 (Source: Based on Climate Change Authority Electricity Research Report 2016 Figure 8 (CCA, 2016), (AEMC, 2016b))

3.4.1 Retailer controlled costs

Approximately 38% of the typical bill, this component refers to the competitive wholesale and retail electricity markets. More than 70% of electricity customers and 80% of gas customers are contracted to one of the ‘Big 3’ retailers: AGL, Origin and Energy Australia. These retailers and the majority of those with the balance of customers have significant interests in generation and are often referred to as *gentailers*. The dominance of the *gentail* model means it is difficult to separate the cost of wholesale purchases (often a combination of self-generation, forward contracting, other risk products and spot purchases) from the retail costs of marketing, customer acquisition and retention, billing etc.

The most direct impact of many climate policies is on the wholesale cost component. As mentioned, electricity sector emissions are dominated by the combustion of coal (around 62% of electricity generated and around 88% of emissions) (CCA, 2016, p. 15). The closure of Northern Power Station (SA) in 2016 and Hazelwood (VIC) in 2017 with relatively short notice has already placed upward pressure on wholesale prices (AEMC 2016b).

The pressures on wholesale energy costs are discussed in more detail in Section 3.4.2 and 3.4.3 below. Section 3.4.2 discusses the potential uplift in wholesale prices projected by a range of modelling studies of different climate policies including: carbon pricing; an emissions intensity scheme, an expanded renewable energy target mechanism, contracts for difference and others. Section 3.2 discussed some of the other pressures on prices including: the cost of gas; the cost of policy uncertainty, and; the potential for productivity measures and other initiatives targeting network costs, to put downward pressure on prices.

The impact on wholesale prices is one thing. The bundling of wholesale costs with other components and turning these into the bills of small customers is a job for retailers operating in the competitive market. Competition is the tool for keeping downward pressure on these costs, but respected analysts of the Victorian Retail market have identified signs of a market that is not operating efficiently (Ben-David 2012, 2015, 2016, Mountain 2015, 2016).

Simshauser & Whish-Wilson (2017) found price dispersion in Victoria's deregulated retail market meant many vulnerable customers were being priced at above efficient costs if they were on a standing offer contract or on a market contract whose benefit period had lapsed (and hence paying standing offer rates). The authors recommend policies to help firms shift vulnerable households onto more competitive pricing. The Great Britain energy market investigation by the Competition & Markets Authority made similar findings in 2016 (CMA, 2016). The Victorian Government announced a review of electricity and gas retail markets in Victoria that delivered a final report in August 2017 that found 'consumers are not gaining the benefits of a competitive retail market' (Thwaites et al., 2017).

The Grattan Institute report *Price Shock: is the retail electricity market failing consumers?* also made well publicised findings (Wood et al., 2017):

"... the evidence provided in this report and by other research over the past decade indicates that excessive profits are being made in the retail electricity market. This was not the result intended when competition was introduced." (p20)

The Turnbull Government direction to the ACCC to undertake an inquiry into retail electricity pricing came soon after (27 March 2017) and referenced the Grattan Institute report amongst others. The ACCC has been given a wide terms of reference and over a year to conclude the inquiry. It is expected to produce a final report due by 30 June 2018.

The similar energy market investigation by the UK's Competition and Markets Authority (CMA) has led to talk of re-introducing price caps in the UK electricity and gas markets. Ofgem introduced an energy price cap for the approximately 4 million households on pre-

payment meters from April 2017 and there has been suggestion of extending that to other vulnerable customers (Citizen's Advice, 2017).

3.4.2 Inferences from recent modelling of Climate Policies from 2020

In December 2015, 195 countries, including Australia, adopted the international climate deal to bind all countries to take action to reduce emissions, referred to as the Paris Agreement (UNFCCC, 2015). The core element of the agreement is to limit global warming to well below 2°C above pre-industrial levels, and pursue efforts to limit warming to 1.5°C. To achieve the aims of the agreement the 195 countries are required to submit comprehensive national climate action plans and agreed to review them every 5 years to enable more ambitious targets to be set as required. The Australian Government has a 2030 emissions reduction target of 26-28% below 2005 levels.

The electricity sector generates around one-third of the National Greenhouse Gas Inventory (refer to Section 1.4.2) and will inevitably be required to make a substantial contribution to Australia's international commitments to reduce greenhouse gas emissions.

A number of reports into the impact of different climate policy options on electricity markets were released in 2016 by CSIRO, Jacobs (for multiple clients) and Frontier Economics. A summary and brief discussion of each one is contained in Appendix C. These modelling reports contrast a range of possible climate and energy policies against a range of emissions reduction targets between now and 2030 and on to 2050. An assessment of indicative price impacts shows that most climate policy options would add around 5c/kWh to electricity prices over the period from 2020 to 2030 (approx. 20%), assuming no changes to any of the other cost drivers discussed herein. However, recent analysis suggests that the uncertainty created for investment in the electricity system from the absence of clear climate policy is already driving up electricity prices by a similar amount (refer to Section 3.4.3).

The policy options modelled can be categorised broadly as:

- market mechanisms (a price or limit is applied to carbon; the policy is technology neutral). Examples include a direct carbon price, an electricity sector specific emissions intensity scheme and variations on a 'cap and trade' mechanism;
- technology support programs (subsidised investments in renewable or 'low emissions' technologies). Examples include an expansion of the existing Renewable Energy Target scheme, modifications to the existing scheme to include support for other technologies below a defined emissions intensity limit and feed-in tariffs with

- contracts for difference (such as the ACT reverse auction mechanism), or;
- coal regulation (high-carbon generation is forced out of the market). Examples include forced closure based on age or emissions intensity.

Direct comparisons among the modelling reports are difficult. The studies have various purposes, use different assumptions and constraints and make different levels of data publicly available. However, it is possible to draw some conclusions relevant to the research topic:

- The majority of electricity consumed in the NEM is delivered via transmission and distribution networks from the fleet of large scale generation technologies that power the entire NEM, still predominately coal and gas. Much of this existing coal generation fleet will need to be refurbished or replaced by 2030 (Climate Council, 2014; Senate Environment and Communications Reference Committee, 2017). The choices made about what will replace them will largely determine the sector's greenhouse footprint and prices paid by consumers.
- All options deliver a shift away from coal as the dominant energy source for electricity generation in Australia to various combinations of gas and renewable energy sources – particularly wind and solar. Assumptions about the future price of gas and the technology costs of renewables are therefore key variables in the forecasting of future prices. Given the uncertainty of these costs, all modelled price impacts should be treated with caution.
- All options considered come at an economic cost but the likely impact on wholesale prices varies considerably depending on the mechanism used, the extent and rate of emissions reductions targeted as well as the input assumptions noted above.
- Market mechanisms¹⁹ were consistently found to have lower overall economic costs.
- Options that combined multiple mechanisms can achieve emissions reductions at a lower combined cost²⁰.
- Options that include the widest range of technology options have lower overall economic costs.
- Options that involve costs to government in lieu of costs to consumers can have lower direct impact on prices depending on how the cost of the scheme is recovered²¹. See section 3.4.7 below for discussion of 'around the market' versus market mechanisms

¹⁹ This was true for all three modellers

²⁰ Examples include the policy combinations modelled by Jacobs for the CCA

²¹ An example is Feed-in tariffs with Contracts for Difference modelled by Jacobs for the Climate Change Authority

for cost recovery.

- Investment expenditure is expected to rise while fuel costs fall under many scenarios. The 'cost of capital' is therefore another key variable in the forecasting of future prices. Policy uncertainty puts upward pressure on the cost of capital leading to higher costs for consumers²².
- All options exist alongside other drivers of change in the average price of electricity as well as the structure of prices²³. The assumptions made about these other drivers impact on the forecasts of future retail prices from each of the modelling exercises.
- Scenarios that optimised network pricing showed lower residential retail prices than some scenarios with less ambitious climate policies.
- Price structures are already on a path of higher fixed supply charges and charges that will increasingly reflect the cost of peak demand on the network. This will deliver a redistribution of grid-supply costs amongst households²⁴.
- Most future scenarios include an increasingly distributed energy system with solar, storage and electric vehicles. Uptake and use of distributed energy resources is also likely to deliver a redistribution of grid-supply expenditure amongst households²⁵.
- Besides higher prices for electricity generation, assumptions regarding productivity and efficiency of energy use are critical to how much consumers will need to spend on grid-supplied electricity over future years. The National Energy Productivity Plan (NEPP) is therefore a critical complementary measure to the climate policies modelled.

3.4.3 Policy Uncertainty

The impact of climate policy uncertainty on the electricity sector has been recently highlighted by a range of organisations. The Preliminary Report for the Independent Review into the Future Security of the National Electricity Market (the Finkel Review) noted that this uncertainty presents a risk to the security and reliability of the electricity system:

Reducing emissions in the electricity sector and the need to replace the ageing coal and gas generation fleet will involve significant investment in long-lived assets. In order for businesses to invest in these assets with confidence, they need to be able to form long-term expectations from the investment signals they receive... If businesses do not invest when needed, this will impact on the security and reliability of electricity supply.

²² The Finkel review preliminary report notes that "For businesses to take risks on the future and invest, they need to be confident that emissions reduction policies and the mechanisms to achieve them are consistent with Australia's international commitments and will not change drastically in the future." Page 22.

²³ The modelling by the CSIRO in particular demonstrates this

²⁴ Analysed in the ENA CSIRO Network Transformation Roadmap

²⁵ Analysed in the ENA CSIRO Network Transformation Roadmap

There is evidence that investment in the electricity sector has stalled and investors have become less responsive to investment signals. This is due to policy instability and uncertainty driven by numerous reviews into the RET and a lack of clarity about the policies to reduce emissions after 2020.

A media release entitled 'No room for Partisan Politics in Energy' was issued on 13 February 2017 by 18 organisations representing industry, energy, consumer, environmental and social stakeholders warned that ongoing policy uncertainty also increased costs which would be felt by all energy users:

The status quo of policy uncertainty, lack of coordination and unreformed markets is increasing costs, undermining investment and worsening reliability risks. This impacts all Australians, including vulnerable low-income households, workers, regional communities and trade-exposed industries...More than a decade of this has made most energy investments impossibly risky. This has pushed prices higher while hindering transformational change of our energy system. The result is enduring dysfunction in the electricity sector.

In March 2017, the Australian Energy Council released an estimate of the costs of past climate policy uncertainty on current and forward prices. Given the difference between forward average wholesale prices (\$100-120/MWh) and what the underlying cost of supply should be (\$57MWh based on a 10 year weighted average between 2020-2030 from the Climate Change Authority modelling), the electricity cost of sustained national policy inaction is effectively equivalent to a carbon price in excess of \$50 a tonne. This suggests that development of durable and efficient national energy and climate policies which return investment to the market are likely to reduce electricity prices (AEC, 2017b).

3.4.4 Network costs

Approximately 45% of the typical bill is for the electricity network that transports electricity to and between consumers. The economic regulation of the monopoly businesses that operate the transmission and distribution networks continues to evolve and implement outcomes from the Australian Energy Regulator's Better Regulation program (2013-14). The decentralisation of electricity supply has triggered a review of the existing economic regulatory framework by the AEMC and a 'Distribution Market Model' project to explore how the operation and regulation of electricity distribution networks may need to adapt to increased uptake of distributed energy resources (DERs) such as rooftop solar, battery storage and electric vehicles.

Elements of the AEMC's Power of Choice program directly affect existing network costs: Network Pricing, Competition in Metering Rule changes and Ring fencing guidelines. Relevant COAG Energy Council priorities are:

- Energy Market Transformation
- Improving Institutional Performance
- Security, Sustainability and Stability of the National Energy Market

Network pricing rule changes in particular will redistribute costs. These are currently proceeding on an opt-in basis, but research suggests that ‘Opt-out’ is more likely to achieve the potential economic benefits (CSIRO, 2017). The *Network Transformation Roadmap* developed by the CSIRO and Energy Networks Australia represents the most comprehensive vision of the future grid and outlines the potential to lower costs. Simshauser and Downer (2014) outline how tariff reform can benefit many customers in hardship. An immediate challenge lies in identifying and supporting vulnerable customers for whom this is an opportunity.

The AER has stated that demand tariffs - as proposed by the vast majority on network businesses - are more cost reflective than consumption based tariffs and that (AER, 2017b):

“In the next round of tariff reform we consider new customers across all networks should be assigned by default to cost reflective tariffs.”

By ‘new customer’ the AER is referring to new dwellings that are connecting to the grid for the first time. New customer connections represent around 1 to 1.5% of the residential and small business market (depending on jurisdiction) so this still represents a relatively slow transition of the metering fleet. A key reason for pursuing tariff reform is to improve the utilisation of existing infrastructure. This is discussed further below.

3.4.5 Utilisation of the Grid

Energy infrastructure is built to meet peaks in demand, but this capacity is idle most of the time. The ratio of peak to average demand reflects the average utilisation of the infrastructure. The chart below from the Australian Energy Council shows that South Australia has the highest ratio of peak to average demand (and therefore the poorest utilisation) and that the ratio seems to be deteriorating (increasing) in each jurisdiction (AEC, 2017c). This places upward pressure on unit prices and supply charges as fixed costs are recovered from lower energy sales.

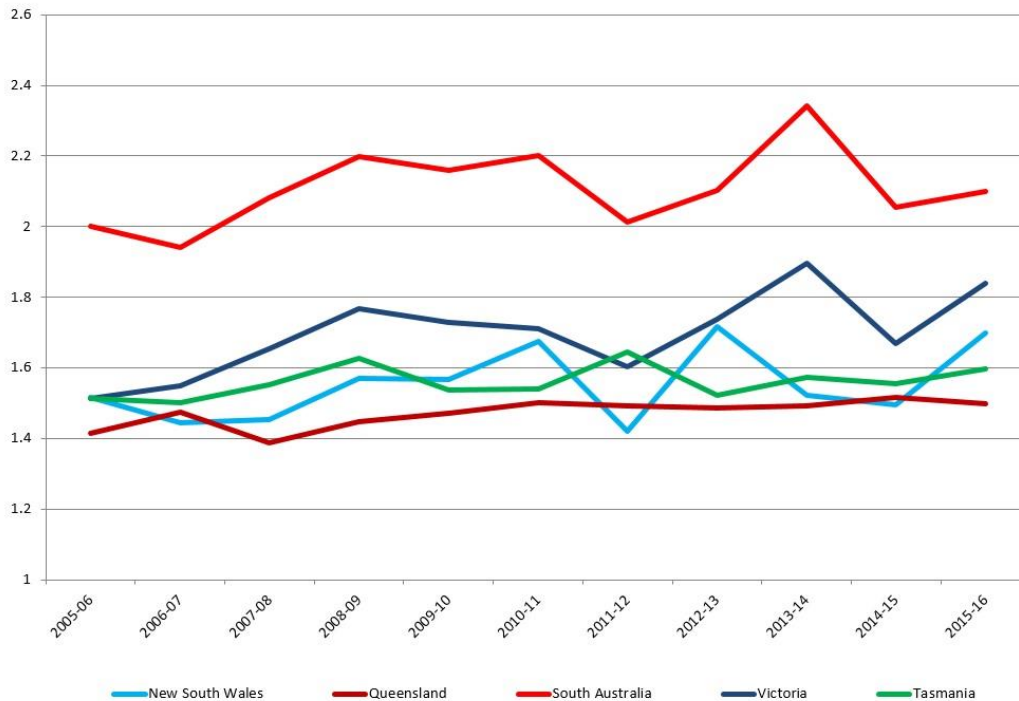


Figure 20: Ratio of peak to average demand in NEM jurisdictions (Source: AEC analysis of AER and NEM-Review data (AEC, 2017c))

CSIRO highlights the impact of improving grid utilisation on average electricity unit prices in its Network Transformation Roadmap work for the ENA as well as in its 2015 National Outlook. Network Tariff reform also aims to incentivise greater utilisation of infrastructure away from peak times (AEMC, 2014, p. 8):

Over the longer term, more efficient pricing of network services can minimise overall electricity network costs borne by consumers due to better utilisation of the network and deferral of peak demand driven network investment.

Numerous studies from the transport sector have highlighted the potential for transport electrification to reduce emissions (ClimateWorks, 2016, 2014; CSIRO, 2015). Under the right incentives, this can also improve grid utilisation and hence place downward pressure on electricity unit prices for all end-uses (AEMC, 2014, 2012b; CSIRO, 2017) (CSIRO 2016, AEMC 2012)

This lowering of costs for consumers from better utilisation of infrastructure is an objective of the National Energy Productivity Plan (CoAG, 2015b) and the successful implementation of the plan is intended to place downward pressure on residential energy costs. The extent to which this might benefit vulnerable consumers is considered later in this thesis.

3.4.6 RET and State-based energy schemes

As introduced in section 3.2.5, approximately 8% of the typical bill covers the funding of schemes such as the national Renewable Energy Target, state Energy Efficiency and Feed-in Tariff schemes as an uplift on retail prices. This is considered regressive by some (Nelson et al., 2011), as vulnerable households who cannot access the schemes' benefits (such as renters) still pay the costs, while better-off households who were able to access the schemes also avoid some of the costs of the scheme by consuming less electricity from the grid. The Queensland Government managed to contain the retail impact of wholesale price increases from July 2017 by changing the policy on cost recovery of the state's feed-in tariff for solar: The cost of the state's Solar Bonus Scheme was removed from electricity bills and incorporated into the state budget for three years from the 2017-18 financial year at a cost of \$771m (Queensland Government, 2017, p. 45). The social tariff proposed by SA Power Networks (refer to section 1.3.3) aimed to the recovery of that state's solar feed-in tariff from the network charges of households participating in a retailer hardship program.

Choices about mechanisms to implement climate policy – such as carbon prices or renewable energy targets – will influence this element of prices into the future. Section 3.4.7 discusses emerging interest in schemes that take costs 'around the market'.

3.4.7 Internalise the costs of climate policy or go 'Around the Market'?

From the perspective of electricity users, the choice between climate policies that are most efficient overall and those that produce lower electricity prices is not obvious. The modelling considered in Section 3.2.2 consistently showed that market mechanisms have lowest total economic costs, but subsidy schemes can deliver lower electricity prices. A caveat to this is that the costs of the subsidy need to be recovered from somewhere. Where incentives are provided out of government revenues rather than as a direct uplift in energy prices, consumer exposure to costs then aligns more with the progressive nature of Australia's tax and transfer system rather than electricity prices. Examples of such schemes include Australia's Emissions Reduction Fund and a trend in the US where 'around the market' payments are being used to keep base-load plants open for longer than the market would otherwise sustain²⁶.

In a similar vein there are a number of other charges collected via electricity bills that

²⁶ See, for example: Illinois providing direct financial support for Nuclear Plants at risk of closing www.utilitydive.com/news/illinois-passes-sweeping-energy-bill-with-support-for-exelon-nuclear-plants/431521/ and Colorado www.utilitydive.com/news/re-regulation-vertically-integrated-utility/428639/ "One state is an anecdote; five or six states is a trend," said Ray Gifford, former chair of the Colorado Public Utilities Commission and author of a recent [white paper](#) on around market reforms."

undermine affordability for vulnerable low income households (AEMC, 2016b).

These are fundamental choices for policy development and stakeholders should be reasonably expected to have developed a perspective related to their interests.

3.4.8 GST

Australia's 10% Goods and Services Tax (GST) applies to the sale of electricity (and has done so since its introduction in 2000). Simshauser, Nelson and Doan (2011a) forecast residential electricity price rises over the five years from 2010 that proved to be quite accurate. Analysis for their policy prescriptions included a view that the increase in revenue from GST on electricity bills over the period would, if strategically spent, be more than adequate to 'eliminate fuel poverty' (Simshauser et al., 2011b).

The first section of this report estimated GST collections from household electricity bills in 2015-16 of almost \$1.6 billion - a sizeable revenue base that can be redistributed to alleviate the worst impacts on vulnerable households. Recent estimates of the costs of concessions from state and territory governments equate to 55% of this GST estimate.

Hypothecating revenue generated to 'fuel poverty' is an alternate to the UK approach outlined in Section 2.7.1 where a reduced rate of Value Added Tax is applied to all residential electricity and gas and therefore conferring a benefit on all households rather than a focus on those in hardship.

3.5 Policy Formulation

This chapter has covered a wide range of issues relevant to the pursuit of **stable and efficient pricing**. In the context of vulnerable energy consumers, this policy outcome is the foundation upon which the other, complementary policy outcomes are based. Arguably, efficient, stable pricing gives these complementary policy areas the greatest potential for success.

The incorporation of the costs of gas price increases and climate policy responses and changes to tariff structures being pursued under the *Power of Choice* reforms means higher costs and redistribution of costs, potentially exposing new vulnerabilities. Priority actions for each main element of the cost stack have been developed and are presented below.

3.5.1 Priority issue 1.1: Effectiveness of retail competition

Excess profits have been suggested and large price dispersion has been demonstrated in a

number of recent reports. The Turnbull Government's March 2017 direction to the ACCC to undertake an inquiry into retail electricity pricing as well as a similar inquiry by the Victorian Government should ensure that this issue receives significant attention. Similarities to the UK experience are becoming obvious and should form part of each inquiry. The ACCC is expected to produce a final report by 30 June 2018.

A number of policy options exist, and a rule change proposal is a likely consequence of the review. Since the issues relate to all consumers, not just those at risk of debt disconnection, it is appropriate that Energy Consumers Australia allocate resources to researching and preparing a rule change proposal that can be initiated soon after the release of the ACCC findings.

3.5.2 Priority issue 1.2: Wholesale market volatility

Wholesale prices higher than necessary erodes affordability for all consumers but vulnerable consumers, by definition, are especially sensitive to price volatility when translated to *bill shock* when passed on quickly by retailers. On this basis, policy choices that reduce uncertainty should benefit vulnerable consumers in particular. The dominance of the *gentail* vertically integrated business model in the NEM means that the ACCC retail pricing inquiry will necessarily look at wholesale markets. The Independent Review into the Future Security of the National Electricity Market (Finkel Review) and the Australian Government Review of climate change policies are also expected to contribute clarity over future directions in energy generation. Responsibility for responding to this issue rests with the Commonwealth, State and Territory Governments and the CoAG Energy Council.

3.5.3 Priority issue 1.3: Tariff reform

The implementation of network tariff reform has significant potential to redistribute costs between households and is recommended as a vulnerable customer priority policy area. Implementation is proceeding on a voluntary basis, but the AER has signalled an expectation of mandatory assignment (with opt-out), for new connections at least, from 2020. Given the limited likelihood of mandating tariffs without an opt out provision, it is recommended that Energy Consumers Australia build on the Power Shift project and initiate a project to identify vulnerable households with load profiles that would make 'opt-in' to demand tariffs cost effective. Uptake and effectiveness can then be evaluated in anticipation of mandatory assignment beyond the next 5-year regulatory cycle.

3.5.4 Priority issue 1.4: Other costs recovered on energy bills

The recovery of costs for a range of programs, as well as GST, increases the size of all electricity bills and exacerbates affordability challenges for vulnerable households. The consideration of new climate policies is an opportunity to contrast options that recover the cost of action on climate change from consolidated revenue rather than electricity bills. This way the progressive redistribution of the tax and transfer system applies rather than increases in the price of energy. This is recommended as a vulnerable customer priority policy area with links to concession reform. It is recommended that the Australian Council of Social Service (ACOSS) consult its membership to develop a position on this issue on behalf of vulnerable consumers. This position should be put to COAG Energy Council for consideration as part of designing the National Energy Guarantee and to State and Territory Governments in the context of jurisdictional schemes.

3.6 Chapter Summary

This chapter has covered a wide range of issues relevant to the pursuit of **stable and efficient energy pricing**.

The NEM has a single market objective of pursuing economic efficiency in the long-term interests of consumers. This is achieved by promoting competition in wholesale and retail markets and by applying incentive based regulation to the monopoly transmission and distribution businesses.

The state of play in relation to pricing was presented in relation to the main components of a typical electricity bill. Retailer Controlled Costs – wholesale and retail market activity – is dominated by the ‘gentailer’ model of the ‘Big 3’ energy businesses: AGL, Origin and Energy Australia and represents around 38% of the typical bill. Wholesale markets refer to the compulsory spot market for the output of electricity generators and the financial instruments that manage risk and aggregate demand. This is where climate policies have the most direct impact.

This chapter also discussed key upward and downward pressures on prices from a range of sources and considered the recommendations put forward by various stakeholders. Key factors include the cost of natural gas, policy uncertainty, sudden closures of generation capacity, jurisdictional renewable energy target schemes, declining utilisation of expensive network assets and a range of other priorities as part of the ongoing market reform agenda.

The efficacy of retail competition has been questioned and inquiries launched. The retail component of bills bundles up network charges and wholesale energy costs with other fees and charges. However, attention is increasingly being paid to the efficiency of these markets and on price dispersion within the residential customer group.

Network costs are the largest component of most bills at around 45%. These are regulated charges and are being slowly reformed to be more 'cost reflective'. This means that prices (in terms of levels and structures) should reflect the two key drivers of network costs: congestion from coincident peaks in demand and location. Most jurisdictions preclude small customer pricing based on location so most distributors will be introducing residential tariffs with a 'monthly peak demand component' from 2017 on an 'opt-in' basis.

Funding mechanisms for national and state/territory programs tend to be based on annual electricity consumption and comprise around 8% of the typical bill. GST adds 10% to all bills.

An underlying policy question relates to choices over preferences for the cost of action on climate change being derived from energy bills or from consolidated revenue (i.e. contributions reflect the redistributive effects of the tax and transfer system) or in what balance of the two.

The market's consumer safety net is undermined by costs in excess of the minimum necessary to provide a reliable and secure electricity system and there are four priority areas identified where attention should be paid:

- Wholesale energy costs
- Effectiveness of retail competition
- Network charges and tariff reform
- Other charges recovered from energy bills

Competitive electricity markets rely on consumers exercising choice over their electricity retailer. For a range of reasons this is a challenge for many households but for those on low incomes with relatively high expenditure this exacerbates vulnerability. Informed and engaged consumers is one of the five policy outcomes of the market's safety net and is analysed further in the following chapter.

4 Policy outcome: Informed and engaged consumers

4.1 Introduction

This chapter considers policies that seek to ensure consumers are **informed and engaged** in competitive energy markets. This policy outcome contributes to affordability by encouraging consumers to find the best priced energy supply.

Residential electricity is supplied on a competitive basis in NSW, VIC, SA and SE QLD and households need to regularly engage with the market to ensure they are receiving a competitively priced supply. There is limited choice of retailer in the ACT and no effective choice in regional QLD, TAS, WA and NT. Whether or not there is a choice of retailer, homeowners in all regions often have choices to be made about:

- Fuel switching to Gas (pipeline or bottled gas)
- Solar for electricity or hot water
- Battery Storage

Supporting consumer choices in this regard is a range of measures including accreditation of Solar Installers, Solar Retailer Accreditation and a Code of Conduct by the Industry Peak body the Clean Energy Council (2017).

Benefitting all consumers, not just homeowners, are minimum energy performance standards and Appliance Energy Ratings (Mandatory energy rating labels on Air Conditioners, Televisions, Computer Monitors, Refrigerators; Freezers; Clothes Washers; Clothes Dryers; Dishwashers) through the Equipment Energy Efficiency (E3) program - an integrated program on energy efficiency standards and energy labelling for equipment and appliances auspiced by the Commonwealth's *Greenhouse and Energy Minimum Standards (GEMS) Act 2012* and aligned with New Zealand Government. Consumer engagement on consumption choices is discussed further in Chapter 5.

As is the case for each of the five chapters covering the key policy areas of the consumer safety net, this chapter presents four stages of a policy cycle. The *Policy Review* presents current initiatives seeking to engage consumers in competitive energy markets at national and jurisdictional levels. COAG Energy Council, AEMC and AER have strategic priorities aligned with this policy objective. Network Tariff reform is an important component of policies that seek to put downward pressure on prices by improving utilisation of the grid. However, success is predicated on consumer behaviour that is only beginning to be understood. A new market institution, Energy Consumers Australia has been formed to promote the consumer

interest in energy markets.

Key Issues are distilled from stakeholder publications in the second stage. These include:

- price dispersion and the cost of not being engaged in the competitive energy market;
- obligations on retailers to review tariffs;
- the impact of the digital divide on energy market engagement;
- risks and opportunities for vulnerable consumers from tariff reform and smart meters.

A *Policy Analysis* stage takes an empirical approach to the key issues. It is clear that vulnerability in competitive electricity markets is closely linked to barriers to this ongoing exercising of choice.

The *Policy Formulation* stage considers the issues and the analysis and recommends balancing policy between promoting more engagement and protecting those who are unable or unlikely to engage.

4.2 Policy Review

This outcome is pursued at national and jurisdictional levels. The COAG Energy Council priority '*Empowering Consumers*' is aligned with this policy outcome. A comprehensive reform package from the COAG Energy Council and Australian Energy Markets Commission (AEMC) known as *Power of Choice* is delivering a range of measures in order for consumers to "make informed choices" about electricity. These include unwinding cross-subsidies through tariff reform, mandating smart meters for new connections from December 2017 and opening up competition for metering, energy storage and other customer-side aspects of energy markets. The final report of AEMC's *Power of Choice review – giving consumers options in the way they use electricity* underlines the ongoing role of consumer choice that necessitates this policy outcome (AEMC, 2012a):

The package of reforms will support the electricity market in meeting consumer needs over the next 15-20 years. It provides more opportunities for consumers to make informed choices about the way they use electricity based on the benefits that end use services provide. Ultimately, consumers will be in the best position to decide what works for them.

The AEMC publishes a set of strategic priorities for energy markets every two years. The *Strategic Priorities for Energy Market Development 2015* (AEMC, 2015a) included a strategic priority of:

Consumer priority – enabling consumers to make informed decisions in competitive retail markets

This updated the previous consumer priority (AEMC, 2013) of:

Consumer priority: Strengthening consumer participation and continuing to promote competitive retail markets.

Both statements support the policy outcome of informed and engaged consumers but the subtle update reflects a change from encouraging participation to better informing those that have chosen to participate. This reflects the maturing of some retail markets over that time²⁷, a rapid shift in technological possibilities – particularly battery storage - and the rise of the proactive energy consumer or *prosumer*. However, as will be outlined in this chapter, not everyone is willing or able to become a *prosumer* and this will need to continue to be recognised in the regulatory frameworks.

The most recent version at the time of completing this thesis, split the consumer priority into two parts (AEMC, 2017c):

*A market that works for consumers, in terms of prices and participation options;
Look after vulnerable consumers.*

The ‘delivery’ priorities were summarised for each of these as:

*Better information for better decisions. Empower consumers to participate;
Get vulnerable consumers onto suitable market offers. Improve concessions.*

This 2017 update followed substantial price rises for the NSW market in particular (the home state of the AEMC offices) and the preliminary report of the ACCC retail electricity inquiry. The shift in language from ‘informed decisions in competitive retail markets’ to ‘a market that works’, and ‘empower consumers’ from ‘participation’ and ‘information’ in the earlier versions seem to reflect the lack of confidence that retail electricity markets are working in the consumer interest. This waning confidence is certainly consistent with the quite negative findings of the separate Victorian market review of 2017 (Thwaites et al., 2017) that ‘consumers are not gaining the benefits of a competitive retail market’.

The Australian Energy Regulator (AER) also sees one of its core functions in retail energy markets as being relevant to this policy outcome (AER 2016b):

Our functions, set out in the National Energy Retail Law, aim to help consumers

²⁷ NSW and South-East Queensland adopted the National Energy Customer Framework and de-regulated electricity prices over the period 2013-2015

engage confidently in the retail market and make well informed choices.

The AER's *Energy Made Easy* website is a key resource and is complemented by jurisdictional initiatives such as Victoria's *Energy Compare* website, NSW's *Your Energy* website and South Australian initiatives such as *Utilities Literacy Program* and '*The Guide*' (a resource for community workers assisting households with utilities affordability)²⁸.

Energy Made Easy is the government's energy contract comparison website however, according to research commissioned by AEMC, only 16% of households are aware of it (Newgate Research, 2016)

The AEMC's Energy Consumer Research 2016 also indicated that around 55% of all customers had not switched electricity retailer or plan in the last five years. Market segmentation analysis revealed similar results (approx. 50%) for the 20% of households considered *vulnerable* (Newgate Research 2016). This suggests that these households are likely to be paying *standing offer* rates and therefore significantly more – typically 10-20% more (as will be shown below) - than customers who actively pursue a better market offer²⁹.

Ultimately, for those unable or unwilling to exercise their *power of choice* there is a risk of being 'left behind' and the emergence of a 'two tier energy market' (ECA, 2017b, p. 11). The high proportion of disengaged consumers was reported in AEMC's 2016 Retail Competition Review (AEMC 2016a) with the comment:

"... there is still a need for a strategic and coordinated approach to enhance customers' awareness of energy use and costs, and the tools available to assist customers to access competitive retail market offers and investigate new products and services."

The *Distribution Network Pricing Arrangements Rule Change* is a key component of the *Power of Choice* reform package (AEMC, 2014). The rule change compels network pricing to better reflect network congestion (peak demand). As of early 2017, the AER has approved new 'monthly peak demand' tariffs to be available from most Distributors on an 'opt-in' basis until 2020. However, research into the likely *voluntary* uptake of different pricing structures by CSIRO Behavioural Economics team (Stenner et al., 2015) reinforced well-known cognitive biases away from "complexity, novelty and risk" and towards "simplicity, familiarity and certainty".

²⁸ *Guide to electricity, gas and SA Water services For South Australian community workers v2 2017* available from www.sa.gov.au/energy/resources

²⁹ Based on the differences between standing offers and market offers in each jurisdiction reported in AEMC 2016 Residential Price Trends Report.

The formation of a new energy market institution, Energy Consumers Australia (ECA) in January 2015 represents a key milestone in the pursuit of this outcome. ECA describes itself as (ECA, 2017b):

“ ... an independent organisation created by the Council of Australian Governments to give residential and small business energy consumers a national voice in the energy market. We conduct research and analysis, identify issues and work with other consumer organisations, ombudsmen, energy companies, regulators and governments to improve outcomes for consumers.”

ECA has articulated a vision of a:

“sophisticated market for energy services for households and small business” on the basis that “consumers are increasingly becoming interactive participants in the energy market and are investing in technology to generate, store and ultimately trade electricity to manage their consumption and bills.”

The precise role of ECA in the pursuit of this policy outcome is not yet clear. However, such a vision implies the presence of informed and engaged consumers in order to participate and so it is likely to feature in strategic priorities as the organisation matures.

In its options paper for Energy Networks Australia “Supporting Vulnerable Customers”, consultants at Houston Kemp recommended energy network business consider leading in the provision of information for all customers on the basis that their regulated monopoly status meant they had a relationship with all customers in their region regardless of who each customer has as their retailer (Kemp et al., 2015).

The National Energy Productivity Plan 2015-2030 (NEPP) includes ‘Make Choice Easier’ as a key measure owned by COAG Energy Council and Energy Consumers Australia. alongside ‘support best practice services for vulnerable consumers’.

So, it is clear from the above that informed and engaged (or even *empowered*) consumers is a priority for a range of stakeholders. However, encouraging participation in a market that, according to a number of recent reports outlined in the previous chapter, seems to be failing to deliver efficient prices is not a recipe for long term success. It is vitally important to ensure that *choice* is not seen as an outcome in itself. The following section distils key issues from stakeholder publications into four key issues.

4.3 Key Issues

AEMC’s 2016 Retail Competition Review made a number of recommendations relevant to this policy outcome (AEMC, 2016a). The AEMC offered to assist a Jurisdiction-lead initiative to

coordinate the development of NEM-wide awareness and engagement programs to make it easier for customers to access the best options for their circumstances and improve customer confidence in the energy markets. AEMC also supported the targeting of vulnerable consumers that are not engaged with government or community sector support services and, consistent with Chester (2013), to diversify the available information and engagement methodologies away from purely online options.

Expanding on the governance issues considered above, past recommendations have reflected a desire to foster stronger relationships between community sector workers (Financial Counsellors, Housing Support Workers etc) and energy retailers (including their Hardship teams) (National Energy Affordability Roundtable, 2013; SACOSS, 2016b).

Smart meters and network tariff reform are adding a new layer of distinction between customers but are also adding new ways of engaging with households and managing consumption.

The stakeholder literature also includes recommendations for policy to focus on:

- Jurisdictions coordinating the development of NEM-wide awareness and engagement programs to make it easier for customers to access the best options for their circumstances and improve customer confidence in the energy markets. (AEMC, 2016a)
- Targeting vulnerable customers who are not engaged with the energy market or support services (AEMC, 2016a; SACOSS, 2014a)
- The relationship between vulnerable consumers, their advocates (e.g. community workers, financial counsellors) and energy retailers (National Energy Affordability Roundtable, 2013; SACOSS, 2016b)
- The ability of advanced metering to provide more frequent billing and near real time consumption and cost information that can minimise bill shock.
- Diversity in the provision of information and engagement away from purely online resources (Chester 2013, National Energy Affordability Roundtable 2013, AEMC 2016a).
- Incorporating Behavioural Economics into policy considerations (Stenner et al 2015)
- Price & Product Information Statements and Bills that clearly separate market-based charges (retail and wholesale) from other charges, such as regulated network charges and policy costs that apply to all customers within a jurisdiction/network (SVDP,

2016c)

These have been distilled into four priority issues:

- Price dispersion and the cost of not being active in the competitive energy market
- Obligations on retailers to review tariffs;
- Internet access and the digital divide – barriers to accessing information
- Risks and opportunities for vulnerable consumers from tariff reform and smart meters

Each of these is analysed further in the following section.

4.4 Policy Analysis

4.4.1 Price dispersion and the cost of being disengaged

Price dispersion is an economics term that refers to the situation where different sellers offer (and sustain) different prices for the same good. Recent studies have highlighted the scale of price dispersion for electricity and this is analysed further here in the context of vulnerable consumers.

The National Energy Retail Law (NERL) defines the two types of retail energy contracts for households and small business: *Standard retail contracts* and *Market retail contracts*. The tariffs and charges that apply under each contract are referred to as *standing offers* and *market offers* respectively. The standing offer price will be the regulated price under jurisdictional legislation where this remains in force. The National Energy Retail Rules (NERR) sets out the minimum conditions of both contract types.

The difference between standing and market offers is used as the measure of price dispersion for electricity. The AEMC 2016 Residential Price Trends Report (AEMC, 2016b) provides estimates of the number of households on the standing offer as well as costs of standing offers vs indicative market offers for typical levels of consumption in each jurisdiction. This is intended to represent the range of prices that the vast majority of households are likely to be paying and is summarised in Table 1:

Jurisdiction	kWh pa	Market Offer (ex GST)	% on Market	Standing Offer (ex GST)	% on Standing	Difference	as % of Standing Offer
NSW	5,936	\$ 1,199	73%	\$ 1,403	27%	\$ 204	15%
Vic.	4,026	\$ 1,099	91%	\$ 1,358	9%	\$ 259	19%
Qld	5,173	\$ 1,329	70%	\$ 1,434	30%	\$ 105	7%
SA	5,000	\$ 1,487	85%	\$ 1,693	15%	\$ 206	12%

WA	5,198			\$ 1,371	100%	-	
Tas.	8,550			\$ 1,856	100%	-	
NT	6,790			\$ 1,789	100%	-	
ACT	7,312	\$ 1,307	24%	\$ 1,348	76%	\$ 41	3%

Table 1: Summary of Standing offers vs Indicative Market Offers, 2016 (Source AEMC 2016b)

The Vinnies Tariff Tracking Project is a longitudinal study of retail electricity prices in each of the NEM jurisdictions by the Society of St Vincent De Paul and Alvis Consulting. The project's 2016 Summary illustrates the difference in bills between standing and market offers based on a standard 6000 kWh pa consumption in each distribution region (SVDP, 2016b). This is summarised in Table 2:

	Market (ex GST)	Standing (ex GST)	Difference	as % of Standing Offer
Citipower	\$ 1,331	\$ 1,671	\$ 340	20%
Powercor	\$ 1,495	\$ 1,879	\$ 384	20%
Ausnet	\$ 1,604	\$ 2,020	\$ 416	21%
Jemena	\$ 1,485	\$ 1,881	\$ 396	21%
United Energy	\$ 1,399	\$ 1,769	\$ 370	21%
ActewAGL	\$ 1,107	\$ 1,264	\$ 157	12%
Aurora	\$ 1,728	\$ 1,728	\$ 0	0%
Energex	\$ 1,683	\$ 1,827	\$ 144	8%
Ausgrid	\$ 1,468	\$ 1,725	\$ 257	15%
Endeavour	\$ 1,498	\$ 1,679	\$ 181	11%
Essential	\$ 1,752	\$ 1,939	187	10%
SAPN	\$ 1,926	\$ 2,220	294	13%

Table 2: Summary of Standing offers vs Indicative Market Offers, 2016 (Source: Vinnies 2016a)

Overall these estimates suggest that in Victoria, indicative price dispersion (i.e. the difference between standing and market offers) is around 20% of the standing offer; in NSW and SA it is around 10-15% and in QLD it is 5-10%.

Simshauser & Whish-Wilson (2017) found price dispersion in Victoria's deregulated retail market meant many vulnerable customers were being priced at above efficient costs if they were paying standing offer rates. The authors examined customer records for AGL Energy (one of Australia's largest vertically integrated energy retailers with about 30% market share) and found that around 5% of AGL's 530,000 household customers in Victoria were both eligible for a concession and still on the standing contract. As can be seen in the preceding tables, this indicates that these customers are paying around 20% more than necessary.

Table 1 indicates that in the four most populous NEM states (QLD, NSW, VIC, SA include 85% of Australian households), a majority of customers are on a market offer. However, it is also possible to be on a market offer and be paying standing offer rates. Many market offers include a 'fixed benefits period' - usually one or two years - after which discounts lapse and require active intervention from the customer to be reassigned to a competitive offer (SACOSS, 2014b; Wood et al., 2017). Evergreen contracts - where the level of discount remains ongoing - are rare. Recent research by Newgate for AEMC 2016 Retail Competition Review showed that around 55% of all customers have not switched electricity retailer or plan in the last five years (AEMC, 2016a; Newgate Research, 2016). This suggests that these households, if they have drifted back to standing offer pricing as is likely to be the case, are paying significantly more - typically 10-20% more - than customers who actively pursue a better offer³⁰. Market segmentation analysis revealed similar results (approx. 50%) for the 20% of households considered vulnerable.

In its review of retail electricity markets, the Grattan Institute (Wood et al., 2017, p. 20) concluded:

The fact that there is a significant price gap between different offers suggests some households are paying more than necessary for their electricity, and therefore retailers are earning more revenue than necessary to supply those consumers with electricity. And finally, if retailers are earning more than necessary to supply consumers with electricity, how is that consistent with the legislated objective of directing policy to the long-term interest of consumers?

Conclusions around the regressive impact of price dispersion have also been raised in other commentary around excessive profits in the Victorian retail sector (Mountain 2015, 2016; Ben-David 2015, 2016). Overall, it can be concluded that customers who are not actively engaged in the competitive electricity market - around half of all households - are likely to be paying in the region of 10-20% more than necessary for their electricity.

4.4.2 Obligations on retailers to review tariffs

Simshauser & Whish-Wilson (2017) recommend retailers move concession eligible customers off standing contracts and discussed the challenges of obtaining explicit informed consent to do so. This invites the question as to what obligations already exist for retailers to review the tariffs to which customers are assigned?

The National Energy Retail Rules (NERR) only requires retailers to review a market contract

³⁰ Based on the differences between standing offers and market offers as reported in Table 1 and Table 2

if a hardship customer is on a contract that does not allow for Centrepay (automatic deductions from Centrelink welfare payments). This is covered by Rule 74(4). Rule 72 refers to Payment Plans offered to hardship customers but makes no reference to reviews of contracts or tariffs.

The AER's 2016 *Sustainable Payment Plans Framework* refers to the *option* of a tariff review for those customers who are unable to afford ongoing consumption (Option C) (AER, 2016a). In its guidance to retailers on hardship policies, the AER has stated, in approving a submitted hardship policy, it would consider whether the policy includes information on the circumstances under which a retailer will review the appropriateness of a hardship customer's market contract, not just in relation to the Centrepay obligations of the NERR.

In Victoria, the final report of the Essential Services Commission Hardship Inquiry noted that while all 9 retailers surveyed offered tariff reviews to hardship customers, only 5 of the 9 retailers offered such a review to all payment plan customers (most of which are not part of a hardship program) (ESCV, 2016, p. 21). The subsequent Payment Difficulties Framework only mandates a tariff review in the case of those customers unable to afford their ongoing consumption (ESCV, 2017).

Overall, it seems clear that, other than for some cases of households identified as in hardship or having payment difficulties, energy retailers are not obliged to review tariffs. Combined with the analysis above of price dispersion, it seems likely that many vulnerable households are paying more than necessary for their energy. Prime Minister Malcolm Turnbull twice summoned energy retailer executives to a meeting in response to these issues in August 2017 (Turnbull, 2017a, 2017b). Dominant energy retailers AGL Energy, Origin Energy and Energy Australia responded with voluntary measures:

- AGL agreed to write to concession customers on a standing offer to “assess their needs and move them to a better plan” (AGL, 2017a)
- AGL announced a 10 per cent discount off current usage and supply charges for standing offer customers in Victoria who have been customers two years or more (AGL, 2017b)
- Origin announced an automatic discount for Victorian residential concession customers on “Origin’s standing and non-discounted contracts” from 1 January 2018 (Origin Energy, 2017)
- EnergyAustralia announced “on-bill rebates” for standing offer customers in Victoria (EnergyAustralia, 2017)

Voluntary measures such as these do not address the structural issues regarding barriers to effective competition identified in the preliminary report of the ACCC retail electricity inquiry (ACCC, 2017). The AEMC received a rule change request in August 2017 from the Commonwealth Government regarding mandatory notification of the end of a fixed benefit period in retail contracts. The change was made via the expedited rule change process and hence little consultation occurred on the broader issues (AEMC, 2017d). It seems highly likely that consumers will want and need further protections and the final report of the ACCC retail electricity inquiry may well be the trigger for further rule changes.

4.4.3 Internet Access and the Digital Divide

It has been observed in the stakeholder literature that internet access can be a significant barrier to engaging with the retail energy market. The key instruments of this policy outcome are comparison websites and information portals that are not readily accessible to many in the community.

A number of studies into what is often referred to as the 'digital divide' and 'digital inclusion' have been conducted in recent years (Ogle and Musolino, 2016; Thomas et al., 2016) and an Australian *Digital Inclusion Index* has been published online. 2016 was declared the National Year of Digital Inclusion by AustraliaPost and the GoDigi national digital literacy program was launched. It is clearly not just an issue relevant to energy but there is potential for overlap between digital literacy, utilities literacy and vulnerability as an energy consumer.

A primary source of data regarding internet access is the ABS product 8146.0 Household Use of Information Technology, Australia 2014-15. The report shows that 14% of households in Australia were without internet access in 2014-15. The results by state indicate SA and Tasmania have higher than average proportions of households without access (17.7% and 18.4% respectively). A strong indicator is equivalised household income. 33% of households in the lowest income quintile are without internet access, 25% of the second. This is shown in Figure 21.

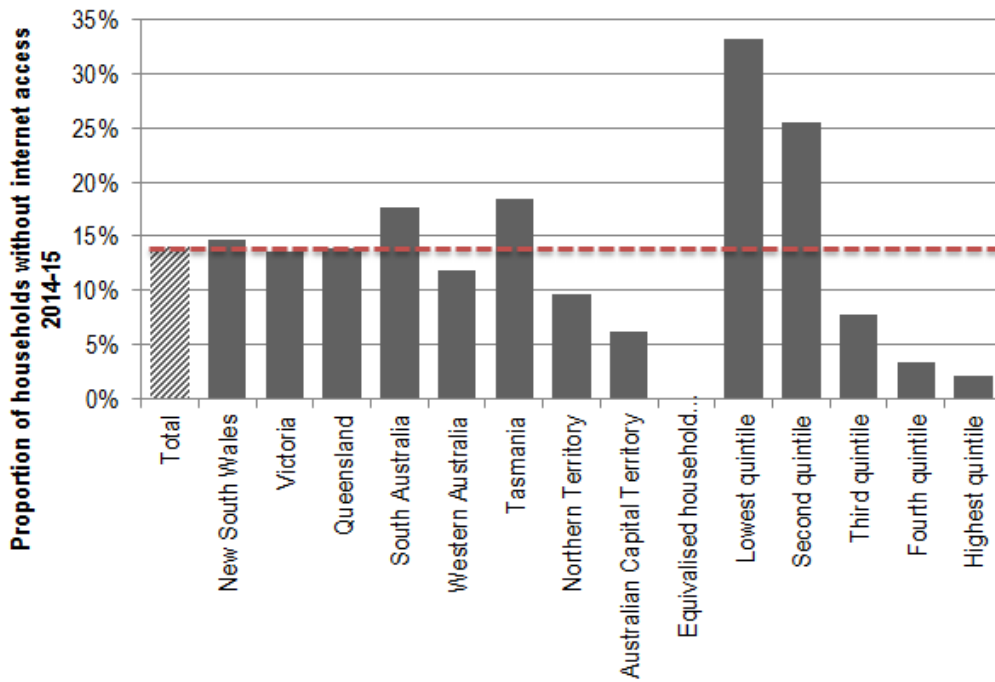


Figure 21: Proportion of households without internet access 2014-15 (Source: ABS 8146.0)

In terms of persons rather than households, ABS 8146.0 also shows that not using the internet is strongly tied to age (Figure 22), lower levels of education and coming from a non-english speaking background.

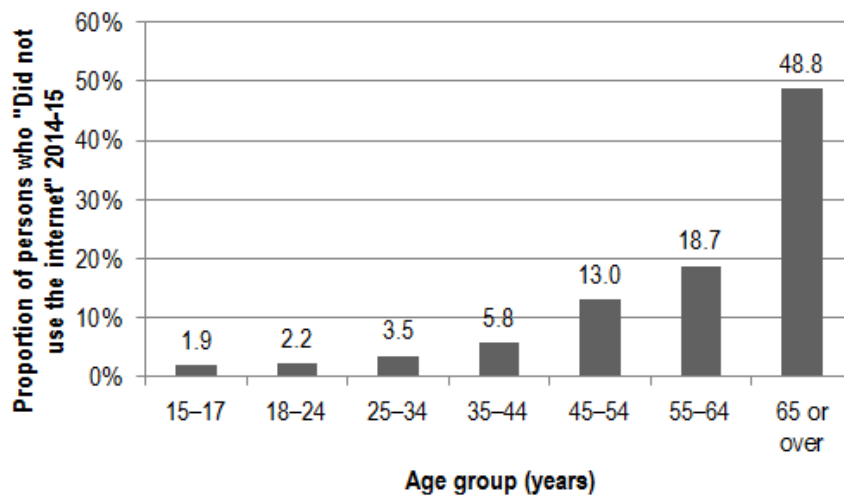


Figure 22: Proportion of individuals who do not use the internet 2014-15 (Source: ABS 8146.0)

In summary, there is clearly potential for an overlap between the digital divide and vulnerability as an energy consumer. Recommendations from stakeholders to go beyond purely online resources clearly have merit (Chester, 2013).

4.4.4 Risks and Opportunities from tariff reform

The need to accompany tariff structure changes with information and education has been recognized by the COAG Energy Council in their Reform Agenda Implementation Plan (July 2015):

Key Action: Support effective communication on the benefits of tariff reform to support faster transition and take up of new tariffs

Further, the COAG Energy Council workplan for the implementation of the National Energy Productivity Plan states:

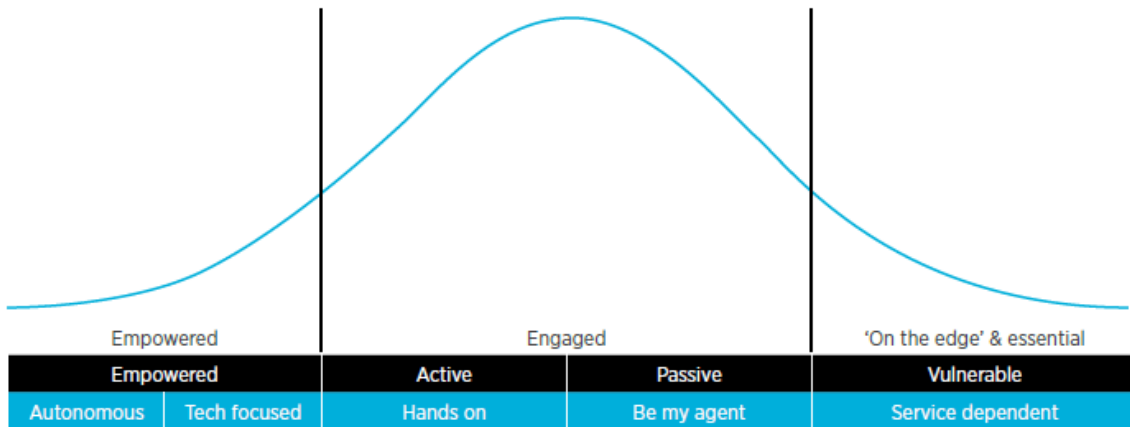
The Council considers that it is important that reform is introduced in a way that supports consumers to make decisions that are best suited to their needs. This includes being able to understand new tariffs, how tariffs affect their own circumstances and being in a position to respond. This support must include a range of supporting tools and targeted communication (Measure 3: Make Choice Easier).

and;

The Council recognises that the current market transition with increasing choice in energy services, tariffs and technologies can provide strong consumer benefits by allowing consumers to choose services which most suit them and providing more options in managing energy costs.

However, this greater choice also increases complexity and could increase risks of bill shock for some consumers. Choice needs to be supported by the right tools and customer information to avoid adverse impacts.

The Network Transformation Roadmap work by the CSIRO and Energy Networks Australia (2015, 2016) paints a picture of a future grid that reduces emissions, improves security and lower costs. It also considers distributional impacts and has provided a useful conception of the vulnerable consumer in their vision of the future grid. In this work, vulnerability is used to describe customers who are unable to take up opportunities that would enable them to save on electricity bills (2016, p11). Vulnerability is further characterised as being 'service dependent' and being at the opposite end of an empowerment spectrum to the autonomous, independent, tech-focussed and empowered customers sometimes referred to the 'prosumers' (see Figure 23).



Source: Plausible 2027 customer segments were informed by an international literature review, commissioned expert papers and structured stakeholder workshops. In particular, Rosemary Sinclair of Energy Consumers Australia is acknowledged for employing the market curve device to graphically represent customer segments (adapted with permission).

Figure 23: Example of market segmentation curve for residential customers in 2027 (Source: CSIRO and ENA Network Transformation Roadmap 2015, 2016)

In the context of a policy outcome of informed and engaged consumers, the CSIRO spectrum also serves to highlight that being disengaged and disempowered can be strong contributors to 'vulnerability'.

Also relevant is the CSIRO contribution to network tariff reform. A nation-wide survey experiment was conducted in order to better understand how consumers will respond to future electricity tariffs. This was one of the first injections of the science of human decision making – Behavioural Economics – into the national electricity policy debate. The research was clear that relying on a behavioural response to new pricing signals was unlikely to yield success in the underlying objective of reducing peak demand. The report states (Stenner et al., 2015, p. 47):

... cost-reflective pricing will be more successful the less it relies on consumers, themselves, responding to changing price signals.

The implication being home energy management systems (HEMS) and/or other supportive mechanisms would be required to lower peak demand and hence lower costs. In a 2016 speech the AEMC clarified that the price signals being sent were intended to be received by retailers as the consumer's agent rather than by consumers directly (AEMC, 2016c, p. 4):

The role of the networks is to provide cost-reflective pricing. The retailers' role is to take wholesale costs, network charges and other potential energy services such as distributed generation or energy management systems, and package these up for consumers. In many ways, their job is to be the consumers' agent for dealing with the rest of the system.

By contrast, an earlier 2015 speech was much clearer that consumer themselves would receive

the signal (AEMC, 2015b, p. 4):

The first piece of the puzzle is getting effective price signals to the consumer. That's where the distribution network pricing rule change comes in – which will come into effect from 1 July 2017.

The AER has also adopted a similar position in their final decisions on the first round of Tariff Structure Statements (AER, 2017b, p. 7):

We consider the main objective of network tariff reform is that retailers are exposed to the costs of network congestion.

Overall, the reality of consumer behaviours and the propensity of the market to profiteer from inactive consumers creates a risk of vulnerability for a significant number of households.

4.5 Policy Formulation

Key issues can be summarised as:

- Over half of all households have not switched retailer, or switched plan with their existing retailer for at least five years. It is likely that these households are paying 10-20% more for electricity than necessary.
- Energy retailers have a critical role in ensuring vulnerable households are on the most appropriate tariff but there is presently no explicit obligation to do so.
- The digital divide – barriers to accessing information technology – is a challenge for this policy outcome. The majority of information and tools are online resources but complementary measures are needed for the 15% of households (mainly low income and or elderly) who do not have internet access (2014-15).
- The move to advanced metering provides new opportunities for information and engagement however, coupled with tariff reform, for some households this could exacerbate vulnerability. Behavioural economics acknowledges that price alone is unlikely to change consumption patterns.

The analysis herein shows that vulnerability of consumers is often determined by their ability to engage with energy markets – to pursue lower prices or to respond to price signals and lower costs. In terms of policy, a pivotal question relates to the extent that the vulnerable are encouraged to be more engaged and empowered and the extent to which these households may need protection from the cost penalty of being disengaged.

4.5.1 Priority Issue 2.1: Engagement of vulnerable consumers with energy markets

The AEMC 2017 Retail Competition review and the ACCC retail electricity pricing inquiry are

very important opportunities to advance the interests of vulnerable consumers. Both reviews must consider the vulnerable consumer and insights into behavioural economics from the CSIRO. The need to engage households on tariff reform is an opportunity to recast engagement with consumers but no obvious leader has emerged to date. It is recommended that Energy Consumers Australia seek to be the champion of this policy outcome as part of the Power Shift project. Priorities include activities and resources that complement the online information presence with material suitable for the elderly and those with low levels of English literacy and numeracy.

4.5.2 Priority Issue 2.2: Vulnerable consumers unable to engage with energy markets

Surveys indicate that half of all customers have not switched retailer or plan in at least five years (Newgate Research, 2016). In most cases these customers would have drifted to standing offer pricing that is potentially well above the cost to supply. Encouragement to engage and switch on a regular basis is not a viable response for many. Similar concerns in the UK energy market have led to the reintroduction of price caps for pre-payment meters and calls to extend this re-regulation to all vulnerable customers. The ACCC retail inquiry is expected to form recommendations in this regard and, following meetings called by the Prime Minister, major energy retailers are initiating voluntary actions. A Rule Change would be required in order to place a mandatory obligation on retailers to initiate tariff reviews in more cases.

4.6 Chapter Summary

This chapter has considered policies that seek to ensure consumers are **informed and engaged** in competitive energy markets. Residential electricity is supplied on a competitive basis in NSW, VIC, SA and SE QLD and households need to regularly engage with the market to ensure they are receiving a competitively priced supply. This policy outcome therefore contributes to affordability by encouraging consumers to find the best priced electricity and gas supply available to them.

Recent research indicates that most households are quite disengaged with the energy market and are therefore likely to be paying more than necessary for electricity and gas. Initiatives in this category generally focus on online price comparator sites but many low-income households and the elderly do not have internet access at home. Behavioural economics is providing new insights into consumer decision making that are relevant to responding to these issues. Stakeholders have recommended a more coordinated and resourced awareness

and engagement effort nationally.

The Policy Formulation stage recommends balancing policy between promoting more engagement and protecting those who are unable or unlikely to engage. The primary recommendation in this regard is to protect the vulnerable with a mandatory obligation on retailers to ensure households are not paying standing offer rates unnecessarily.

It is critical to acknowledge that choice is not an outcome in itself. Electricity policy should be focussed on delivering efficient prices and consumers making informed decisions around consumption. The need to protect consumers from prices above efficient levels exposes a key limitation of reliance on competition to deliver these efficient prices.

The safety net policy outcomes of Stable and Efficient Pricing and Informed and Engaged consumers in this and the preceding chapter focus on the cost of energy supply. The following chapter shifts the focus to how electricity is consumed and the potential this has to enhance affordability and contribute to the strength of the safety net.

5 Policy outcome: Energy consumed efficiently and productively

5.1 Introduction

This Chapter considers policies that affect the **energy consumption** of households. Consumption is influenced by a range of factors including the size, age and health of both the dwelling and the people in it, the equipment and appliances in use, the knowledge and information available to the household and their behaviours.

The overall aim of the national electricity market has been stated as “... to provide a reliable, secure energy supply at the best price for consumers” (AEMC, 2017b). This policy outcome contributes to affordability by encouraging and supporting consumers to get the best ‘value’ from their energy expenditure. For a long time this has been largely referred to as *energy efficiency* but is now framed as *energy productivity*. It is not the same as encouraging consumers to use less energy (*energy conservation*, although this may be the outcome) but to aim for consuming as little energy as possible to achieve the ‘energy services’ they need or want. An example that illustrates this would be the installation of an efficient air-conditioner and insulation in the home of someone whose health is compromised by hot weather even if this increases consumption³¹. The shift in focus from purely *efficiency* to *productivity* also reflects nascent changes in electricity tariff structure that ensure electricity savings have different ‘value’ depending when they occur. Savings at peak times will increasingly have greater value than off-peak times.

As is the case for each of the five chapters covering the key policy areas of the consumer safety net, this chapter presents four stages of a policy cycle. The *Policy Review* presents current initiatives seeking to influence consumption choices by households. This policy outcome has the COAG Energy Council’s ‘*National Energy Productivity Plan 2015–2030*’ (NEPP) as the centrepiece national policy initiative. Related policy initiatives include consumer protection measures such as Minimum Energy Performance Standards (MEPS) for appliances and new housing as well as a number of state and territory programs that seek to engage households and change consumption decisions and behaviours. Recent national data illustrates how households are consuming less energy from the grid through a combination of rooftop solar PV and energy efficiency improvements in appliances and the housing stock.

There is a long history of energy policy and program activity in this area and the state and

³¹ This was trialled by Uniting Communities in private rental properties in Adelaide a project called *Beat the Heat!* as part of the Low Income Energy Efficiency Program (LIEEP) - www.unitingcommunities.org/find-a-service/services/beat-heat-project/

national level and many have had some focus on low-income households³². However, the short-term and discontinuous nature of government funding has frustrated many stakeholders.

Key Issues are distilled from stakeholder publications in the next stage. These include:

- Understanding Load profiles and dynamic pricing
- Minimum energy performance standards of housing and appliances
- Best practice policies and programs (including access to efficient appliances)
- Distributed Energy Resources (DER)

The *Policy Analysis* stage takes the form of a case study of three households and an analysis of consumption patterns and tariff outcomes under newly published 'cost reflective' network tariffs. This case study also considers the impacts of solar power on each household consumption pattern and confirms that the financial return on solar is diminished under these new tariff structures.

The *Policy Formulation* stage considers the issues and the analysis and then makes recommendations in each of four priority areas:

5.2 Policy Review

Relevant COAG Energy Council priorities are:

- Empowering Consumers
- Energy and Carbon Policy

The COAG Energy Council's '*National Energy Productivity Plan 2015–2030*' (NEPP) was released in December 2015 and is the centrepiece of national policy on energy consumption. The plan also has a headline target of a 40% improvement in Australia's energy productivity by 2030. This economy-wide measure is expressed as the ratio of economic output (measured as GDP) to primary energy used. The NEPP states two main intended outcomes:

Energy consumers that are able to effectively manage their energy costs and are engaged in improving the productivity of their energy use; and

An energy system (including electricity, gas and transport fuels) that delivers least cost

³² For example: The Australian Greenhouse Office's Cool Communities program ran from 2001 to 2004 and facilitated numerous community scale energy and greenhouse projects; the Green Start program was axed after seeking proposals but before implementation in 2010; The Low Income Energy Efficiency Program (LIEEP) was announced in July 2011 and finally closed on 30 June 2016 <http://www.environment.gov.au/energy/programs> The Home Energy Saver Scheme (HESS) ran from 2012 to 2014.

energy in the long term interests of consumers

The engaged consumer is a policy outcome discussed in the previous chapter in relation to competitive energy markets. Here, the overlap of scope means that engagement extends to how energy is used.

The idea of a *least cost* energy system can be scaled down to the household level and interpreted as the equipment and appliances that receive, produce, store and use energy in the home. In relation to major appliances, the Equipment Energy Efficiency (E3) Program is the principal initiative. The E3 program is underpinned by the *Greenhouse and Energy Minimum Standards (GEMS) Act 2012* and implements iterative improvements to minimum energy performance of products sold in Australia and New Zealand but also requires labelling of the energy (and water) performance of products.

Minimum Energy Performance Standards (MEPS) are intended to protect consumers from purchasing highly inefficient products. The Energy Rating Label (ERL) is intended to inform consumers at the point of sale about the likely energy consumption of Air Conditioners, Televisions, Computer Monitors, Refrigerators; Freezers; Clothes Washers; Clothes Dryers; Dishwashers. MEPS apply to most of these items as well as the ERL. A number of product categories have MEPS without an ERL requirement including: 3-phase electric motors, Gas and Electric Storage Water Heaters, incandescent and fluorescent lamps and ballasts.

The NEPP refers to measures such as MEPS, the E3 program and the energy provisions of the National Construction Code as consumer protection measures (CoA, 2016, p. 14):

Where the market does not provide efficient minimum services and adequate protections for consumers, there is a role for government measures, such as standards for equipment, appliances and buildings and service requirements for consumers.

In relation to vulnerable consumers, the NEPP includes a measure ‘Support best practice services for vulnerable consumers’:

Vulnerable consumers (indigenous, low income earners, remote, elderly) need additional assistance beyond those in Measure 3 [“Make choice easier”]. Based on recent research, a best practice voluntary guideline for service providers will be developed with Energy Consumers Australia and stakeholders, which will seek to reduce the barriers to vulnerable consumers effectively engaging with energy productivity measures and services.

The accompanying Work Plan provided further detail:

The Commonwealth is currently supporting a wide range of valuable research-based pilots on delivering better energy productivity services to support different vulnerable consumer groups. These include pilots with indigenous communities, refugees, remote

and regional groups, the elderly and young consumers, and low income groups.

Building on these pilots, the Commonwealth commits to working with Energy Consumers Australia and stakeholders to develop a best practice voluntary guideline for service providers aimed at reducing the barriers to vulnerable consumers effectively engaging with energy productivity measures and services.

The pilots referred to are the projects of the Low Income Efficiency Program (LIEEP). LIEEP provided grants to 20 different consortia of government, business and community organisations to trial approaches to improve the energy efficiency of low income households and enable them to better manage their energy use. The review and complementary research by ECA is known as *Power Shift*. Intended outcomes include:

- Improved, evidence-based understanding of what really works in supporting vulnerable consumers to manage their energy bills.
- Identification of opportunities for market-led solutions and other initiatives to support vulnerable consumers to manage their energy bills.

Community sector support for the ECA's *Power Shift* initiative would build on practical experience in delivering energy programs (such as LIEEP and the Home Energy Savings Scheme, HESS). Overall though, a focus for leadership is missing. For example, there is no Australian equivalent of UK fuel poverty charity National Energy Action.

A number of jurisdictions have energy efficiency programs in place that include low-income households as a target audience such the NSW Home Energy Action Program and the SA Retailer Energy Efficiency Scheme. Victoria has flagged an Energy Efficiency and Productivity Strategy and held an Energy Efficiency and Productivity Summit in 2015.

The Energy Efficiency Council (EEC) is Australia's peak body for energy efficiency, cogeneration and demand management. The EEC released a comprehensive Policy Handbook in support of the NEPP in mid-2016 and has called for a National Energy Efficiency and Productivity Agency (EEC, 2016). In relation to vulnerable household consumers, the handbook includes the following policy recommendations:

- Develop a national residential energy efficiency disclosure scheme
- Introduce minimum standards for rental properties
- Upgrade public and community housing
- Expand and review partnership programs to support vulnerable households
- Research and trial programs to encourage energy efficient building renovations
- Research and trial programs to improve the efficiency of multi-dwelling buildings

Following the introduction of mandatory standards for rental properties in the UK and New Zealand, resurgent interest in minimum energy performance standards for rental properties in particular is becoming evident in Australia (BSL et al, 2016). The NSW Government consulted on options to improve energy performance of tenanted homes, including minimum standards and incentives for landlords (OEH, 2016). The current review of the Victorian Residential Tenancies Act has also seen support for minimum standards of energy and water efficiency (Victoria State Government, 2016, p. 4).

Community Energy initiatives provide opportunities for households to engage more personally in meeting their energy needs and are continuing to test and evolve governance models³³. A national Community Energy Strategy was released in 2015 to develop a shared agenda to grow the Community Energy Sector in Australia. The *Renewables 4 All* advocacy project was funded by ECA and developed policy briefings on a range of topics that extend access to renewables to low-income and vulnerable households (CPA, 2016). The Queensland Disability Network Bright Sparks program is an example of peer education to engage a community of interest on energy market issues.

5.2.1 Recent modelling of future electricity consumption

The AEMO National Electricity Forecasting Report 2016 was released in June 2016 to provide electricity consumption forecasts over the 20 years to 2036. The projections incorporate a directive from the Council of Australian Governments (COAG) Energy Council that the contribution of the electricity sector should be consistent with national emission reduction targets: a 28% reduction from 2005 levels by 2030. For the 2016 NEFR, AEMO assumed the achievement of this target will be supported by energy efficiency trends (driven by the 40% improvement in energy productivity between 2016 and 2030 targeted by the National Energy Productivity Plan (NEPP)), rising electricity prices and retirements of coal-fired generators.

The 2016 NEFR is the first to project residential demand as a separate category and reveal a period of unprecedented reduction in per capita consumption. The forecasts assume 27% more residential connections over the 20 year forecast period. However, overall residential consumption from the grid is forecast to reduce by 16% in the 20-year forecast period (0.9% average annual change). Population growth and appliance uptake continue to drive increased consumption but their effect is more than offset by the forecasts for continuing investment in

³³ See for example the Coalition for Community Energy (C4CE)

rooftop PV and energy efficient appliances (See Figure 24, below).

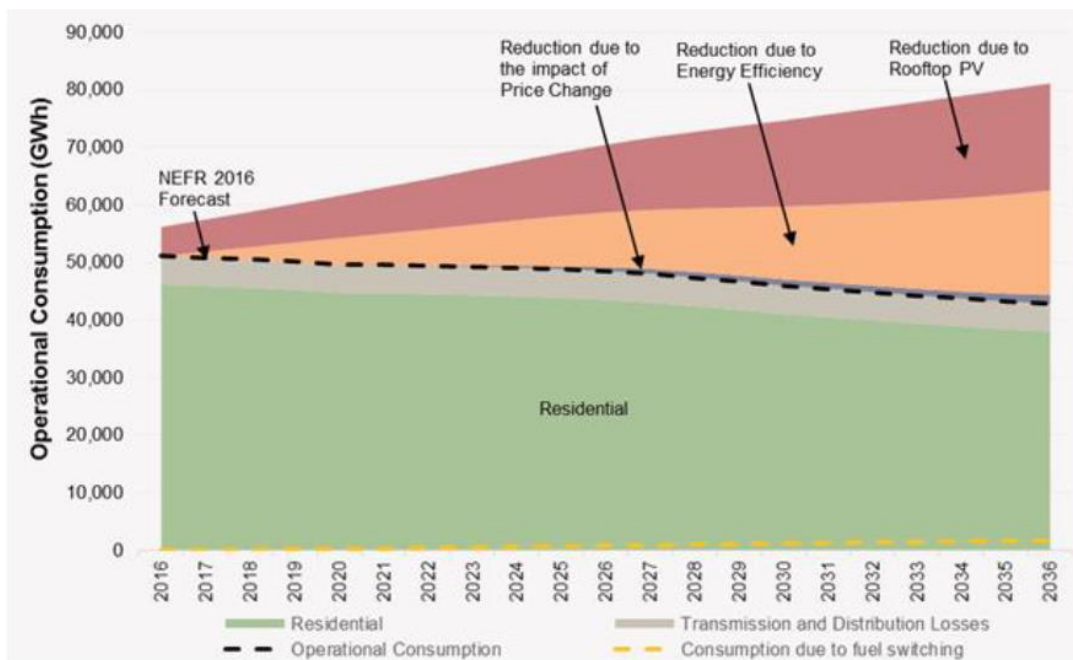


Figure 24: Residential operational consumption 2016-36, all NEM regions (Source: AEMO NEFR 2016 Figure 3)

5.3 Key Issues

This section distils key issues from stakeholder publications into four priority issues.

Consumption is influenced by a range of factors including the size, age and health of both the dwelling and the people in it, the equipment and appliances in use, the knowledge and information available to the household and their behaviours. The Australian Energy Regulator’s Energy Bill Benchmarking program commissioned research into the drivers of consumption from ACIL Allen Consulting in 2014 and 2017. The results of a nationwide survey and matching billing data confirmed the findings of regression analyses by others that the strongest indicator of annual consumption is the number of people in the household (Cao et al., 2014).

Looking forward, the timing of consumption is expected to become increasingly reflected in prices and hence costs. In this respect, consumption patterns – not just total consumption – will drive energy bills.

Dwelling energy performance has been the focus of a number of policy recommendations in recent times. This includes disclosure for all residential buildings and the setting of minimum standards for rental properties (ACF et al., 2007; EEC, 2016; SVDP, 2016a). A focus on overcoming the landlord-tenant split incentive in rental properties (public and private) has

been a recurring theme (ACF et al., 2007; KPMG et al., 2016; National Energy Affordability Roundtable, 2013). The 2010 report of the (then) Prime Minister's Task Group on Energy Efficiency stated (p 35):

In other sectors improvements will be difficult unless several barriers are removed simultaneously. For example, a low-income family in a rented home will need access to finance, removal of the split incentive, and information about what their options are before they can make changes to their energy use. Providing only one of these will not be enough. Faced with this combination, they may well decide that making any change is too hard... This range of experiences of the barriers to improving energy efficiency calls for an integrated strategy to remove multiple barriers so that measures to target specific barriers also work together effectively.

The landlord-tenant split incentive is a well-known principal-agent problem. The policy logic of minimum energy performance standards as a consumer protection measure could extend to the rental market. The policy challenge lies in developing a cost-effective response that doesn't put upward pressure on rents.

The following is a summary of recommendations from stakeholder literature relevant to vulnerable households and energy consumption:

- Overcoming landlord-tenant split incentives in rental properties (public and private).
- Regulation of dwelling energy performance - minimum standards for rental properties
- Regulation of dwelling energy performance - disclosure for all residential buildings at point of sale.
- Regulation of dwelling energy performance – tougher minimum standards for all new properties.
- Supporting access to Distributed Energy Resources for vulnerable households.
- Jurisdictions coordinating the development of NEM-wide awareness and engagement programs to make it easier for customers to access the best options for their circumstances and improve customer confidence in the energy markets (AEMC, 2016a).
- Coordination of state-based programs, incorporation of the implications of tariff reform and the pursuit of best practice
- Increased support for vulnerable households to access more efficient capital items
- Pursuing best practice in energy efficiency and productivity programs for vulnerable customers (including supporting ECA's *Power Shift* project)
- On-going funding for effective energy programs that target vulnerable consumers.
- A National Energy Efficiency and Productivity Agency

- The coordination of state-based programs, incorporation of the implications of tariff reform and the pursuit of best practice has been recommended by a number of stakeholders (EEC, 2016; National Energy Affordability Roundtable, 2013; Owen, 2013; SVDP, 2016a).

Recommendations have also been made to increase the support for vulnerable households to be able to access more efficient capital items such as large appliances (Chester, 2013; National Energy Affordability Roundtable, 2013; Simshauser et al., 2011b).

Energy Innovation thinktank the Rocky Mountain Institute cited Distributed Energy Resources for Low Income households as one of eight key electricity innovations to watch in 2017.

“In 2017, with the decrease in the costs of DERs coupled with smartphone-enabled engagement pathways (including pay-by-phone, electronic billing, and pre-pay), utilities, regulators, and others are revisiting whether they can serve these customers better with DERs than with subsidies.”

Locally, the STUCCO Student Cooperative provides an example of a consumer-led solar plus storage embedded network that lowers the electricity bills of 40 student residents. Public housing providers in NSW, QLD and SA have announced solar programs for public housing.

These recommendations have been distilled into four key issues.

- Understanding Load profiles and dynamic pricing
- Minimum energy performance standards of housing and appliances
- Best practice policies and programs (including access to efficient appliances)
- Distributed Energy Resources (DER)

Load profiles are analysed further in a case study of the impacts of cost reflective tariffs on three different households in order to illustrate the opportunities, and risks, of a redistribution of costs from the introduction of tariffs tied to peak demands.

5.4 Case Study: A tale of three households and a changing electricity market

The changes to the rules around network pricing and the ongoing introduction of smarter metering will redistribute the costs of electricity networks (around half of the typical household electricity bill) on a more ‘user pays’ basis. The AER has approved the first set of ‘cost reflective tariffs’ proposed by the NEM distribution businesses and they are largely similar: a monthly ‘peak demand’ charge has been added that applies to the maximum demand recorded in a half hour period.

This case study contrasts the implications of new ‘cost-reflective’ network tariff structures for three households – referred to A, B & C and shows quite different outcomes in each case. It also considers the network cost implications of adding solar power.

	Household A	Household B	Household C
Annual Consumption (kWh)	4,806	4,806	9,612
MD (kW)	5.7	3.6	5.5
Load Factor	10%	15%	20%
RSR tariff	\$ 833	\$ 833	\$ 1,621
MRD tariff	\$ 1,038	\$ 824	\$ 1,336
Change (RSR to MRD)	+ \$ 205	- \$ 9	-\$ 285
	25%	-1%	-18%

Table 3: Comparison of Network Charges between three example households under two tariff structures

The case study households are located in Adelaide, South Australia and are connected to the SA Power Networks distribution network. This example is therefore based on SA Power Networks new ‘MRD’ residential monthly demand tariff that will be available from July 2017. The analysis is based on half-hourly interval data for these households made available by SA Power Networks during consultation on their 2017-20 Tariff Structures Statement.

The new SA Power Networks tariff introduces a charge based on the household’s peak demand in each month. Peak demand is measured during the hours of 4-9PM local time every day. A seasonal component is based on Nov-Mar being the peak period and attracts a higher charge per kW of maximum demand per month than for the ‘shoulder’ period of April to October.

This case study is intended to be illustrative rather than predictive or comprehensive – a range of consumption patterns exist and will result in a diversity of outcomes. It is however a valid example using actual consumption patterns in context.

To the extent that the new network tariffs are more ‘cost reflective’ than the historic consumption-based tariffs, the different cost outcomes for these two households must also reflect a ‘cross subsidy’ currently in existence in the present consumption-based charging for use of the network. In terms of electricity network charges (approximately 50% of the typical bill), a ‘cross subsidy’ exists when the revenue collected from a customer or group of customers is insufficient to cover the cost to serve these same customers. A cross-subsidy is then paid by other customers to cover this shortfall by charging these other customers more

than their cost to serve.

There are two principal customer attributes that are drivers of network costs and hence two principal sources of cross subsidies in residential electricity pricing – Location and Peak Demand. These are discussed further in a section on cross subsidies.

5.4.1 Understanding load profiles

Household energy consumption is influenced by a range of factors including the size, age and health of both the dwelling and the people in it, the equipment and appliances in use, the knowledge and information available to the household and their behaviours.

As stated above, the timing of consumption is expected to become increasingly reflected in prices and hence costs. In this respect, consumption patterns – not just total consumption – will drive energy bills.

Simshauser & Downer (2014) analysed consumption patterns for households on AGL Energy’s hardship program and observed higher than average total consumption (approximately one-third more) but with consumption patterns that were less ‘peaky’ than the average (an increase in average maximum demand of approximately 20%) and lower cost to supply under some cost reflective tariffs. This is illustrated in **Figure 25**:

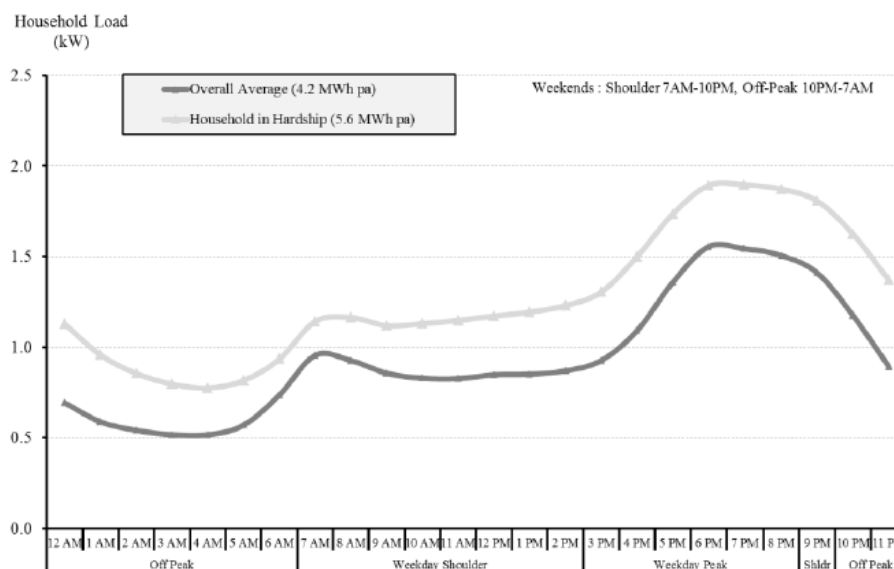
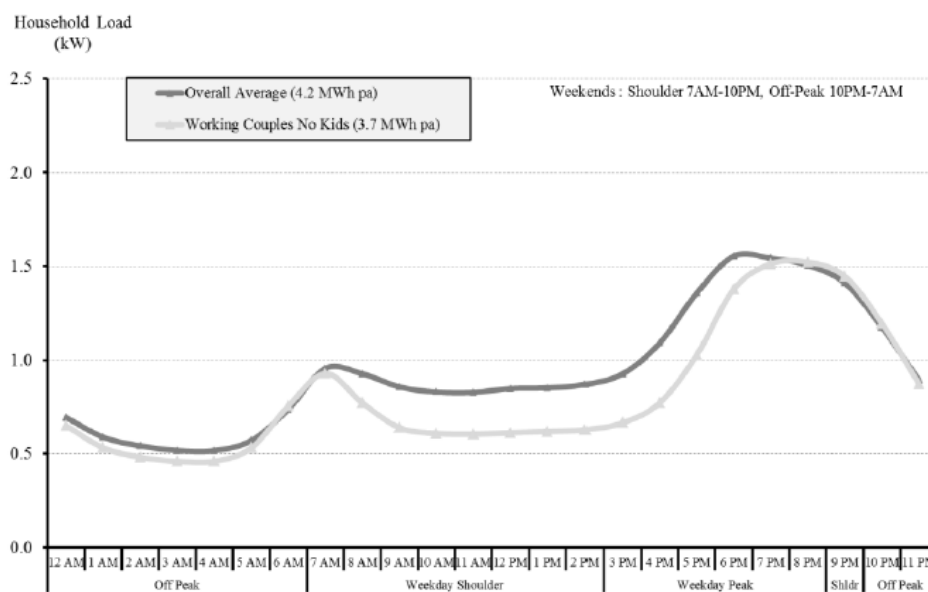


Figure 25: Annual average weekday load curve: Household in Hardship (Source: Simshauser & Downer 2014 Figure 6)

Recent analysis by ESC Victoria confirms that hardship customers tend to consume around twice the average volume of electricity (ESCV, 2016). Customers on retailer hardship

programs represent less than 1% of residential customers (AER, 2017a) and are not necessarily representative of all customers considered vulnerable. It is also not possible to conclude whether higher than average consumption is due to poor efficiency, poor quality housing or simply from having a large number of people in the household.

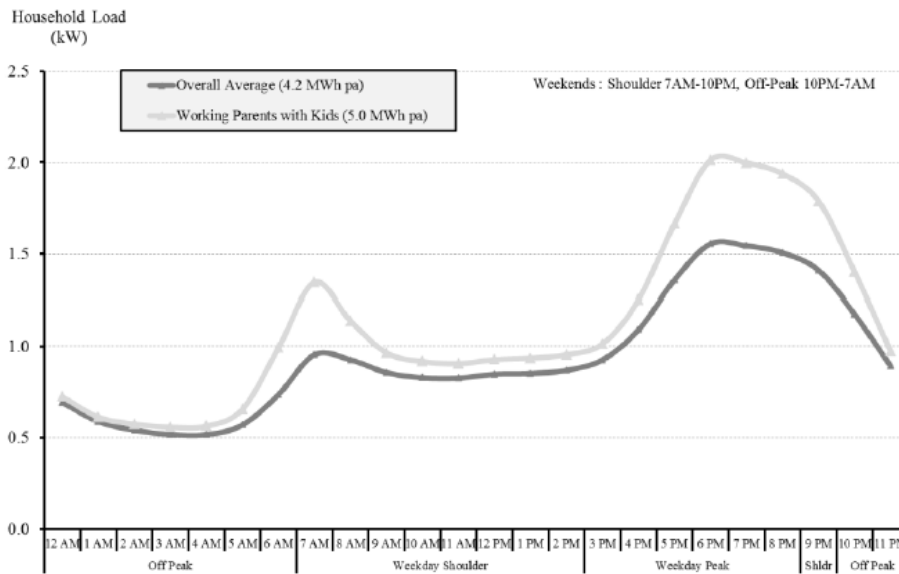
The research by Simshauser & Downer (2014) also developed indicative load profiles for a number of household types. These are reproduced below. Of particular interest is the similar shape in each case. The profile of Figure 26 shows the consumption of a household that is rarely occupied during the day – clearly consuming less during school and business hours but not necessarily having lower peaks in the morning or evening.



Source: AGL HANA.

Figure 26: Annual average weekday load curve: Working couple NO kids (Source: Simshauser & Downer 2014 Figure 3)

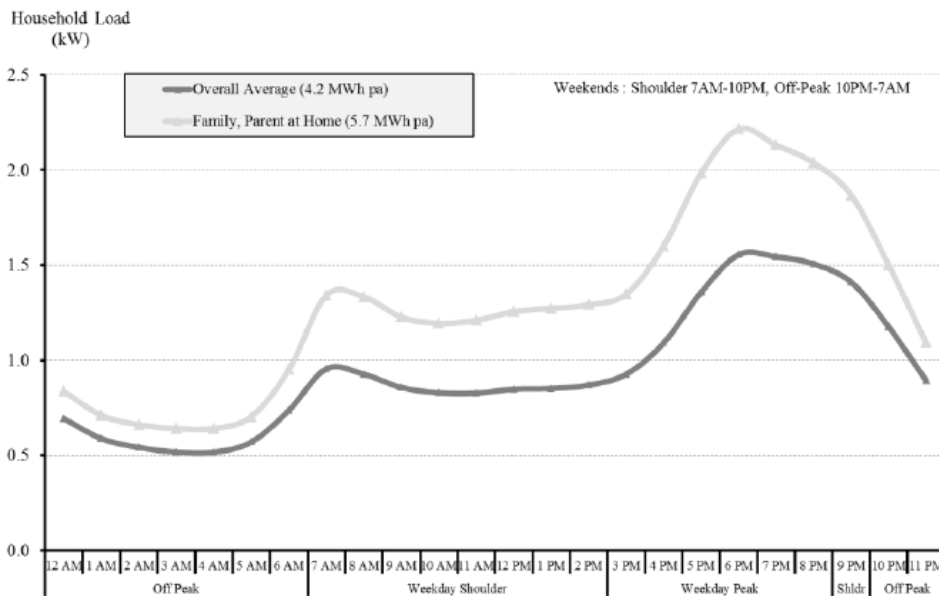
Figure 27 illustrates the impact of adding children to the profile. Here, the intensity of consumption around mealtimes becomes quite pronounced.



Source: AGL HANA.

Figure 27: Annual average weekday load curve: Working parents with kids (Source: Simshauser & Downer 2014 Figure 4)

Figure 28 illustrates the impact of having the home occupied during the day: a similar shape but with more of a bridge between the morning and evening peaks.



Source: AGL HANA.

Figure 28: Annual average weekday load curve: Family, parent at home (Source: Simshauser & Downer 2014 Figure 5)

Figure 29 illustrates an average profile for concession and pensioner households that has obvious similarities to the others but with less pronounced peaks in the morning and evening.

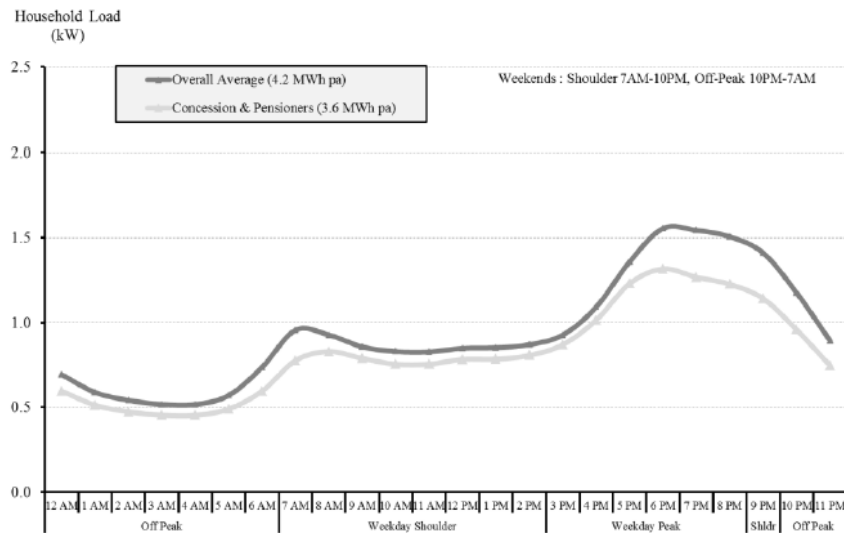
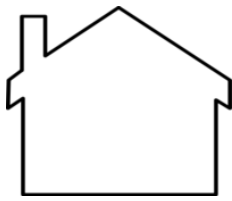


Figure 29: Annual average weekday load curve: Concession & Pensioner Households (Source: Simshauser & Downer 2014 Figure 7)

These average profiles are of interest but will inevitably hide a level of detail. The following section takes the actual consumption profiles of three households and examines the impact of different load profiles on the energy bills under new, cost reflective network tariffs.

5.4.2 The case-study households



Household A is understood to be a ‘working family’ that uses reverse-cycle air-conditioning for cooling and heating. This results in a relatively peaky consumption pattern at the end of each day as illustrated in the average load profiles of **Figure 30** for the peak demand charging months of November to March and, even more so in the average load profiles for what SA Power Networks refer to as the *Shoulder* demand months of April to October. Household A has a relatively low ‘load factor’ – the ratio of average to peak demand – of 10%.

Summary	Household A
Annual Consumption (kWh)	4,806
MD (kW)	5.7
Load Factor	10%
Network Charges 17/18 RSR	\$ 833

Table 4: Network cost summary, Household A

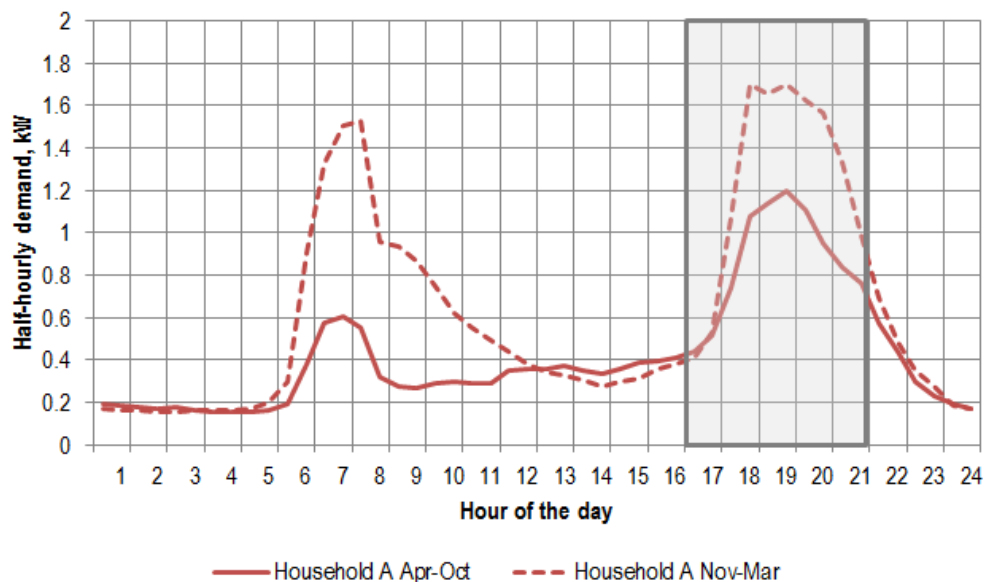
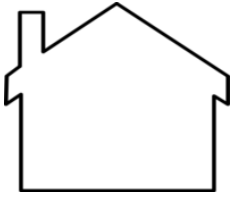


Figure 30: Average daily load profile across 48 half-hour intervals Nov to Mar vs Apr-Oct – Household A



Household B is understood to be occupied during the day and uses an evaporative cooler and gas for heating. This results in a relatively flat consumption pattern with an, on average, increase in electricity use around the early evening. Household B has a relatively average 'load factor' – the ratio of average to peak demand – of 15%.

Summary	Household B
Annual Consumption (kWh)	4,806
MD (kW)	3.6
Load Factor	15%
Network Charges 17/18 RSR	\$ 833

Table 5: Network cost summary, Household B

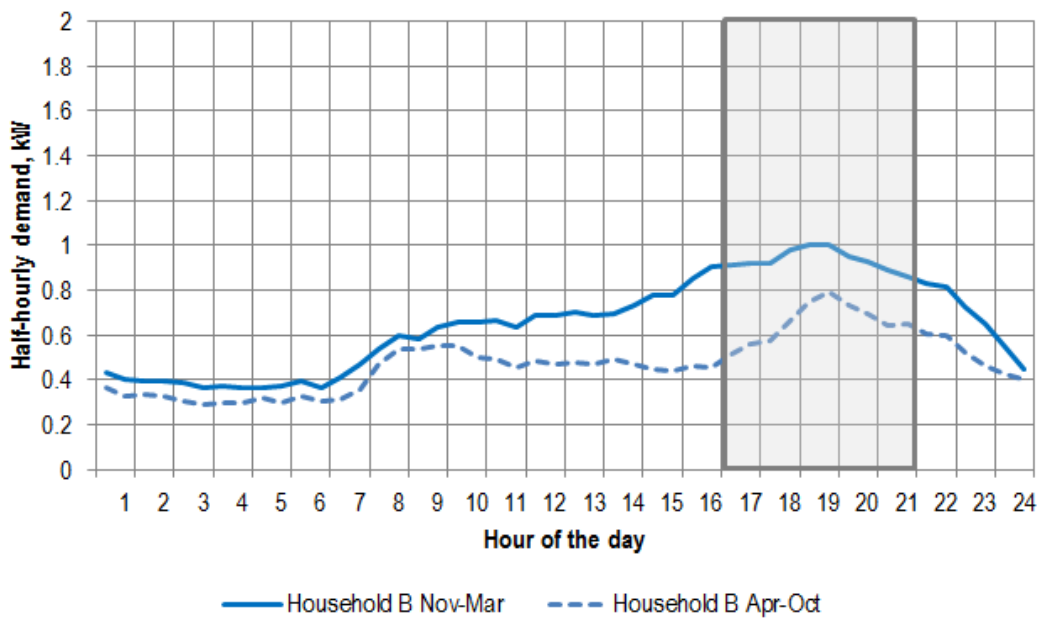
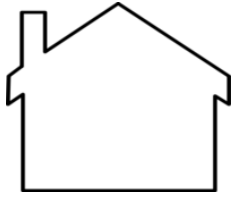


Figure 31: Average daily load profile across 48 half-hour intervals Nov to Mar vs Apr-Oct – Household B



Household C is understood to be an all-electric home with ducted reverse cycle air conditioning. This results in an average load that is higher overnight than during the day during the winter months. Household C has a relatively high 'load factor' of 20%.

Summary	Household C
Annual Consumption (kWh)	9,612
MD (kW)	5.5
Load Factor	20%
Network Charges 17/18 RSR	\$ 1,621

Table 6: Network cost summary, Household C

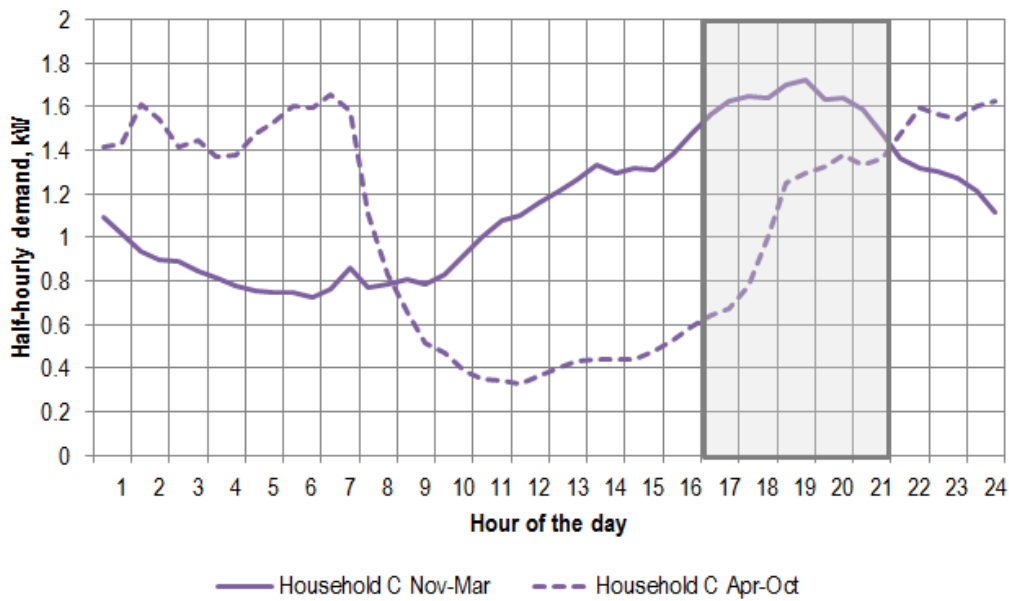


Figure 32: Average daily load profile across 48 half-hour intervals Nov to Mar vs Apr-Oct – Household C

Combined, these diverse seasonal profiles for the three households are shown below:

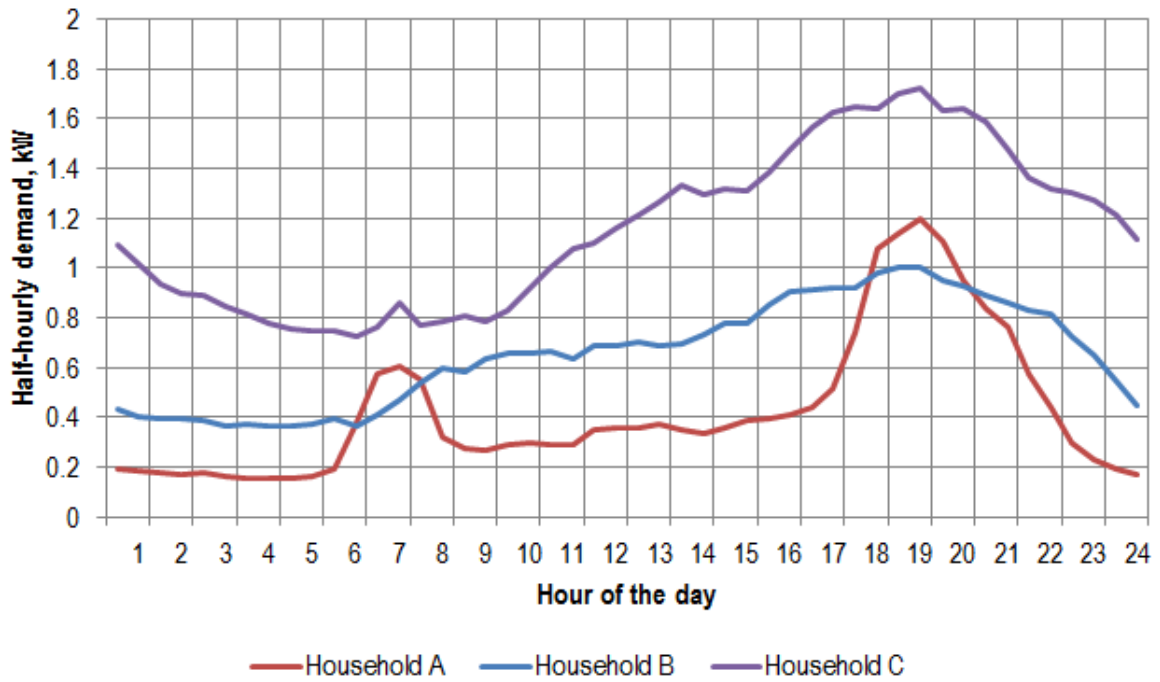


Figure 33: Average daily load profile across 48 half-hour intervals: Summer months of Nov to Mar – Households A, B and C

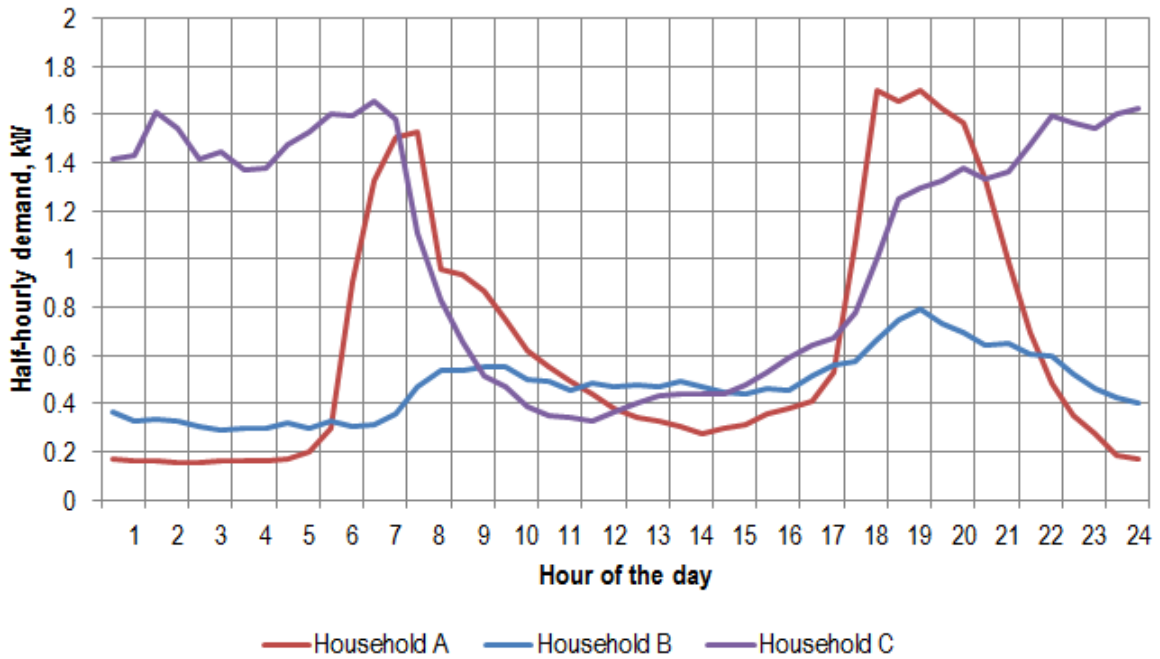


Figure 34: Average daily load profile across 48 half-hour intervals: Winter months of April-October – Households A, B and C

5.4.3 Methodology overview

A full year's consumption data for these three households has been used to determine the network charges payable under SA Power Networks standard residential tariff and their new cost reflective monthly demand tariff. The consumption data has been provided as a time series of half-hourly consumption (expressed as kW over the half hour) from 2013-14.

The impact of solar on each load profile and the network charges payable is evaluated by adding a synthetic annual time-series of solar PV production for Adelaide using the PVWatts® calculator from the US National Renewable Energy Laboratory (NREL). A simple spreadsheet tool is then used to combine the consumption and solar time series and develop the net load presented to the grid.

In order to allow for like-for-like comparisons of outcomes, the consumption profile of Household A has been scaled up from its original 4,100 kWh pa to the 4,806 kWh of Household B (approx. the mean consumption of households in SA). Importantly this preserves the relationship between kW and kWh. Household C has been scaled from the original 11,271 kWh pa to 9,612 kWh – exactly double that of Households A and B.

5.4.4 The new tariffs

The first round of *Tariff Structure Statements* have been approved by the AER and a summary of the initial residential pricing structures is included in Table 7.

The basic tariff structure is similar in most cases. A simplified representation of the tariff is:

$$NUoS = S + P1 * kW + P2 * kWh$$

Where:

NUoS = the aggregate network charge payable by the customer per month (\$ per month)

S = a fixed supply charge (\$ per day)

P1 = a price charged per kW of the maximum demand recorded during a specified charging window on specified days of the week during the month in question (\$/kW)

P2 = a price charged per kWh of consumption during the month in question (\$/kWh)

As will be demonstrated for the households of the case study, the difference in outcomes pivots on the relationship between 'kW' and 'kWh': the lower the 'kW' for a given 'kWh', the

lower the costs under these new tariff structures. This is a central concept when developing public policy on energy consumption and energy affordability for vulnerable households in the future electricity market.

Region	2017/18 Indicative Prices	Fixed \$ pa	Demand \$/kW/mo		Usage c/kWh	Demand Charge Window		
			Peak	Other		Time of Day	Days of Week	Months
QLD	Energex	\$ 138.70	\$ 7.97		4.278	4-8PM	weekdays	all. Cap of 5KW in first 12 months
	Ergon	min 3kW off peak = \$306.18	\$ 80.06 East; \$200.54 West	\$ 11.34 East; \$17.10 West	1.738	3-9.30PM	every day	Jan-Mar average of max demand on top four days per month. Other months = min 3kW
SA	SAPN	\$ 141.62	\$ 11.86	\$ 5.87	6.1	4-9PM	every day	Nov-Mar
VIC	Citypower	\$ 85.00	\$ 8.57	\$ 2.93	3.56	3-9PM	working weekdays	Dec-Mar
	Powercor	\$ 125.00	\$ 10.61	\$ 3.54	3.58	3-9PM	working weekdays	Dec-Mar
	Jemena	\$ 29.87	\$ 4.92		4.772	3-9PM	working weekdays	all year
	Ausnet Services	\$ 105.00	\$ 8.97	\$ 2.25	7.6	3-9PM	working weekdays	deferred to 2018
	United Energy	min 1.5 kW = \$112.50	\$ 9.29	\$ 4.07	3.327	3-9PM	working weekdays	Dec-Mar
ACT	ACTEW AGL	\$ 124.10	\$ 5.78		6	7-9AM and 5-8PM every day	every day	all year
TAS	TasNetworks	\$ 199.06	\$ 9.35	\$ 3.11	0	Peak (7-10AM and 4-9PM weekdays) and Off-Peak demand with no kWh charges	weekdays	all year
NSW	Essential	\$ 259.89	\$ 4.975 per kVA	-	5.852 / 4.485 / 2.519	Peak/Shoulder/Off Peak: Peak = 5pm to 8pm; Shoulder = 7am to 10pm weekdays unless peak applies; Off peak = all other times	weekdays	all year
	Endeavour	\$ 142.35	-	-	14.01 / 9.27 / 5.56	Peak/Shoulder/Off Peak:	working weekdays	all year
	Ausgrid	\$ 155.02	-	-	26.6 / 5.48 / 2.81	Peak/Shoulder/Off Peak: Peak = 2pm to 8pm in summer, 5pm to 9pm in winter ; Shoulder = 7am to 10pm every day unless peak applies; Off peak = all other times	working weekdays	Peak = Nov-Mar + Jun-Aug

Table 7: New residential tariffs being offered in 2017 in each NEM jurisdiction

5.4.5 Tariff outcomes

The network tariffs used for the comparison are those proposed by SA Power Networks and approved by the AER for South Australian residential customers in 2017-18. These are:

RSR – Residential Single Rate. This is the default tariff option and is a two-part inclining block tariff with a fixed supply charge of \$0.4268 per day or \$155.78 pa (including GST). The first 4000 kWh per annum is priced at \$0.1364 per kWh, consumption in excess of 4000 kWh per annum is priced at \$0.1639 per kWh

MRD – Monthly actual kW Demand. This is an opt-in tariff that charges the same fixed supply charge as RSR but includes a monthly peak demand charge (measured as the highest half-hourly demand between 4pm and 9pm local time) priced at \$0.429 per kW per day for

November to March and approximately half that rate, \$0.2123/kW per day, for the seven months from April to October each year. A volume charge of \$0.0671/kWh also applies.

The interval data for the two households was interrogated to determine the charging parameters for each tariff. In both cases, since their annual consumption is scaled to be identical, their network charges under RSR is \$833 ea.

On the MRD tariff, Household A sees quite an increase in network charges: up 25% to \$1038 while Household B experiences a small 1% decrease to \$824. This is due to the higher monthly maximum demand for Household A of close to 5 kW compared to Household B’s 3 kW.

	Household A	Household B	Household C
Annual Consumption (kWh)	4,806	4,806	9,612
MD (kW)	5.7	3.6	5.5
Load Factor	10%	15%	20%
RSR tariff	\$ 833	\$ 833	\$ 1,621
MRD tariff	\$ 1,038	\$ 824	\$ 1,336
Change (RSR to MRD)	+ \$ 205	- \$ 9	-\$ 285
	25%	-1%	-18%

Table 8: Comparison of Network Charges between four example households under two tariff structures

It is also worth noting that the combined network charges under the two tariff options yield quite similar totals for these examples (\$ 3,288 on RSR vs. \$ 3,198 on MRD) but the reallocation of costs away from Household C to Household A is obvious in Figure 35:

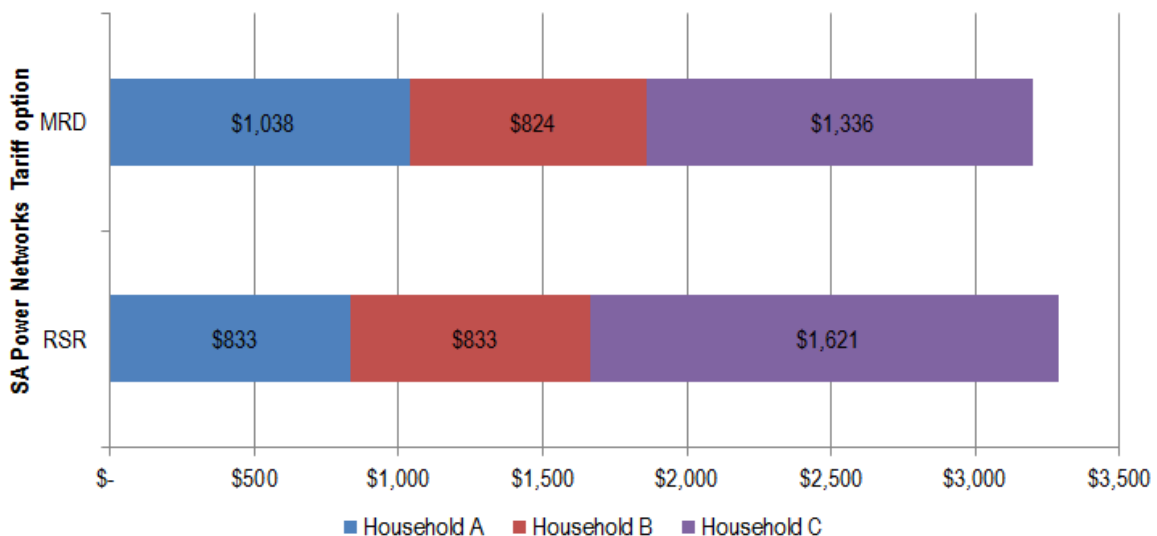


Figure 35: Network Charges incurred under two tariff structures by four example consumption patterns

The outcome of transferring households A and B to the new MRD tariff and without any changes to consumption patterns is to go from paying identical network charges to a difference in costs of \$214 per annum – 26% of the \$833 payable under the consumption based tariff RSR.

The only different parameter for these two households is the measure of monthly maximum demand. The billable demand quantities for each household are shown in **Figure 36**, where the seasonal peaks of Household A and C suggest a strong influence from heating and cooling equipment in both cases.

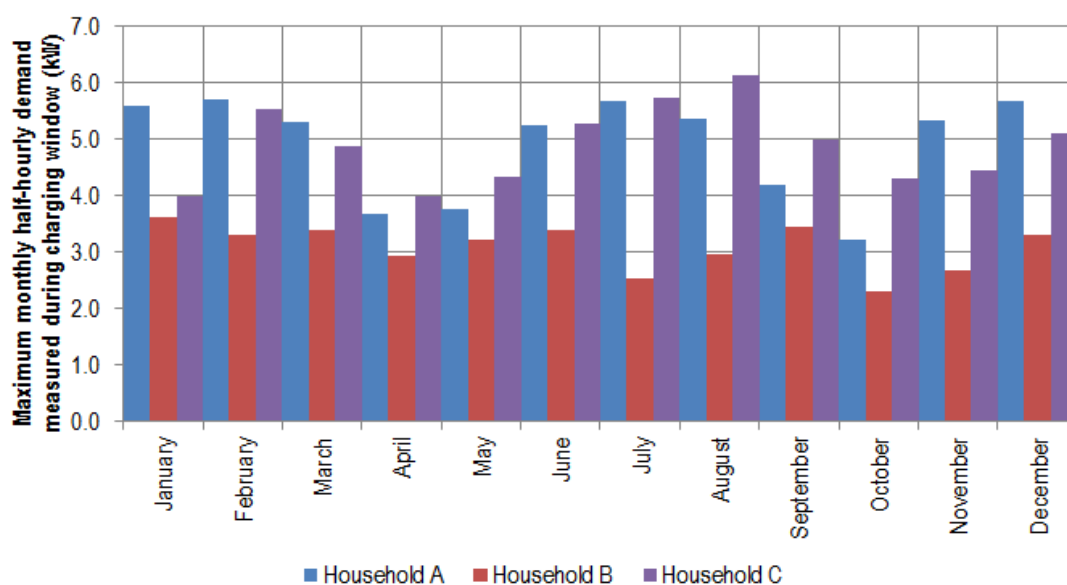


Figure 36: Maximum monthly half-hourly demand measured 4-9PM 2013-14 – Households A, B & C

Household A and C have very similar monthly peak demand but C has twice the annual consumption of A. Under the RSR tariff, C pays almost double that of Household A (+ 95%) but under the MRD demand tariff, C pays only 29% more than A. The effective ‘average price’ per kWh for Household A is nearly 22c/kWh whereas for D the effective average price is around two-thirds that at 14c/kWh.

For our two households with identical consumption A & B, B has a peak demand³⁴ of around 64% of A and ends up paying 80% of the network charges of A.

This represents a significant redistribution of costs and, if these tariffs are indeed ‘cost reflective’, must represent an unwinding of a cross subsidy. However, both customers now

³⁴ Represented by the energy consumed across a half-hour measurement interval and expressed in kW

also face the same ‘cost of capacity’ for future investments in the form of the \$/kW per month demand charge. This is intended to reflect the long run marginal cost of expanding the electricity network and ensure that consumers see the true cost of expanding the network to meet any new demand (such as a new airconditioner). A more ‘user pays’ approach as intended.

The following chart shows that by annualising the demand charges (seasonal charges are averaged over the year), the tariffs signal a year-round average ‘cost of capacity’ in the residential market of between \$50 and \$120 per kW per annum depending on which distribution network you connect to. Note that TasNetworks sends the strongest signal in that regard but does so with without any consumption charges. All of the other businesses also charge a c/kWh component.

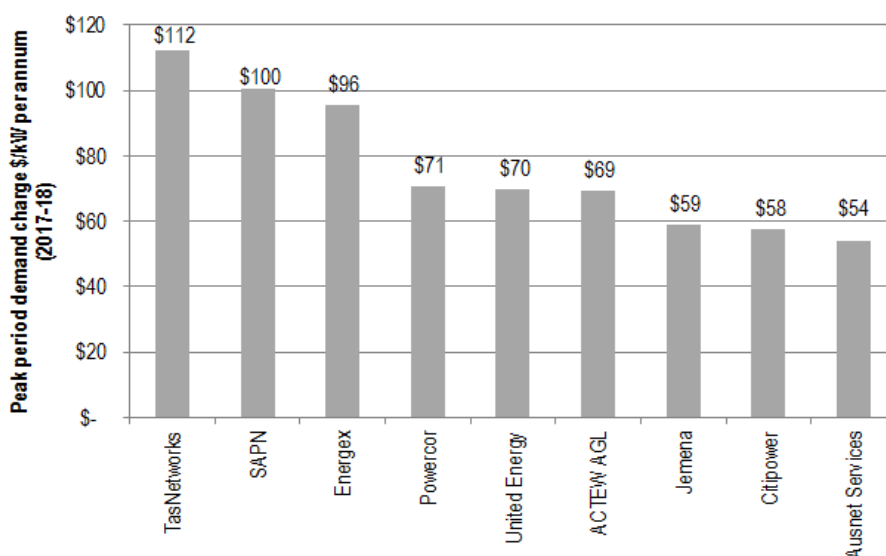


Figure 37: Annualised demand charges 2017-18 NEM Distribution Network Service Providers (\$/kW)

The AER has approved these tariffs and uptake will be on an opt-in basis until 2020 at least. The uptake of tariffs over this time-frame will provide insights as to the appetite of households and retailers to embrace their potential.

Next, the impact of each of these households adding solar is investigated.

5.4.6 The impact of solar on bills under a demand tariff

In this section, the impact on consumption patterns of adding a 2kW solar array to each dwelling is investigated. An annual time-series of solar PV production for Adelaide has been generated from PVWatts® and netted off the load profiles to simulate the effect of adding 2kW of solar PV to each case. The PVWatts® time series includes the hour by hour, day to day

and seasonal variations in output that would be expected in a real installation.

The average annual daily electricity profile for the two households and a 2kW solar system (facing North inclined at 30°) are shown below in Figure 38 for the peak demand charging months of November to March and for the shoulder months of April to October in Figure 39:

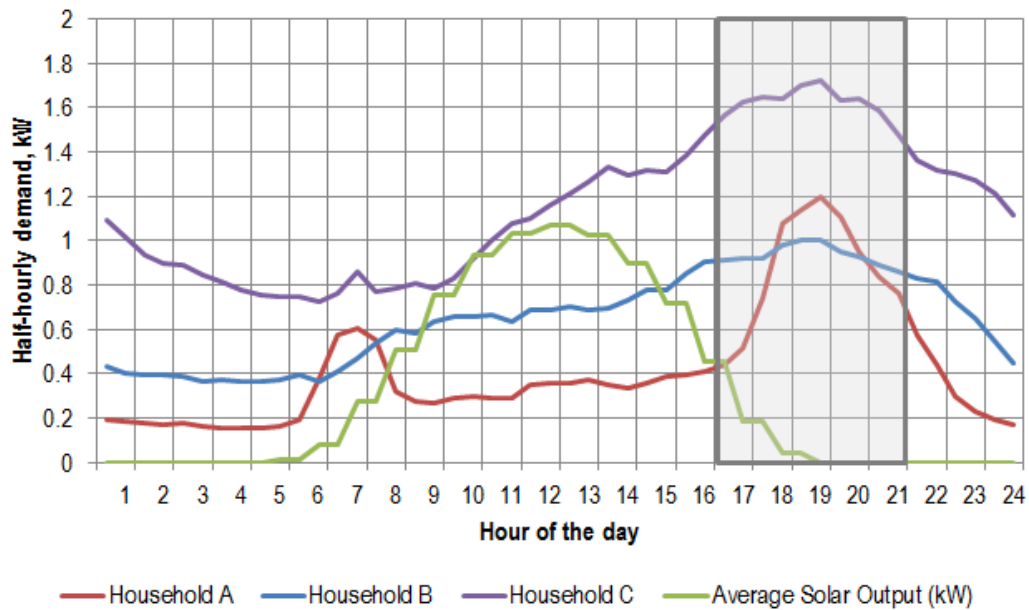


Figure 38: Average daily load profile across 48 half-hour intervals: Nov to Mar – A, B and C

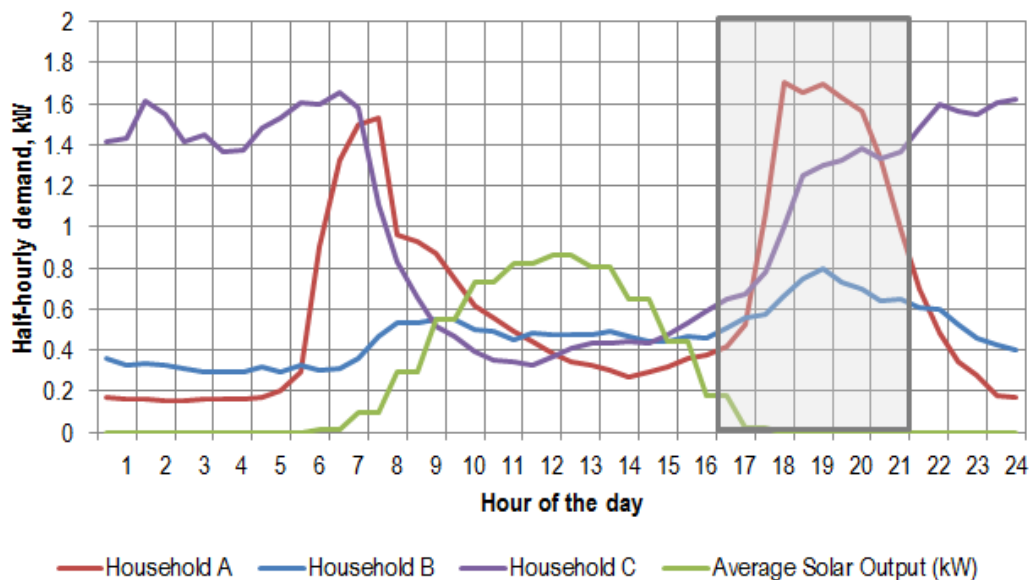


Figure 39: Average daily load profile across 48 half-hour intervals: April-October –A, B and C

Household A and B consume 4,806 kWh per annum. Household C consumes twice as much. With the same 2kW solar array, analysis of load profile interaction shows that for the data analysed:

- Household A: grid consumption reduces by 18% and 'self-consumption' is 36% of the solar output,
- Household B: grid consumption reduces by 31% and 'self-consumption' is 62%
- Household C: grid consumption reduces by 11% and 'self-consumption' is 46%

Clearly, Household B is best able to make use of this solar power system – even more so than Household C since even though C has twice the consumption, this is largely overnight and unable to utilise the solar production without energy storage. The impact on network charges under each tariff (RSR and MRD) is then compared in Table 9. The impact of solar under the demand tariff in each case is less than half that under the exiting tariff structure.

	No Solar		2kW solar		Impact of 2kW	
	RSR	MRD	RSR	MRD	RSR	MRD
Household A	\$ 833	\$ 1,038	\$ 694	\$ 977	-\$ 140	+\$ 61
Household B	\$ 833	\$ 824	\$ 609	\$ 723	-\$ 224	-\$ 101
Household C	\$ 1,621	\$ 1,336	\$ 1,441	\$ 1,260	-\$ 180	-\$ 76

Table 9: Comparison of Network Charges under two tariff structures and with 2kW solar

The misalignment of the solar profile and Household A's profile evident in Figure 38 and the poor 'self-consumption' of 36% is reflected in the impact on network charges for Household A:

- A 2kW solar array on Household A would see a 20% reduction in Network Charges on the RSR tariff to \$ 694.
- A 2kW solar array on Household A would see a 6% reduction in Network Charges on the MRD tariff to \$ 977
- Adding 2kW of solar and changing to the demand tariff would increase network charges by 17% for Household A – approximately \$144

The relatively better alignment of the solar profile and Household B's profile evident in Figure 38 and Figure 39 is reflected in the relative impact on network charges for Household B:

- A 2kW solar array on Household B would see a 37% reduction in Network Charges on the RSR tariff to \$609.
- A 2kW solar array on Household B would see a 13% reduction in Network Charges on the MRD tariff to \$723
- Adding solar and changing to the demand tariff would decrease network charges by 13% for Household B – approximately \$110 per annum.

The alignment of the average solar profile and Household C's average profile in Figure 38 appears to be quite good but detailed analysis shows relatively modest impacts on network charges:

- A 2kW solar array on Household C would see a 12% reduction in Network Charges on the RSR tariff to \$1441.
- A 2kW solar array on Household C would see a 6% reduction in Network Charges on the MRD tariff to \$ 1260
- Adding 2kW solar and changing to the demand tariff would decrease network charges by 22% for Household C - approximately \$ 362 per annum.

Interestingly, doubling the size of the solar PV system does not double the reduction in network charges:

- A 4kW solar array on Household C would see a 20% reduction in Network Charges on the RSR tariff to \$1348.
- A 4kW solar array on Household C would see a 9% reduction in Network Charges on the MRD tariff to \$ 1260
- Adding 4kW solar and changing to the demand tariff would decrease network charges by 25% for Household C - approximately \$ 401 per annum.

In terms of network charges, the same solar system delivers a better financial return to Household B than either A or C. It is also clear that solar does little to improve the consumption profile of Household A.

5.4.7 Implications

The AER has approved these tariffs and uptake will be on an opt-in basis until 2020 at least. The uptake of tariffs over this time-frame will provide insights as to the appetite of households and retailers to embrace their potential.

Simshauser & Downer (2014) argue that many customers on retailer hardship programs would in fact see a reduction in costs under cost reflective network pricing. Our Household C is an example of that. However, as demonstrated, our Household A is an example of a household with only median consumption that is likely to see significant increases. If Household A was already vulnerable and unable to afford any further increase in energy bills, what could be done to change their consumption patterns to be more like B or C and lower their bills? Are these measures cost effective? Do they require access to capital? These and

other questions will need to be answered in order to inform future policies geared towards the consumption patterns of vulnerable households.

Given the variation in cost impacts from the case studies, the establishment of a set of 'benchmark' load profiles would be a useful addition to the tools available to policymakers and consumers seeking to understand the distributional impacts of tariff reforms. It is understood that the CSIRO selected sample customer load profiles for the Network Transformation Roadmap (CSIRO, 2017) from the *Solar Cities* program and this may be a reliable place to start.

Cross subsidies

In terms of electricity network charges (approximately 45% of the typical bill), a *cross subsidy* exists when the revenue collected from a customer or group of customers is insufficient to cover the cost to serve these same customers. A *subsidy* is then paid by other customers to cover this shortfall by charging these other customers more than their cost to serve. To the extent that the new network tariffs are more 'cost reflective' than the historic consumption-based tariffs, the different cost outcomes for these two households must also reflect the *cross subsidy* in existing consumption-based charges.

There are two principal customer attributes that are drivers of network costs and hence two principal sources of cross subsidies in residential electricity pricing – Location and Peak Demand:

- Location: Customer density underpins the average 'cost to serve' of any given customer. Terrain and climate also contribute to location specific costs. Regional and remote customers are inherently costlier to serve than metropolitan customers due to the lower density of customers and the distances involved. 'Statewide', 'postage stamp' or 'country equalisation' pricing policies aim to limit the differences in pricing within network regions and are a common policy measure in Australia. However, there is often a trade-off in terms of reliability for regional and remote customers which should be considered in any evaluation of policies.
- Peak Demand: Capital expenditure on network capacity is a key driver of network charges and is driven by coincident demand from customers. Some customers contribute to coincident demand more than others yet pay via tariffs based on accumulated consumption regardless of when it was consumed. In the residential context, differences in peak demand are often attributable to choices around heating and cooling (most regions

are summer peaking and hence driven by cooling demand) and, more recently, solar PV.

The changes to the rules around network pricing and the ongoing introduction of the metering that enables tariff reform will enable the unbundling of these cross subsidies over time. The first round of tariffs developed under the rule changes are shown in Table 7 and have focused on maximum demand. No explicit targeting of locational cost differences within distribution areas has been proposed so far.

Solar

These example profiles also demonstrate the difference in impacts on consumption patterns and network costs from solar. The impact on costs of solar under the demand tariff in each case is less than half that under the existing tariff structure. The limited impact of solar on the level of maximum demand recorded for each month results in reduced savings compared to the impact where reduced overall consumption is rewarded. The extent to which this is considered more cost reflective is likely to be controversial. The AER has proposed further work in relation to the charging windows and the 30-minute measurement interval (AER, 2017b, p. 67) and this may moderate concerns.

5.5 Policy Formulation

Priority issues can be summarised as:

- Energy performance standards of housing and appliances
- Best practice policies and programs (including access to efficient appliances)
- Understanding Load profiles and dynamic pricing
- Distributed Energy Resources (DER)

Policy formulation for this outcome must reflect these key issues and the analysis herein.

5.5.1 Priority issue 3.1: Split incentives in rental housing

The pursuit of mandatory disclosure of energy performance at point of sale or lease is not as important to many vulnerable households as ensuring a minimum standard is met. For many households, the affordability of rent, urgency of need and other priorities are likely to override the decision making benefits of mandatory disclosure. It is recommended that MEPS for rental housing become a priority measure of the National Energy Productivity Plan. An independent review of the *Greenhouse and Energy Minimum Standards Act 2012* (GEMS Act) was announced

in January 2018 and this is a key opportunity to advance this issue (CoA, 2018).

5.5.2 Priority issue 3.2: Energy productivity programs

Community scale energy efficiency programs have been part of the Australian energy policy landscape since the early days of energy market reform. An opportunity exists to embrace the context of change in the market – including tariff reform – to recast these programs as energy productivity and learn from past projects. Smart meters and battery storage are providing options for programs not previously feasible. Alignment with jurisdictional energy efficiency schemes should be a policy priority alongside creating opportunities for low income households to access more efficient capital items such as major appliances.

It is recommended that ECA be assigned responsibility for curating and interpreting all energy consumption programs from around Australia. The ECA *Power Shift* project is an important current initiative in this regard building an evidence base of what works. Expanding the scope to state-based initiatives would enhance the value of the research. Stability of funding for future programs is an issue that needs national consideration and the ECA role will provide evidence for an informed debate.

5.5.3 Priority issue 3.3: Consumption patterns

The finalisation of the first round of cost reflective network tariffs provides an opportunity to test for risks and opportunities from tariff reform. However, the lack of a reliable set of consumption profiles is a barrier to comparative analysis and policy formulation. CSIRO have initiated work in this area as part of the Network Transformation Roadmap and this information would complement the consumption benchmarks already produced by the AER.

It is recommended that AER's bill benchmarking work be expanded to develop benchmark consumption profiles.

5.5.4 Priority issue 3.4: Distributed Energy Resources

Distributed Energy Resources (DER) have the potential to be the distinction in a two-tier energy market. Without careful pricing, DER can exacerbate cross subsidies and shift costs onto already struggling households. Comprehensive policy in this regard needs to balance twin objectives of encouraging access to DERs for vulnerable households while minimising the shifting of costs on to those unable to afford it. This is a vulnerable customer priority policy area with links to tariff reform and concession reform.

Recommendation 6.6 of the Finkel Review was for CoAG Energy Council to (Finkel et al.,

2017, p. 25):

... engage with relevant portfolio areas including housing, and with state, territory and local governments, to identify:

- *Opportunities to accelerate the roll out of programs that improve access by low income households to distributed energy resources and improvements in energy efficiency.*
- *Options for subsidised funding mechanisms for the supply of energy efficient appliances, rooftop solar photovoltaic and battery storage systems for low income consumers.*

It is recommended that Energy Consumers Australia commission further research into the risks and opportunities for vulnerable consumers from DER and keep this issue on the CoAG Energy Council agenda.

5.6 Chapter Summary

This chapter has considered policies that affect the **energy consumption** of households. Australia's National Energy Productivity Plan is the centrepiece but activities occur at state and local government levels as well. Governance of activities in this space tends to fall on state and territory energy or environment departments. Concerted policy leadership is missing: there is no obvious champion of energy productivity programs for low income and vulnerable households. Energy Consumers Australia is well placed to coordinate this work.

Distributed Energy Resources (DER) are technologies such as solar power, batteries, electric vehicles, smart meters and home energy management systems that can be 'orchestrated' to shift demand and lower costs. These DERs and dynamic pricing are emerging as the potential drivers of a 'two tier' electricity market and the implications for vulnerable households warrants further research and policy development.

Energy consumption policies also have a consumer protection aspect in the form of minimum energy performance standards for new housing, equipment and appliances. Analysis supports the extension of this approach to rental housing to protect many vulnerable households. Consumer protection more broadly is the subject of the next chapter, Chapter 6.

6 Policy outcome: Robust Consumer Protection

6.1 Introduction

This chapter discusses the essential service nature of electricity and presents the rationale for why **robust consumer protections** are a critical policy outcome. Disconnection of electricity or gas due to unpaid bills is a reality for an increasing number of households despite concerted efforts to make this a measure of 'last resort'. New technologies and financial products are challenging existing frameworks. Current policies and programs aimed at vulnerable households have not been designed with the current and future energy markets in mind (Kemp et al., 2015). This creates a need for a policy refresh and an opportunity to make progress toward a coordinated national framework.

As is the case for each of the five chapters covering the key policy areas of the consumer safety net, this chapter presents four stages of a policy cycle. A *Policy Review* presents current initiatives seeking to provide consumer protection in energy markets at national and jurisdictional levels. COAG Energy Council, AEMC and AER have strategic priorities aligned with this policy objective. This policy outcome also interacts with Australia's Consumer Policy framework and Law (also see Section 2.3.3). In summary, policy settings are in a review phase as they seek to remain effective and efficient in a changing market.

Key Issues are distilled from the analysis and stakeholder publications in the second stage. These include:

- Levels of energy debt and disconnection are growing, and a growing number of households are being observed with levels of ongoing energy costs plus arrears that are unaffordable. For these households disconnection is inevitable without policy intervention.
- New products and services are blurring the lines between energy consumer protections and the general protections of Australian Consumer Law. Reviews are underway but policy direction is not yet clear.
- Some customers are reliant on electricity to operate life sustaining equipment. The energy market rules include specific provisions regarding registration and notice of planned outages but these may not be adequate to protect those vulnerable to unplanned outages. New technologies such as batteries and smart meters may provide new policy opportunities to support these households.
- Monitoring and reporting of consumer protection issues is inconsistent and does not comprehensively cover the energy consumer experience. Policy formulation would be

enhanced by improvements in this area.

The *Policy Analysis* stage takes an empirical approach to the key issues and reveals estimates of the scale of debt and disconnection.

The *Policy Formulation* stage considers the issues and the analysis and then makes recommendations in relation to each of four key priority areas.

6.2 Policy Review

The relevant COAG Energy Council priorities are:

- Empowering Consumers
- Energy Market Transformation

Since the retail market rules of Australia's National Energy Market make specific provision for the process by which disconnection can occur, it seems reasonable to claim that the practice of electricity disconnections represents a conscious choice of government and a legitimate area of public policy. Energy retailers are responsible for the direct contact with energy customers and have obligations under The National Energy Retail Law (NERL) Clause 47 to ensure that disconnection for unpaid bills is a 'last resort':

47— General principle regarding de-energisation (or disconnection) of premises of hardship customers

A retailer must give effect to the general principle that de-energisation (or disconnection) of premises of a hardship customer due to inability to pay energy bills should be a last resort option.

Public policy in Australia recognises energy as an essential service. This is evidenced by the 'industry-specific' approach to energy consumer protection in Australia's Consumer Policy Framework. To explain why energy consumers warrant explicit protection beyond the generic provisions of the broader consumer policy framework, the Productivity Commission Review of Australia's Consumer Policy Framework stated (PC, 2008, p. 108):

There are good reasons to supplement the generic consumer law with specific measures to protect and empower energy consumers. They are essential services, with disconnection having potential harmful effects; billing is lumpy increasing the risk of financial stress for low income households; price menus and product bundling can be complex; and some areas of supply are not yet fully competitive.

Reference was also made to the different pace of reform amongst the states and territories as

being further reasons why national Consumer Law would not be appropriate for energy markets. Energy markets therefore featured in the Productivity Commission's considerations of *Industry specific* consumer regulation. The PC recommended: (Recommendation 5.3):

... Australian Governments should agree to the longer term goal of a national consumer protection regime for energy services, with a single set of requirements to apply in all jurisdictions participating in the national energy market. Those requirements should be enforced by the Australian Energy Regulator.

This recommendation precipitated the National Energy Customer Framework (NECF). The NECF complements the generic consumer protections provided by Australian Consumer Law. The NECF is a package of legal instruments centred on the National Energy Retail Law (NERL) and includes a set of Rules that complement the National Electricity Rules and National Gas Rules. Rather than the NECF, Consumer Law is supplemented by state-specific provisions in Victoria, Western Australia and the NT.

The NECF currently applies in:

- Australian Capital Territory (commenced 1 July 2012);
- Tasmania (commenced 1 July 2012);
- South Australia (commenced 1 February 2013);
- New South Wales (commenced 1 July 2013);
- Queensland (commenced 1 July 2015); and
- Victoria - Chapter 5A³⁵ of the National Electricity Rules only (commenced 1 July 2016).

The National Energy Customer Framework does not currently apply in Western Australia or the Northern Territory and, as above, only applies in a limited manner in Victoria.

The NECF is regulated by the Australian Energy Regulator (AER). The equivalent activity in Victoria is regulated by the Victorian Essential Services Commission (ESC) where the universal use of advanced metering provides a different context. On 1 January 2016, Victoria's energy industry legislation was amended to include a new objective for the regulator (ESCV, 2016):

To promote protections for customers, including in relation to assisting customers who are facing payment difficulties.

The Hardship Review conducted by the Victorian Essential Services Commission in 2016 and the subsequent development Payment Difficulties Safety Net project can be regarded as the

³⁵ Chapter 5A: Electricity Connection for Retail Customers

frontier of policy development related to this policy outcome (robust consumer protection) as at 2017 (ESCV, 2017). This sits alongside recent work by the Australian Energy Regulator under the NECF on a Sustainable Payment Plans Framework (AER, 2016a). Both initiatives are aiming for 'best practice' in the way customers are treated and both acknowledge a cohort of customers who are unable to afford ongoing consumption let alone being able to repay existing debt. This group is considered particularly vulnerable.

Disconnection for unpaid bills is the 'last resort' of both frameworks and numerous studies have been conducted over many years on the impacts of disconnections on households, especially those with children. ECA is also pursuing a focus on disconnections. A study commissioned by ECA stated that there has been a large increase in the number of disconnections in recent years and that around 160,000 households were disconnected from electricity or gas each year (KPMG, 2016).

As outlined in the previous chapter, the National Energy Productivity Plan (NEPP) and the E3 program consider the minimum energy performance of appliances and buildings as consumer protection measures. This illustrates a logical overlap between these two policy outcomes and an example of a major policy initiative that can contribute to multiple policy outcomes.

In terms of policy governance, this outcome sits between energy law and consumer law and roles and responsibilities are not always clear. Alongside Australian Consumer Law (ACL), the primary instrument is the National Energy Customer Framework (NECF) except for Victoria, and in WA and the NT where local arrangements apply. To illustrate the division of scope, two examples of penalties imposed on retailers are:

- \$325,000 by the ACCC on Origin Energy for contravening the *Australian Consumer Law* with misleading claims about price discounts.
- \$80,000 in 2015 and \$60,000 in 2017 by the AER on Simply Energy for contravening the *National Energy Retail Law* by failing to obtain the explicit informed consent of customers before switching them to Simply Energy contracts.

Reflecting the complex governance arrangements over this policy outcome, the 2016 Retail Competition Review (AEMC 2016a) recommended:

- The AEMC and Energy Consumers Australia (ECA) work alongside the COAG Energy Council to determine how the energy consumer protections framework needs to evolve.

- COAG Energy Council successfully complete its current review of the National Energy Customer Framework (NECF) in light of the changing business models facilitated by technological change and existing Australian Consumer Law protections.

In terms of the consumer protection issues raised by the changing electricity market, the Consumer Action Law Centre outlined a dozen areas of potential consumer detriment in the new energy markets that will need to be addressed in an updated framework (CALC, 2016). A recent study by the St Vincent de Paul Society in Victoria revealed the impact that advanced metering is having on disconnection patterns: raising concerns about the remote disconnection capability they provide and links to an increase in households being disconnected multiple times over a three year period (SVDP, 2016a, p. 4). The Ombudsman schemes in each jurisdiction are also investigating options for providing dispute resolution services to customers in the transforming energy markets (ANZEWON, 2016). COAG Energy Council is also inquiring into consumer protection issues as part of the Energy Market Transformation priority. In mid-2017, COAG Energy Council announced that while current consumer protections provided by the National Energy Customer Framework and Australian Consumer Law are generally sufficient for behind the meter products, they considered an industry-led Code of Conduct would support consumer protections for customers acquiring new energy products and services (CoAG, 2017). This would complement existing Clean Energy Council initiatives for solar (Clean Energy Council, 2017) but it is not yet clear how such an approach will be monitored and evaluated over time.

In summary, policy settings are in a review phase as they seek to remain effective and efficient in a changing market.

6.3 Key Issues

This section distils key issues from the analysis and stakeholder publications. The following is a summary of recommendations from the stakeholder literature relevant to consumer protections and vulnerable households:

- The relationship between vulnerable consumers, their advocates (e.g. community workers, financial counsellors) and energy retailers (National Energy Affordability Roundtable, 2013; SACOSS, 2016b)
- Expanded monitoring and consistent reporting of key indicators (National Energy Affordability Roundtable, 2013; SVDP, 2016a)
- Nationally consistent approach to life support equipment (National Energy

Affordability Roundtable 2013)

- Provide meaningful information and choices which take into account real consumer decision making biases (CALC, 2016)
- Ensure the adequacy of consumer protections across all products and services (CALC 2016)
- Share the benefits of energy market innovation across the whole community, including the vulnerable demographics who may face barriers to accessing new products and services (CALC 2016)
- Pursuit of best practice customer interactions at a national level (National Energy Affordability Roundtable, 2013; SACOSS, 2016b; SVDP, 2016a).
- Policy focus on those customers identified through Payment Difficulties or Hardship initiatives that are unable to pay for ongoing consumption.

Based on the above and the preceding Policy Review, the four key issue categories are:

- Monitoring and reporting
- Debt and Disconnection
- New Products and Services
- Life Support Equipment and other medical energy needs

The main issues can be summarised as:

- Monitoring and reporting of consumer protection issues is inconsistent and does not comprehensively cover the energy consumer experience (including NECF, ACL and Victoria's Energy Retail Code). Policy formulation would be enhanced by improvements in this area.
- As prices rise faster than incomes, levels of energy debt and disconnection are growing. A growing number of households are being observed with levels of ongoing energy costs plus arrears that are unaffordable. For these households disconnection is inevitable without policy intervention.
- New products and services are blurring the lines between energy consumer protections and the general protections of Australian Consumer Law. Reviews are underway but policy direction is not yet clear. Pre-payment meters have always been contentious in Australia. New metering technology enables features that may overcome many of the consumer protection issues associated with 'self disconnection' from pre-payment meters. 'Pay as you go' on a fortnightly basis via a smart meter has

been proposed for some customer situations in Victoria but not necessarily well received (ESCV, 2017).

- Some customers are reliant on electricity to operate life sustaining equipment. The energy market rules include specific provisions regarding registration and notice of planned outages but these may not be adequate to protect those vulnerable to unplanned outages. Most jurisdictions provide specific subsidies for these customers but there is no coordinated perspective. New technologies such as batteries and smart meters may provide new opportunities to support these households.

Each of these is discussed further in the following Policy Analysis section.

6.4 Policy Analysis

6.4.1 Monitoring and reporting

A regular, consolidated national picture of energy consumer experiences is absent. The Australian Energy Regulator publishes data for NECF participant jurisdictions that covers complaints, payment plans, hardship programs, debt and disconnections. Equivalent Victorian data is published by the Essential Services Commission in their annual Energy Retail Performance Reports and often includes further levels of detail not present in the AER data. The Economic Regulation Authority in WA publishes similar data in their annual performance reports. Equivalent data for the NT is published by the Utilities Commission in their annual Power System Review reports.

State and Territory Ombudsman schemes report complementary data relating to complaints and disputes. However, the equivalent data for the 'energy services' or 'behind the meter' market (such as solar PV and batteries) is less readily available. These are usually pursued under the ACL and mechanisms such as local Fair Trading offices. As the market expands it is relevant to consider the monitoring and reporting of consumer protection issues and the role of this information in policy development.

6.4.2 Debt and Disconnection

ECA is pursuing a focus on disconnections called 'Keeping people connected'. A study commissioned by ECA stated that there has been a large increase in the number of disconnections in recent years and that around 160,000 households were disconnected from electricity or gas each year (KPMG, 2016).

In Australia's NEM households can be disconnected from supply (also referred to as *de-*

energised or cut-off) for falling behind on their electricity account. While allowed under the rules only as a measure of *last resort*, policy implementation has not yet coalesced a strategy to minimise disconnections. The NECF requirement for “last resort” provides little guidance on the practical challenges embodied in the notion of “capacity to pay” in the management of customer debt. The Australian Energy Regulator has determined that a retailer cannot disconnect a customer for non-payment when the amount owing is less than \$300.

Market data show that over 1 in 100 households in the NEM have their electricity supply disconnected (cut-off) each year for unpaid bills. Retailers are seeking to contain an estimated \$240m in overdue accounts (approx 1.9% of market turnover). **Table 10** consolidates data reported by AER, AMEC, ESCV, QCA and Treasury Budget Papers in each state and territory.

2014-15	NEM	QLD	NSW	ACT	VIC	SA	TAS
Residential Customers	8,500,000	1,886,000	3,053,000	164,000	2,457,000	751,000	237,000
Residential Customers with Debt (non hardship)	240,000	39,000	83,000	4,500	79,000	30,000	4,000
Participated in Hardship Program (ave)	79,000	15,000	22,000	1,700	29,000	11,000	1,000
Total Customers with Debt	319,000	54,000	105,000	6,200	108,000	41,000	5,000
Total Customers with Debt	3.8%	2.9%	3.4%	3.8%	4.4%	5.5%	2.1%
estimated Total Debt (\$m)	\$ 240						
est Residential Electricity market annual Turnover, (\$m) inc GST	\$ 12,500						
Debt to Turnover	1.9%						
Disconnection	1.27%	1.57%	1.06%	0.67%	1.45%	1.34%	0.14%
Reconnection (same name and address)	0.75%	0.75%	0.65%	0.42%	0.96%	0.77%	0.08%
Proportion that reconnect	59%	48%	61%	62%	66%	57%	54%
Proportion of households receiving concession	31%	25%	29%	19%	38%	29%	38%
Total expenditure on concessions (\$m)	\$ 641						
Total expenditure on emergency payments (\$m)	\$ 33						
Total government contribution to residential electricity bills (\$m)	\$ 674						
Government contribution as % of Turnover	4.2%						

Table 10: Summary of Residential Debt and Disconnection in the National Electricity Market 2014-15

Understanding the scale of the ‘hardship’ end of the National Electricity Market requires an understanding of levels of debt and disconnection. In 2014-15 the total number of customers with a debt of more than 90 days was around 4% (and over 5% in South Australia). On average 25% of these customers participate in a retailer’s hardship program.

Disconnection rates and reconnection rates differ between jurisdictions. The overall disconnection rate (1.26%) will include those who vacated premises so will overstate the number of households living with power disconnected. The reconnection rate (same name, same address, 0.75%) is a more likely proxy for those living with power disconnected even though this would miss those who remain disconnected for long periods of time. The literature does not reveal a preferred approach to distinguishing the ‘willing to pay but unable’ from the ‘able to pay but unwilling’. For the purpose of this policy analysis though, there is no need for great precision. It is sufficient to indicate that around 1% of households are disconnected for unpaid bills each year. Figure 40 illustrates a NEM wide trend of increasing levels of disconnection but a mixed result in jurisdictions:

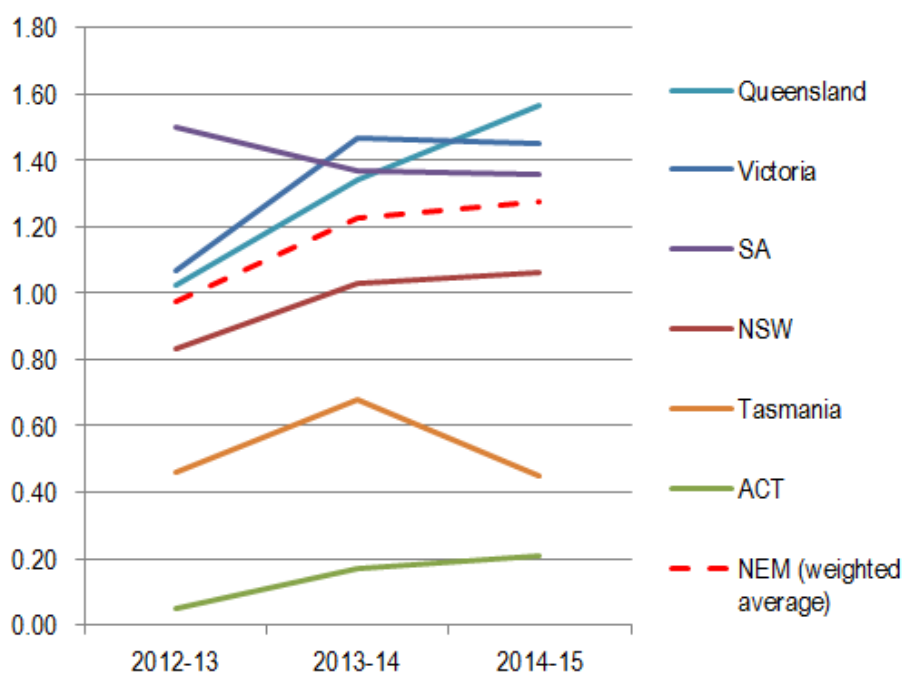


Figure 40: Disconnection for unpaid bills in the National Electricity Market (Source: AER, ESC-V)

One example of local issues is the situation in Tasmania, where over 10% of households use a pre-payment meter. This needs to be considered alongside what otherwise look like relatively low levels of debt and disconnection. This is discussed further below. Another example is the ACT approach to disconnections. Here cases are heard by the ACT Civil and Administrative Tribunal (ACAT) prior to a disconnection being permitted. The Tribunal approach contributes

to the lowest disconnection rates in the NEM.

The Victorian Essential Services Commission Payment Difficulties Framework project and the Australian Energy Regulator's voluntary Sustainable Payment Plans Framework acknowledge a cohort of customers who are unable to afford ongoing consumption let alone being able to repay existing debt. The AER framework suggests:

The customer and retailer should try to agree on an affordable repayment amount that is as close as possible to the amount required to cover the customer's ongoing usage. This limits the growth of the customer's debt, keeps their energy supply connected and encourages their engagement.

Payment plans that are less than ongoing usage should be reviewed at least once every 3 months.

The customer and the retailer should work together to try to close the gap between the current repayment amount and the amount required to cover ongoing usage and reduce debt. This might include (but is not limited to): reviewing the customer's tariff, checking that they are receiving available concessions, providing tailored energy efficiency advice, offering incentive payments, and referring the customer to a financial counsellor or government assistance schemes.

The ESC Draft Payment Difficulties Safety Net included a Draft Customer Advice Manual that suggested an approach where the customer pays what they can while an 'energy management plan' is developed with the energy retailer. Similar to the AER framework, the ESC guide encouraged referral to other support services to assist with household finances. In both cases, the guidance is somewhat open ended.

The debt and disconnection data indicates that those at risk represent around 5% of residential customers. There is clear potential, given the scales involved, for some realignment of concession funding to those with debt. This could involve a rebalancing from the broad-brush concession programs to the more reactive and targeted emergency funding programs in place in most jurisdictions (currently estimated to be 95% to 5%).

Case Study: South Australia

In terms of state-by-state differences in indicators, as at December 2015, South Australia had the highest rates of electricity and gas customers on hardship programs, the highest rate of electricity disconnections and the second highest rate of gas disconnections (behind ACT).

The Australian Energy Regulator (AER) and the Essential Services Commission of SA (ESCOSA) publish a number of 'hardship' indicators for the South Australian energy markets. The following charts are for the period to the end of Calendar Year 2015.

The number of residential customers with a debt (>90 days) can be seen to be trending

downward since the commencement of the NECF (data was not collected for this indicator prior to the NECF) and currently sits at around 30,000 electricity customers (approx. 4% of all households) and 15,000 gas customers (approx. 3% of gas customers):

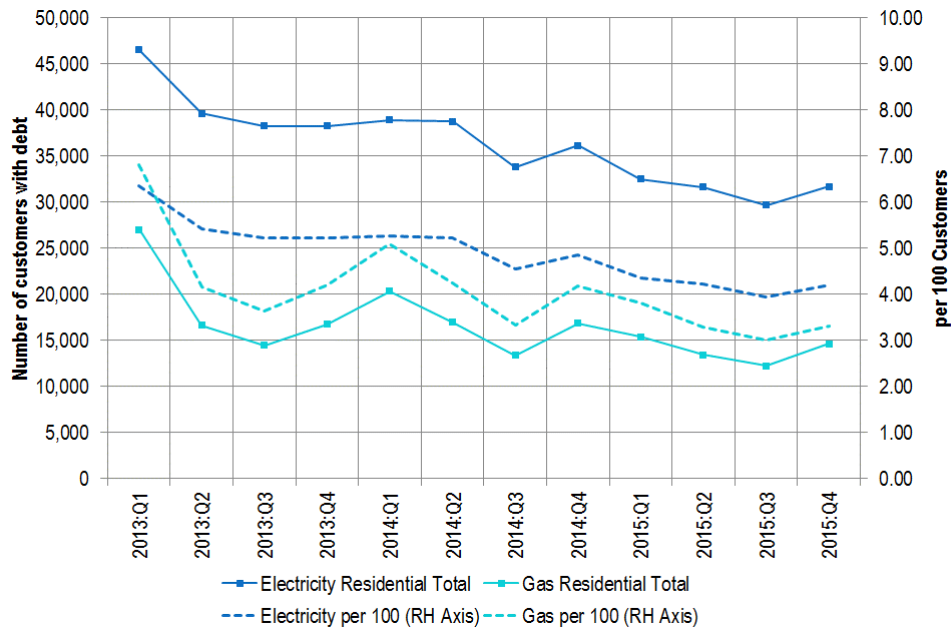
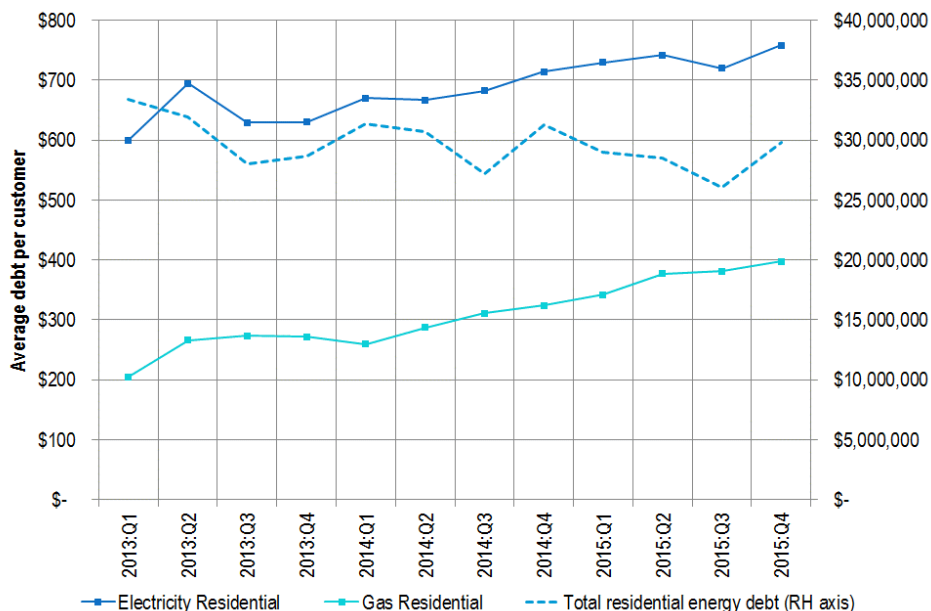


Figure 41: South Australian customers with an energy debt³⁶

However, the average debt per customer is rising and the total value of debt is relatively stable at \$30 million as shown in Figure 42.



³⁶ Source: ESCOSA 2016, *NERL: Review of operation in SA*, p. 29.

Figure 42: Average South Australian energy debt³⁷

Figure 43 shows that the number of customers participating in a retailer’s hardship program has risen sharply since such programs were mandated with the introduction of the NECF (indicated by the dashed red line). This does not necessarily imply a growth in demand and could represent a growth in awareness:

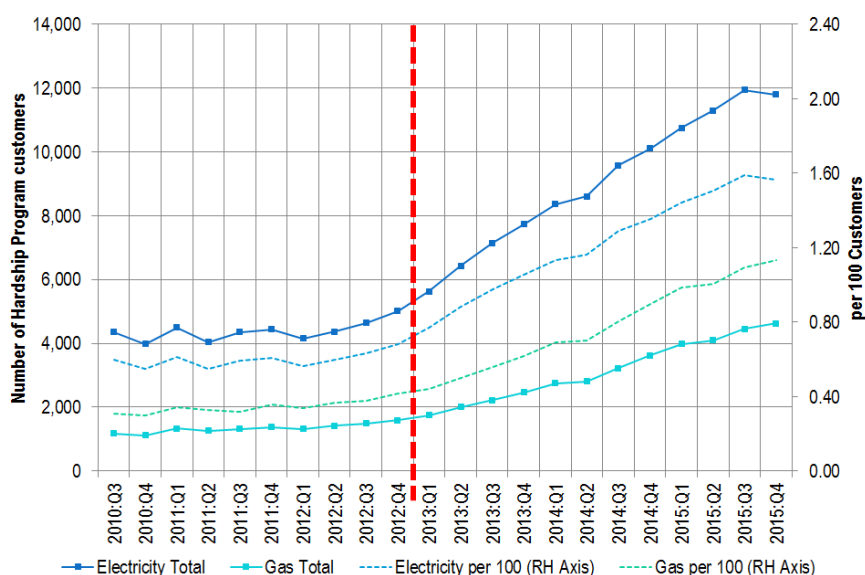


Figure 43: South Australian consumers participating in energy hardship programs³⁸

The number of electricity disconnections for non-payment have been relatively stable at around 2,500 per quarter for a number of years. Gas disconnections can be seen to exhibit an upwards trend in recent years to now exceed 1200 per quarter.

³⁷ Source: AER, Retail statistics, South Australia – customer energy debt

³⁸ Source: ESCOSA 2016, *NERL Review Final Report – Time Series Data – Quarterly*

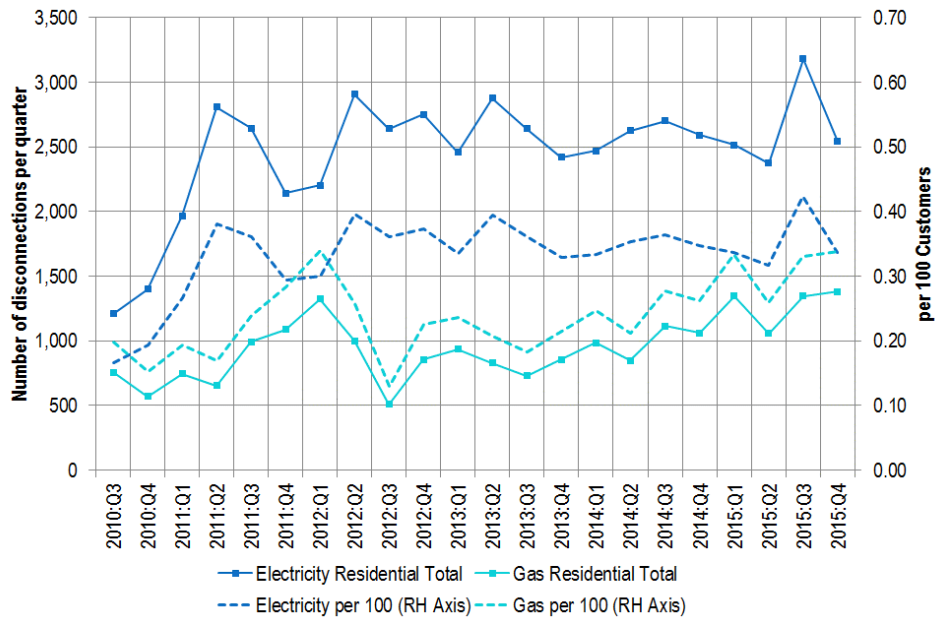


Figure 44: Energy disconnections in South Australia³⁹

6.4.3 Pre-payment meters as an alternative to debt

When households fail to pay their electricity account, the debt they accrue is with an energy retailer. These retailers have the role of collecting payment from customers and re-distributing it to the entire electricity value chain. Most retailers are privately-owned businesses, and all are run on a commercial basis, so it is not surprising that monitoring and managing cash flow is an important activity. The commercial basis for disconnecting supply appears sound and it would be difficult to justify a role for government on the basis of market failure. It is however the essential nature of supply and the persuasive influence of even the threat of being cut-off that allows for the undermining of social policy.

Prepayment meters in the NEM are restricted to those of Tasmania’s Aurora Energy and its Aurora Pay As You Go (APAYG) program. APAYG is under review and Aurora have announced plans to launch the next generation prepayment product in late 2017.

As at 30 June 2015, there were 29,612 APAYG customers. This is 12.5 per cent of the total number of Tasmanian residential customers. Of this total around 54 per cent are concession customers, compared to 38% of all residential customers. There is no daily fixed charge for concession card holders (the concession is applied daily and covers the fixed charge applied to other APAYG customers of \$1.34 per day (as at July 2015)). 93,000 households (38%) receive

³⁹ Source: ESCOSA 2016, *NERL Review Final Report – Time Series Data – Quarterly*

the concession. This scale contrasts that of the Aurora NECF data from the AER showing 4,229 residential electricity customers with debt and 1,663 on the hardship program (0.7% and 0.2% respectively). Disconnections in Tasmania also occur at much lower rates than other jurisdictions (0.14% compared to 1.26%) and the presence of prepayment meters at such a scale is likely an influence on this.

Prepayment comes at a price premium in Tasmania. This is consistent with the UK experience where the energy regulator Ofgem introduced an energy price cap for the approximately 4 million households on pre-payment meters from April 2017 and there has been suggestion of extending that to other vulnerable customers (Citizen's Advice, 2017). The Tasmanian Electricity Supply Industry Act 1995, requires the Office of the Tasmanian Economic Regulator to prepare, and table in each House of Parliament, an annual prepayment price comparison report. The comparisons in the 2015 report show that over the course of a year, customers generally pay more on APAYG than on Standing Offer tariffs irrespective of whether or not they receive a concession (OTTER, 2015). The 'premium' was more pronounced for smaller consumers (ave 3475 kWh pa) at 11% than medium consumers (average 6405 kWh) at 5%.

The report noted that APAYG customers with the ability to modify their usage can take advantage of time of use prices and bring their annual costs into line with the costs facing customers on Standing Offer tariffs. However, as advanced metering is deployed elsewhere in the NEM, similar price structures are becoming available in other jurisdictions without the need for pre-payment.

6.4.4 Life Support Equipment and other medical energy needs

There is also an overlap with Health Policy in relation to the electricity needed to operate life sustaining equipment in patient's homes. Policy in this area includes provisions in the National Energy Retail Law and Retail Rules (NERL and NERR which apply in New South Wales, the Australia Capital Territory, Queensland, South Australia and Tasmania) for protection from planned outages and restrictions on the ability to disconnect for unpaid bills.

Life support equipment is generally defined as (AER, 2016b):

- Oxygen concentrator;
- Intermittent peritoneal dialysis machine;
- Kidney dialysis machine;
- Chronic positive airways pressure respirator (CPAP);

- Crigler najjar syndrome phototherapy equipment;
- Life support ventilator; or
- Any other equipment that a doctor certifies is required by a resident for life support.

In all cases, customers are required to produce evidence of their equipment needs from a registered Medical Practitioner. The Retail Rules require that when a connection is registered as having life support equipment (via the associated retailer or direct with the distributor), customers are required to be given:

- general advice that there may be a planned or unplanned interruption to the supply,
- information to assist them prepare a plan of action in the case of an unplanned interruption,
- an emergency telephone number for the distributor at no more than the cost of a local call, and
- at least four business days' written notice of any planned interruption.

According to KPMG (2016) in their review of the costs of disconnection for Energy Consumers Australia, most jurisdictions provide financial support to energy customers with specific medical conditions. In some cases a lump sum is offered, in others specific amounts are available depending on the equipment in question:

- Tasmania – Life Support Concession⁴⁰
- Queensland - Electricity Life Support⁴¹ and Medical Cooling and Heating Electricity Concession Scheme⁴² costed in the 16-17 QLD State Budget at \$2.4m and \$1.3m respectively. The Medical Cooling and Heating Electricity Concession Scheme pays \$320.97 to eligible applicants, implying around 4,000 in total number.
- Victoria – Medical cooling concession⁴³ and Life Support Concession⁴⁴
- New South Wales – Medical Energy Rebate⁴⁵ and Life Support Rebate⁴⁶ costed in the 16-17 NSW state Budget at \$9m and paying \$235 - \$258.50 in each case implies 35,000 – 40,000 recipients per annum. Networks NSW⁴⁷: Ausgrid 21,413 or 1.28% of customer

⁴⁰ www.concessions.tas.gov.au/concessions/electricity_and_heating

⁴¹ www.qld.gov.au/community/cost-of-living-support/electricity-life-support/index.html

⁴² www.qld.gov.au/community/cost-of-living-support/medical-cooling-heating-electricity-concession-scheme/

⁴³ www.dhs.vic.gov.au/for-individuals/financial-support/concessions/energy/medical-cooling-concession

⁴⁴ www.dhs.vic.gov.au/for-individuals/financial-support/concessions/energy/life-support-machine-electricity-concession

⁴⁵ www.resourcesandenergy.nsw.gov.au/energy-consumers/financial-assistance/rebates/medical-energy-rebate

⁴⁶ www.resourcesandenergy.nsw.gov.au/energy-consumers/financial-assistance/rebates/life-support-rebates

⁴⁷ Networks NSW: ENA and Networks NSW Roundtable – Supporting Vulnerable Energy Customers and Network Tariff Strategy 24 September 2015

base at end of June 2015; Endeavour 19,530 or 2.1% of customer base; Essential 16,450 or 1.96% of customer base at end June 2015 – a total of over 57,000 across NSW.

- South Australia – Medical heating and cooling concession⁴⁸.
- Western Australia – Life Support Equipment Electricity Subsidy⁴⁹ allocated \$1.14m in the WA State Budget 2016-17 and Thermoregulatory Dysfunction Energy Subsidy⁵⁰ allocated \$2.3m in the 16-17 budget.

The energy needs of the disabled have been the subject of limited study (PIAC, 2012)(PIAC 2012) and there is limited stakeholder literature on the scale of this customer group. The PIAC study highlighted two particular dimensions of disadvantage specific to energy: disability brings additional energy costs; and disability can inhibit people realising benefits from traditional energy efficiency measures.

The National Disability Insurance Scheme (NDIS) is being introduced progressively around Australia from 1 July 2016. The Australian Government is projecting that by 2019, the NDIS will support about 460,000 people with disability. As an insurance scheme, the NDIS takes a ‘lifetime’ or ‘investment’ approach’ to supporting people with disability early to improve their outcomes later in life. The scheme also provides for self-management of budgets by recipients of support and has specific provisions for Assistive Technology (AT) needs. The interaction between the new funding model and energy costs and other energy consumer issues has not been studied and is recommended for further inquiry. The Queensland Disability Network *Bright Sparks* program is an example of peer education to engage a community of interest on energy market issues.

The AER takes the obligations under the rules very seriously. In July 2016, the AER alleged three distributors across QLD, NSW and SA breached life support obligations under the National Energy Retail Rules. These businesses did not comply with the communication obligations for a planned interruption and were consequently fined a combined total of \$120,000 (AER, 2016c). An example of why the obligations are taken seriously can be found in a case study from South Australia. In December 2015, an unplanned power outage in suburban Adelaide resulted in the death of a 53 year-old man – reportedly with muscular dystrophy - registered as a person on life support with local distributor SA Power Networks.

⁴⁸ Medical Cooling and Heating Electricity Concession Scheme www.sa.gov.au/topics/care-and-support/financial-support/concessions/medical-heating-and-cooling-concession

⁴⁹ www.finance.wa.gov.au/cms/State_Revenue/ECES/Energy_Subsidy_Schemes.aspx

⁵⁰ www.finance.wa.gov.au/cms/State_Revenue/ECES/Energy_Subsidy_Schemes.aspx

The care provider had been placed in liquidation in November 2015 (ASIC, 2015) and reporting of the incident highlighted gaps in the roles and responsibilities for ensuring a back-up plan was in place (Cook, 2016; Nicholson, 2015).

Life-support customers would likely benefit from battery storage technology that could provide continuity of supply during unplanned outages. However, relying on providers of 'behind the meter' services raises other consumer protection issues may pose new risks. This is recommended for inclusion as a key vulnerable consumer issue.

6.5 Policy Formulation

Key issues can be summarised as:

- Monitoring and reporting of consumer protection issues is inconsistent and does not comprehensively cover the energy consumer experience. Policy formulation would be enhanced by improvements in this area.
- As prices rise faster than incomes levels of energy debt and disconnection are growing. A growing number of households are being observed with levels of ongoing energy costs plus arrears that are unaffordable. For these households disconnection is inevitable without policy intervention.
- New products and services are blurring the lines between energy consumer protections and the general protections of Australian Consumer Law. Reviews are underway but policy direction is not yet clear.
- Pre-payment meters have always been contentious in Australia. New metering technology enables features that may overcome many of the consumer protection issues associated with 'self disconnection' from pre-payment meters. 'Pay as you go' on a fortnightly basis via a smart meter has been proposed for some customer situations in Victoria but not necessarily well received.
- Some customers are reliant on electricity to operate life sustaining equipment. The energy market rules include specific provisions regarding registration and notice of planned outages but these may not be adequate to protect those vulnerable to unplanned outages. Most jurisdictions provide specific subsidies for these customers but there is no coordinated perspective. New technologies such as batteries and smart meters may provide new policy opportunities to support these households.

This outcome represents the overlap between energy policy, social policy and consumer

policy. The transformation of energy markets is providing a challenging context for consumer protection policy. Four policy priorities to advance the interests of vulnerable consumers have been identified

6.5.1 Priority issue 4.1: Debt and Disconnection of those unable to pay

The cohort of customers unable to afford ongoing consumption let alone repay debt are the most vulnerable to disconnection under current arrangements. This must be a priority policy area. It is recommended that ECA actively support partnership opportunities between energy retailers, community sector agencies, particularly financial counsellors and governments. Leadership will be needed from the Australian Energy Council (AEC) and, for consumers, from ACOSS and/or Financial Counsellors Australia (FCA).

6.5.2 Priority issue 4.2: New Products and Services

The rapid changes in the energy market and growth of 'behind the meter' energy services is challenging existing consumer protection frameworks. New technologies also have some potential to improve the level of protection provided to vulnerable consumers. Reviews are underway and balancing risks and opportunities provides important context for policy formulation. The opportunities identified in Chapter 5 and the recommendation that Energy Consumers Australia commission further research into the risks and opportunities for vulnerable consumers from DER will keep this issue on the CoAG Energy Council agenda.

6.5.3 Priority issue 4.3: Life Support Equipment

The need for very high reliability by these customers and the opportunities from cost effective storage, smart meters and energy management are a logical match that would benefit from policy coordination. Reliability obligations on electricity distributors could create opportunities otherwise precluded by ring-fencing. Alignment with NDIS funding and alignment with concession reform should be policy priorities. It is recommended that ECA commission research into the opportunities and barriers to these consumers having their needs met by the energy markets.

6.5.4 Priority issue 4.4: Monitoring and Reporting

The evidence base for vulnerable consumer policy advocacy would be enhanced by the capability to provide a consolidated, national picture of energy consumer protection issues. This would consolidate information published by energy regulators, energy Ombudsman schemes and ACL agencies.

It is recommended that ECA consolidate, curate and publish a national picture of energy consumer protection data on its website. Similar to the Energy Security Board's *Health of the National Electricity Market* report (Energy Security Board, 2017), this could be a *Health of the NEM's Safety Net* report.

6.6 Chapter Summary

This chapter has considered the **consumer protection** issues relevant to vulnerable households and energy markets. The existing frameworks are under strain from rising prices and technology - particularly smart meters. Household disconnection rates have grown and stakeholders have identified a cohort of households at risk of disconnection but that do not have the resources to pay for ongoing consumption let alone repay debt. Relationships between community sector, government and energy industry stakeholders are critical to policy progress.

Developments in Victoria - where virtually all households have a smart meter - represent the policy frontier for this one of the five policy outcomes: a new regulatory objective, a Hardship Review and a draft Payments Difficulty Framework. However, a harmonised national scheme seems as far off as ever.

A growing market 'behind the meter' for solar and storage as a service, embedded networks and so on is also testing the boundaries between Australian Consumer Law and Energy Retail Law. Recommendations from the literature include expanded monitoring and consistent reporting of key indicators; pursuit of best practice and continuous improvement at the customer interface. Collaboration between government, retailers, ombudsmen and community sector workers could be strengthened.

Underpinning all four policy outcomes to this point is the need for households to have a capacity to pay for the energy services they need. This is the subject of the next chapter.

7 Policy outcome: All households have a capacity to pay

7.1 Introduction

This chapter considers the social welfare policy objective of ensuring households have a **capacity to pay** for essential goods and services. This involves a combination of income measures from the tax and transfer system as well as jurisdiction-based measures that provide concessions and emergency assistance tied to energy bills. This discussion overlaps with broader issues of poverty and housing affordability and represents a very complex area of public policy.

As is the case for each of the five chapters covering the key policy areas of the consumer safety net, this chapter presents four stages of a policy cycle. The *Policy Review* presents current initiatives seeking to support this policy outcome at national and jurisdictional levels. This policy outcome is largely 'owned' by Australia's social welfare policy frameworks. The policy review includes a focus on each of Income Support, Concessions and Housing Affordability.

Key Issues are distilled from stakeholder publications in the second stage. These include:

- Concessions have not been developed in the context of the changing energy markets and are due for a refresh. This provides an opportunity for better targeting of expenditure and for the inclusion of customer groups known to be vulnerable but not currently eligible for support.
- Some households have such low incomes that essential services such as energy can easily become unaffordable. The divergence between energy costs and incomes over time is exacerbating this issue.
- Housing energy performance is a key driver of energy costs and housing tenure is a key determinant of the options available to respond. Links to housing policy are inescapable yet there is limited coordination.
- Research into poverty and research into energy affordability and energy market vulnerability are rarely aligned. Policy development is constrained by the lack of context provided by such perspectives on the entire household budget.

A *Policy Analysis* stage takes an empirical approach to the key issues and reveals estimates of the scale of poverty in Australia.

The *Policy Formulation* stage considers the issues and the analysis and then makes recommendations in each of four priority issues.

7.2 Policy Review

With its strong focus on competitive markets, energy policy in Australia is explicitly reliant on the general social safety net to complement electricity market outcomes in order to preserve affordability. To quote the Australian Government's 2012 Energy White Paper (CoA, 2012):

“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.” (emphasis added)

Responsibility for this outcome is very much spread across different levels of government. The Australian Government is responsible for income adequacy while the states are assigned responsibility for concessions under the Australian Energy Market Agreement (AEMA). Housing affordability is a shared responsibility also managed under an intergovernmental agreement (National Affordable Housing Agreement).

7.2.1 Income support

According to *Poverty in Australia 2016* (ACOSS 2016), 13.3% of the Population (3 million people) lived below the poverty line in 2013-14 (ACOSS, 2016)⁵¹. Of those people, 57.3% relied on income support payments from Government as their main source of income.

While the situation of poverty is in part due to the fact that most income support payments are set below the poverty line, the impact of indexation also contributes to this situation. In the main, income support payments are now indexed to price inflation rather than wage inflation, for example the Newstart allowance has not increased in real terms since 1994. Comparing the value of income support payments to the Average Weekly Ordinary Time Earnings (AWOTE) reveals quite startling gaps, not only in terms of the amounts but also in terms of the trajectory over time. The ongoing erosion of the adequacy of income support payments is having a compounding impact on the situation of poverty.

The graph below is taken from *Poverty in Australia 2016* (their Figure 18). It can be seen that changes to the Aged Pension in 2009 had a significant and positive effect on this particular payment type compared to other income support payments. This increase of \$32.50 per week can be seen across the data to have improved the circumstance of this group over time, highlighting the core role that governments can play in preventing situations of poverty.

⁵¹ The poverty line is drawn at 50% of median after-tax income

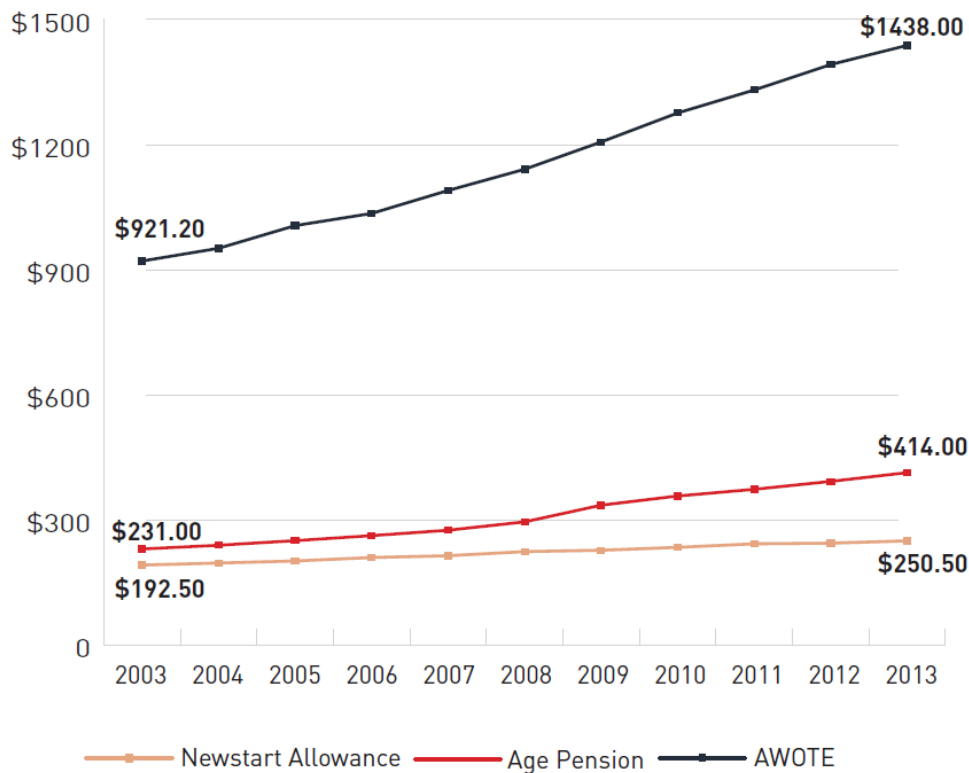


Figure 45: Trends in payment rates compared with average wages (Source: ACOSS 2016 Poverty in Australia Figure 18)

7.2.2 Concessions

As outlined in Section 2.3.1, in the Australian context, distinction has been made between ‘tied’ and ‘untied’ supports. The final report of the 2009-10 Review of Australia’s Taxation System (Henry Tax Review) covers the Transfer System and explains ‘tied’ vs ‘untied’ transfers (Henry, 2010):

“While transfers are usually thought of as cash payments, governments also provide transfers such as concessions and payments that are ‘tied’ to the purchase, or supply, of a particular good or service.”

The economic argument for ‘tied’ transfers lies in the concept of a *merit good* that is, a good that people should consume regardless of their preferences for other things (Ver Eecke, 1998). Dilnot and Helm concluded that energy for households was both an absolute and a participation *merit good* (Dilnot and Helm, 1987): that there is both an absolute requirement for survival and a relative requirement for ongoing participation and inclusion in society⁵².

⁵² 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.

The Henry Tax Review made a number of wide-ranging observations about the eligibility for and distribution of the various concessions at the different levels of government. State and Territory Governments are responsible for energy specific concessions and rebates. Henry's Recommendation 107 called for a review by the Productivity Commission for report to COAG. As at January 2018, this has not occurred. The 2014 Review of Australia's Welfare System "A new System for Better Employment and Social outcomes" Final Report continued to support concession cards and pointed to the Federation White Paper for implications on how concessions might be funded and delivered in the future (DSS, 2015, p. 16). The Federation White Paper process was terminated in April 2016 and the state-federal funding issues remain unresolved

A comprehensive report by KPMG for Energy Consumers Australia (KPMG 2016) estimates that the total cost to governments of energy concession schemes (electricity and gas) is forecast to be \$875m in the 2016/17 Financial Year. Total GST receipts from residential electricity and gas expenditure is estimated at approx. \$1,600m. Concession schemes can therefore be considered to return around 55% of the GST revenue raised. However, significant differences exist in concession payments between jurisdictions and hence the proportion of GST receipts returned will vary (KPMG, 2016; SVDP, 2013).

Calls for concession reform appear frequently and the Victorian regime is usually held up as the most equitable and comprehensive. The shift towards monthly billing, promotion of payment plans and bill smoothing products all contribute towards the capacity to pay an electricity bill. AEMC's 2016 and 2017 Retail Competition Review recommends that jurisdictions review concession policies to assess opportunities to better target them to customers most in need and to harmonise their structure across jurisdictions, where substantive differences exist. (AEMC, 2017a, 2016a)

In its options paper for Energy Networks Australia "Supporting Vulnerable Customers", consultants at Houston Kemp recommended three options for concession reform (Kemp et al., 2015):

- Harmonisation of value and scope across jurisdictions
- Targeting of eligibility and accounting for household size
- Addressing the needs of long-term concession recipients through household or community scale investments in energy efficiency measures such as insulation

7.2.3 Housing Affordability

As the most significant fixed cost to the household budget, housing has a direct impact on the affordability of all other costs. While various issues impact on housing costs, the core challenges include housing tenure, quality of residence, number of people in the home. Anglicare's 2016 Rental Affordability Snapshot stated (Anglicare, 2016):

Over the first weekend in April, the Anglicare member network surveyed 75,410 rental properties across Australia and found just 21 properties were affordable for single adults living on Newstart, and only one was suitable for young people living on Youth Allowance. And despite the higher level of pensions compared to allowances, affordable rentals were extremely limited for a single person living on any government payment.

780 properties were affordable for those on a parenting payment and 389 for those on Disability Support Payment. Once the level of income reaches two people on the minimum wage in a household, they can access 26.2% or over 19,000 properties. This highlights the stark situation people on income support payments face even when compared to those on the lowest wages in the country. A recent research report by Choice for National Shelter and the National Association of Tenant Organisations (NATO) called *Unsettled: Life in Australia's private rental market* provided numerous examples of the tenuous housing arrangements many households are in (Choice et al., 2017).

The Australian, state and territory governments have a range of measures in place targeting housing affordability for low income and vulnerable households. Beyond the provision of public housing, the principal source of financial assistance for households is Commonwealth Rent Assistance.

Rent Assistance is an income supplement payable to those renting privately or in the community housing sector. Importantly, eligibility extends beyond those receiving pensions and other social security payments to those eligible for Family Tax Benefit Part A. Family Tax Benefit Part A is income-tested and paid based on the number and age of children in the household. Rent Assistance eligibility therefore seems to capture low-income families in private rental – a cohort that would be included in most definitions of vulnerable energy consumer. Consideration should be given to the use of Rent Assistance eligibility as a way of improving the targeting of energy concessions. Family Tax Benefit – Part A has previously been recommended as a 'trigger' for energy bill support (Simshauser et al., 2011b).

7.3 Key Issues

This section distils key issues from the analysis of stakeholder publications into four key issues.

The following is a summary of recommendations from the stakeholder literature relevant to consumer protections and vulnerable households:

- A national review of energy concessions (National Energy Affordability Roundtable 2013, AEMC 2016a, Chester 2013, Owen 2013) to assess opportunities to better target them to customers most in need (including extending supports to the working poor) and to harmonise their structure across jurisdictions, where substantive differences exist.
- A review of emergency payments (National Energy Affordability Roundtable 2013)
- Improving adequacy of some income payments such as Newstart and Youth Allowance (ACOSS, 2016; SVDP, 2016a)
- Forging stronger links between concession payments and energy efficiency/productivity schemes (Chester 2013) and/or funding for DER.
- Aligning research into energy affordability and vulnerability with the methodologies and publication of the ACOSS Poverty in Australia series: using the 2017 release of the 2014-15 Household Expenditure Survey for initial work.
- Align policy, advocacy and research initiatives with corresponding housing affordability initiatives. Expand scope to include stronger integration with understanding of transport costs (Burke and Ralston, 2015).

The four key issue categories are:

- Concession targeting
- Income adequacy
- Alignment with Housing Policy
- Research and analysis

These main issues can be summarised as:

- Concessions have not been developed in the context of the changing energy markets and are due for a refresh. This provides an opportunity for better targeting of expenditure and for the inclusion of customer groups known to be vulnerable but not currently eligible for support.
- Some households have such low incomes that essential services such as energy can

easily become unaffordable. The divergence between energy costs and incomes over time is exacerbating this issue.

- Housing energy performance is a key driver of energy costs and housing tenure is a key determinant of the options available to respond. Links to housing policy are inescapable yet there is limited coordination.
- Research into poverty and research into energy affordability and energy market vulnerability are rarely aligned. Policy development is constrained by the lack of context provided by maintaining perspectives on the entire household budget.

7.4 Policy Analysis

7.4.1 Literature review of energy poverty studies in Australia

This section provides a summary of Australian studies seeking to identify demographic attributes of households considered most vulnerable to rising energy costs. Overall, these various studies paint a complex picture of measurement from which one can conclude that there is no universally accepted measure or indicator of household energy affordability in Australia. However, close relationships to the costs of other essentials – such as housing and transport – regularly recur.

Chester and Morris produced an early study of energy poverty in the Australian context (Chester and Morris, 2011) and concluded that Australia was yet to explicitly recognise energy poverty as a distinct social problem and was without a substantive evidence base to inform policy making of the consequences of rising prices on low income and vulnerable households. A number of studies have subsequently sought to identify demographic attributes of households considered most vulnerable to rising energy costs.

The Brotherhood of St Laurence study *Fuel poverty, household income and energy spending: an empirical analysis for Australia using HILDA data* uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey (Azpitarte et al., 2015). This study tests alternative conceptions of fuel poverty based on analysing income and expenditure (such as low income - high energy expenditure) and self-reported financial stress indicators (such as couldn't pay their energy bills and couldn't afford to heat their home). Those who couldn't pay their bills tended to be renters and have children, consistent with the findings of others (Simshauser et al., 2011a, 2011b; SVDP, 2016a). On the other hand those with low income and high expenditure tended to be pensioners. Those who couldn't heat their home were different again. The following groups came through as particularly vulnerable - people living with a

disability, who were over-represented in the 'fuel poor' across all definitions, single parents and renters.

Relative Energy Poverty in Australia (Nance 2013, produced as part of this PhD and attached as Appendix A) applied lessons from the UK's approach to measuring fuel poverty to the Australian context. Unit record data from the 2009-10 HES was analysed in order to identify those with the biggest energy bills and least capacity to pay for them. This study considered five different definitions of 'relative energy poverty' and identified similar household characteristics in each case. The analysis considered after housing cost disposable income and identified significant proportions of those at risk relied on wage and salary incomes (often referred to as the *working poor*) and therefore generally ineligible for energy concessions and outside of the traditional safety nets of the welfare system. Other characteristics identified were single parent households, people living alone (particularly Aged and Disability pensioners), low-income renters and 'dual fuel' households - those reliant on mains or bottled gas.

The Cooperative Research Centre for Low Carbon Living report *Household energy use – Consumption and Expenditure Patterns 1993-2012* argues that an understanding of the impacts of motor fuel prices on household budgets is required to better understand the distributional impacts of carbon policies on affordability (Burke and Ralston, 2015). The study also considered income and expenditure measures to self-reported indicators of financial stress and, similar to Azpitarte et al (2015), found a rather poor correlation. The study also confirmed that families with large numbers of children and renters were more likely to experience an inability to pay bills. Further, a majority of households who reported an inability to pay had a housing affordability problem, similar to the findings of the St Vincent de Paul Society's analysis of AGL Energy disconnected customers (SVDP, 2016a).

Chester (2013) provides a substantial evidence base of the lived experience of low-income households as a result of rising energy bills and describes the trade-offs some households are forced to make between paying their energy bills and using the money to purchase food, pay the rent or meet the costs of raising children. Chester is critical of the common policy measures of concessions and temporary financial assistance as treating the symptoms and not the causes of energy costs and affordability.

Energy Poverty in Western Australia (BCEC, 2016) draws on data gathered through face to face interviews and an online survey of over 4000 individuals. The report finds that single parent

families and renters had the highest burden of energy spending. The WA context is relevant to consideration of the interaction with housing costs:

The economic boom in WA has meant rising wages, but those in the lowest income brackets have seen the least benefit from the boom and have had to contend with rapidly increasing house prices and rents.

... Rising housing and utility costs are increasing the energy poverty challenge

The report also states that low income households have often failed to benefit from improvements to energy efficiency or from solar power and highlights the relationship to income inequality:

This has the potential to push low income households deeper into energy poverty if fuel prices rise and the income gap between the wealthiest and the poorest continues to grow.

In *The Energy Market Death Spiral – Rethinking Customer Hardship* the authors draw on the customer records of AGL Energy and from the 2009-10 HES and conclude that (Simshauser and Nelson, 2012):

... dominant thought on the primacy of customer hardship, aged pensioners, pales into insignificance by comparison to those of in the family formation cohort, and in particular, those known as Australia's 'working poor'.

Simshauser & Downer conducted analysis of consumption patterns for households on AGL Energy's hardship program and observed higher than average total consumption and consumption patterns that were less 'peaky' than the average (2014, p. 10). AS discussed in section 5.4.1, recent analysis by ESC Victoria confirms that hardship customers tend to consume around twice the average volume of electricity (ESCV, 2016). However, customers on retailer hardship programs represent less than 1% of residential customers and are not necessarily representative of all customers considered vulnerable. It is also not possible to conclude whether higher than average consumption is due to poor efficiency, poor quality housing or simply from having a large number of people in the household.

Newgate Research were commissioned to prepare a report for the AEMC's 2016 annual review of retail competition in order to recommend how vulnerable consumers could be supported to benefit more from the retail energy market (Newgate Research, 2016). This report summarised its market segmentation approach by stating:

While there is diversity of demographics and circumstances within all segments, consumers with certain characteristics are more likely to be vulnerable. These include being female (especially single mothers), renting, not being in full-time employment, experiencing recent household stress (e.g. arrival of a baby or a death), living in regional areas, being Indigenous, being a recent immigrant, having special payment

arrangements with one's energy provider, and having savings that would last less than three months.

Overall, these various studies paint a complex picture of measurement from which one can conclude that there is no universally accepted measure or indicator of household energy affordability in Australia. However, close relationships to the costs of other essentials – such as housing and transport – regularly recur. These analyses of historic income and expenditure suggest that a diverse range of household types are represented in the vulnerable household cohort although some are at much higher rates than their proportion of the wider community. Housing circumstances are clearly a key indicator of vulnerability – the cost of housing determines how much room exists in the household budget to pay energy bills and tenure determines the scope of actions available to change consumption.

7.4.2 Future research and analysis needs

An open policy question is whether there is merit in seeking to align understanding of the incidence of energy related hardship with the approach taken to measuring and reporting on Poverty in Australia more generally. The 2017 release of the results of the most recent Household Expenditure Survey may be an opportunity to align with the methodological approach of the *ACOSS Poverty and Inequality in Australia* series of reports.

ACOSS in association with the Social Policy and research Centre (SPRC) has produced a ten year series of research reports charting the path of poverty in Australia. The analysis is based on the ABS Survey of Income and Housing. The survey is conducted every two years but various elements are only surveyed in four or six year cycles – including the Household Expenditure Survey in 2009-10 and 2013-14.

The *Poverty and Inequality in Australia* series aims to provide a stable and independent evidence based picture of the situation of poverty and inequality. The data used is consistent, giving a longitudinal picture by which to chart the situation of those most vulnerable to poverty. Over time various aspects of data capture improve giving rise to more detailed analysis. For example housing tenure was included in the reporting for the first time in 2016.

The issue of energy affordability has been topical for some time but the available data is still not consistent and does not currently provide the same rich picture that we can see for other sub sets such as income, gender, age and family composition. It is felt that a more consistent and regular data capture for energy (as well as for disability and Aboriginal and Torres Strait Islander peoples) would significantly enrich the research reports and our understanding of

the impact of energy on poverty in Australia.

7.5 Policy Formulation

Key issues can be summarised as:

- Concessions have not been developed in the context of the changing energy markets and are due for a refresh. This provides an opportunity for better targeting of expenditure and for the inclusion of customer groups known to be vulnerable but not currently eligible for support.
- Some households have such low incomes that essential services such as energy can easily become unaffordable. The divergence between energy costs and incomes over time is exacerbating this issue.
- Housing energy performance is a key driver of energy costs and housing tenure is a key determinant of the options available to respond. Links to housing policy are inescapable yet there is limited coordination.
- Research into poverty and research into energy affordability and energy market vulnerability are rarely aligned. Policy development is constrained by the lack of context provided by such perspectives on the entire household budget.

This outcome represents the overlap between the national tax and transfer system and jurisdictional energy concessions and emergency payments. Four policy priorities to advance the interests of vulnerable consumers have been identified:

7.5.1 Priority issue 5.1: Targeting of Concessions

There does not appear to be an appetite from governments to harmonise concessions and the sensitivity of state budgets to concession settings is a key reason why. However, the issues are raised regularly and there is a demonstrated need to recalibrate eligibility to capture more of the 'working poor'. Potential exists for some rebalancing from concession programs to the more reactive and targeted emergency funding programs in place in most jurisdictions (currently estimated to be funded 95% to 5%) in order to target those in demonstrated need and with existing debt.

A first order need for policy formulation is to identify a champion or sponsor of a reform project that can influence the COAG Energy Council agenda.

7.5.2 Priority issue 5.2: Housing affordability

Strong links between housing affordability and capacity to pay energy bills are evident from the results of ABS household expenditure surveys. Opportunities to align energy concession eligibility with that for housing affordability measures – such as Commonwealth Rent Assistance – are examples of what is possible.

Given the immaturity of the policy interaction, recommendations for this policy cycle are restricted to further research and analysis in order to build a case for change (see issue 5.4 below).

7.5.3 Priority issue 5.3: Income Adequacy

There is no specific energy dimension to this issue but the link between incomes and essential expenditure (such as energy, housing and food) should be maintained in the policy framework to preserve an important feedback path. The benefits to affordability of an increase to the aged pension in 2009 should appear in the results of the 2015-16 HES. This uplift and indexation is yet to appear in other payments.

7.5.4 Priority issue 5.4: Research and analysis

In 2014, 3 million people (13.3% of the population) including over 730,000 children (17.4% of all children under the age of 15) were living below the poverty line after taking account of housing costs (ACOSS 2016). Having such low incomes risks vulnerability in the energy market. Income inequality is magnified when the context is an essential service such as electricity. It is recommended that ECA commission research from ACOSS that reviews existing energy affordability research and, when the ABS publish data from the most recent Household Expenditure Survey later in 2017, contrast energy consumption and affordability with housing and poverty research in the *Poverty in Australia* series.

7.6 Chapter Summary

This chapter has considered the social welfare policy objective of ensuring households have a **capacity to pay** for essential goods and services. In the energy context, this refers to income measures and energy-specific concessions applied at the jurisdictional level.

This policy outcome has roles and responsibilities spread between Australian, State and Territory Governments and between Treasury/Finance, Human Services and Housing Portfolios. Policy links to housing access and affordability are evident yet there is little evidence of institutional interaction with energy policy.

Income comparisons from ACOSS' Poverty in Australia 2016 illustrated the relative performance of salaries and wages compared to pensions and benefits over the last decade. In 2014, 3 million people (13.3% of the population) including over 730,000 children (17.4% of all children under the age of 15) were living below the poverty line after taking account of housing costs (ACOSS 2016). Having such low incomes risks vulnerability in the energy market. Income inequality is magnified when the context is an essential service such as electricity.

A number of studies have sought to identify demographic attributes of households considered most vulnerable to rising energy costs. Overall, these studies have painted a complex picture of measurement from which there is no universally accepted measure or indicator of household energy affordability in Australia. Opportunities exist to align energy affordability research with housing and poverty research when the ABS release data from the most recent Household Expenditure Survey later in 2017.

Energy concessions vary from jurisdiction to jurisdiction and repeated calls have been made to improve and align these measures nationally and to improve targeting. While concession reform is widely supported, no policy champion has been identified. Estimates of concession expenditure and GST revenue have been compared to illustrate that around 55% of GST revenue from energy bills is redistributed to eligible households.

8 Consequences and Implications

Restating, the research questions that this thesis sought to answer are:

- When considering a consumer safety net for consumers in a liberalised electricity market, what is an appropriate analytical framework for policy and practice that can be used by stakeholders to improve governance and consumer outcomes?
- Subsequently, what priorities emerge from this framework that could be advanced through the policy cycle?

As described in Chapter 2, the analytical framework developed is based on the notion that a liberalised electricity market needs a consumer safety net and that the responsibility for providing this net is shared between the electricity industry, governments and the community sector. Consequently, the safety net has been distilled to five distinct policy outcomes, all of which require attention from those that share these responsibilities in order to minimise the number of households that fall through the net:

Outcome 1: Stable and Efficient Pricing

Outcome 2: Informed and engaged consumers

Outcome 3: Energy consumed efficiently and productively

Outcome 4: Robust consumer protections

Outcome 5: All households have a capacity to pay their energy bills

A chapter has been dedicated to analysing each of these outcomes and, following the second part of the research question, priority issues have been identified. These are summarised in Table 11.

This chapter considers these issues and the policy formulation section of each chapter to develop a summary of recommendations for the actions considered necessary to strengthen the market's consumer safety net.

Following this a section is dedicated to governance aspects by consolidating the recommendations allocated to each stakeholder.

Policy Outcome	No.	Priority Issues
1. Stable and Efficient Pricing	1.1	Effectiveness of retail competition
	1.2	Wholesale market volatility
	1.3	Tariff reform
	1.4	Other costs recovered on energy bills (including GST)
2. Informed and engaged consumers	2.1	Engagement of vulnerable consumers with energy markets
	2.2	Vulnerable consumers unable to engage with energy markets
3. Energy Consumed Efficiently and Productively	3.1	Split incentives in rental housing
	3.2	Energy productivity programs
	3.3	Consumption patterns
	3.4	Distributed Energy Resources
4. Robust consumer protection	4.1	Debt and Disconnection of those unable to pay
	4.2	New Products and Services
	4.3	Life Support Equipment
	4.4	Monitoring and Reporting
5. Capacity to pay	5.1	Targeting of Concessions
	5.2	Housing Affordability
	5.3	Income adequacy
	5.4	Research and analysis

Table 11: Summary of Priority Issues

8.1 Strengthening the safety net

In relation to pricing, excess profits have been suggested and large price dispersion has been demonstrated in a number of recent reports. The Turnbull Government's March 2017 direction to the ACCC to undertake an inquiry into retail electricity pricing as well as a similar inquiry by the Victorian Government should ensure that this issue receives significant attention. The ACCC is expected to produce a final report by 30 June 2018.

Similarities to the UK experience are becoming obvious as competition fails to reduce prices to efficient levels and substantial price dispersion is evident. Several policy options exist, including the re-regulation of pricing. The major retailers have taken voluntary measures but it is likely that a rule change proposal will be needed to ensure ongoing protection of vulnerable households from standing offer prices.

Wholesale prices higher than necessary erodes affordability for all consumers but vulnerable

consumers, by definition, are especially sensitive to price volatility if translated to *bill shock* when passed on quickly by retailers. On this basis, policy choices that reduce uncertainty should benefit vulnerable consumers in particular. The dominance of the *gentail* vertically integrated business model in the NEM means that the ACCC retail pricing inquiry will necessarily look at wholesale markets. The Independent Review into the Future Security of the National Electricity Market (Finkel Review) and the Australian Government Review of climate change policies are also expected to contribute clarity over future directions in energy generation. Responsibility for responding to this issue rests with the Commonwealth, State and Territory Governments and the CoAG Energy Council.

Since many of the issues relate to all consumers, not just those at risk of debt disconnection, it is appropriate that Energy Consumers Australia allocate resources to researching and preparing a rule change proposal that could be initiated soon after the release of the ACCC findings.

Network tariff reform is moving slowly but, as emphasised in the case studies of Chapter 5, there is potential for some households to pay less and become less vulnerable to debt and disconnection while other are at risk of paying more if they are unable to change consumption patterns. The limited likelihood of mandating tariffs without an opt out provision in the near term provides some protection for those at risk of paying more. It is therefore recommended that Energy Consumers Australia build on the Power Shift project and initiate a project to identify vulnerable households with load profiles that would make 'opt-in' to demand tariffs cost effective. Support from the Australian Energy Council would be critical for effective implementation since the framework relies on retailers to translate network prices to small customers. Uptake and effectiveness can then be evaluated in anticipation of mandatory assignment beyond the next 5-year regulatory cycle.

The recovery of costs for a range of programs, as well as GST, increases the size of all electricity bills and exacerbates affordability challenges for vulnerable households. The consideration of new climate policies is an opportunity to contrast options that recover the cost of action on climate change from consolidated revenue rather than electricity bills. This way the progressive redistribution of the tax and transfer system applies rather than increases in the price of energy. This is recommended as a vulnerable customer priority policy area with links to concession reform. It is recommended that the Australian Council of Social Service (ACOSS), as the peak body for the community sector, consult its membership to develop a position on this issue on behalf of vulnerable consumers. This position should be put to COAG

Energy Council for consideration as part of designing the National Energy Guarantee and to State and Territory Governments in the context of jurisdictional schemes.

In relation to the ability of vulnerable households to effectively engage with energy markets and exercise choice, it is recommended that Energy Consumers Australia seek to be the champion of this policy outcome as part of the Power Shift project. Priorities include activities and resources that complement the online information presence with material suitable for the elderly and those with low levels of English literacy and numeracy. However, for those households that are unable to engage effectively, protection from drifting to high priced standing offer or market contracts is necessary. It is recommended that this be reflected in the response of Energy Consumers Australia to the ACCC pricing inquiry, building on the response to priority issues 1.1 and 1.2.

In relation to the role of energy consumption in the safety net, the perennial issue of split incentives in rental housing must be addressed. The pursuit of mandatory disclosure of energy performance at point of sale or lease is not as important to many vulnerable households as ensuring a minimum standard is met. For many households, the affordability of rent, urgency of need and other priorities are likely to override the decision making benefits of mandatory disclosure. It is recommended that MEPS for rental housing become a priority measure of the National Energy Productivity Plan. This responsibility rests with CoAG Energy Council. The first 5-yearly independent review of the *Greenhouse and Energy Minimum Standards Act 2012* (GEMS Act) was announced in January 2018 and this may represent a key opportunity to advance this issue (CoA, 2018). In terms of governance, it is recommended that a lead role be taken by National Shelter, as the non-government peak organisation that aims to improve housing access, affordability, appropriateness, safety and security for people on low incomes. Energy Consumers Australia is well placed to support this work and build the policy connections between housing affordability and energy affordability.

Community scale energy efficiency programs have been part of the Australian energy policy landscape since the early days of energy market reform. An opportunity exists to embrace the context of change in the market – including tariff reform – to recast these programs as energy productivity and learn from past projects. Smart meters and battery storage are providing options for programs not previously feasible. Alignment with jurisdictional energy efficiency schemes should be a policy priority alongside creating opportunities for low income households to access more efficient capital items such as major appliances. It is recommended that ECA be assigned responsibility for curating and interpreting all energy consumption

programs from around Australia. The ECA *Power Shift* project is an important current initiative in this regard building an evidence base of what works. Expanding the scope to state-based initiatives would enhance the value of the research. Stability of funding for future programs is an issue that needs national consideration and the ECA role will provide evidence for an informed debate.

The finalisation of the first round of cost reflective network tariffs provides an opportunity to test for risks and opportunities from tariff reform. However, the lack of a reliable set of consumption profiles is a barrier to comparative analysis and policy formulation. CSIRO have initiated work in this area as part of the Network Transformation Roadmap and this information would complement the consumption benchmarks already produced by the AER. It is recommended that AER's bill benchmarking work be expanded to develop benchmark consumption profiles.

Distributed Energy Resources (DER) have the potential to be the distinction in a two-tier energy market. Without careful pricing, DER can exacerbate cross subsidies and shift costs onto already struggling households. Comprehensive policy in this regard needs to balance twin objectives of encouraging access to DERs for vulnerable households while minimising the shifting of costs on to those unable to afford it. Recommendation 6.6 of the Finkel Review was for CoAG Energy Council to (Finkel et al., 2017, p. 25):

... engage with relevant portfolio areas including housing, and with state, territory and local governments, to identify:

- *Opportunities to accelerate the roll out of programs that improve access by low income households to distributed energy resources and improvements in energy efficiency.*
- *Options for subsidised funding mechanisms for the supply of energy efficient appliances, rooftop solar photovoltaic and battery storage systems for low income consumers.*

It is recommended that Energy Consumers Australia commission further research into the risks and opportunities for vulnerable consumers from DER and keep this issue on the CoAG Energy Council agenda.

In relation to the priority consumer protection issues, the most pressing is the increasing evidence of a cohort of customers unable to afford ongoing consumption let alone repay debt. It is recommended that ECA actively support partnership opportunities between energy retailers, community sector agencies, particularly financial counsellors and governments. Leadership will be needed from the Australian Energy Council (AEC) and, for consumers,

from ACOSS and/or Financial Counsellors Australia (FCA).

Households registered with life support equipment have a need for very high reliability and the opportunities from cost effective storage, smart meters and energy management are a logical match that would benefit from policy coordination. Alignment with NDIS funding and alignment with concession reform should be policy priorities. It is recommended that ECA commission research into the opportunities and barriers to these consumers having their needs met by the energy markets.

The evidence base for vulnerable consumer policy advocacy would be enhanced by the capability to provide a consolidated, national picture of energy consumer protection issues. This would consolidate information published by energy regulators, energy Ombudsman schemes and ACL agencies. It is recommended that ECA consolidate, curate and publish a national picture of energy consumer protection data on its website. Similar to the Energy Security Board's *Health of the National Electricity Market* report (Energy Security Board, 2017), this could be a *Health of the NEM's Safety Net* report.

The fifth outcome, *All households have a capacity to pay their energy bills*, has a clear need for leadership from social policy. In this case, it is recommended that the focus be on coordinated research and analysis that connects energy affordability with general poverty research. The absence of a robust evidence base undermines progress on the impact of broader cost of living issues based on an understanding of, and response to, energy affordability and the strength of the NEM's consumer safety net. It is recommended that ECA commission research from ACOSS that reviews existing energy affordability research and, when the ABS publish data from the most recent Household Expenditure Survey, contrast energy consumption and affordability with housing and poverty research in the *Poverty in Australia* series. A critical component of this must be to identify attributes of households that are vulnerable to debt and disconnection but not eligible for existing energy concessions.

The recommendations in the above summary has allocated responsibilities to different stakeholders. The following sections summarise these from the perspective of these stakeholders.

8.2 Energy Consumers Australia

As the institution resourced to advance consumer issues, ECA has been assigned many of the recommendations that emerge from the research documented in this thesis. In summary these

are:

- Allocate resources to researching and preparing a rule change proposal that can be initiated soon after the release of the ACCC Inquiry into Electricity supply and prices, due in mid 2018. This responds to priority issues 1.1, 1.2 and 2.2.
- Build on the Power Shift project and initiate a project to identify vulnerable households with load profiles that would make 'opt-in' to demand tariffs cost effective. Uptake and effectiveness can then be evaluated in anticipation of mandatory assignment beyond the next 5-year regulatory cycle. This responds to priority issue 1.3.
- Build on the Power Shift project and initiate projects to identify initiatives that enhance the ability of vulnerable households to effectively engage with energy markets and exercise choice. This responds to priority issue 2.1.
- Expanding the scope of Power Shift to incorporate state-based initiatives into the research and analysis of what works. This responds to priority issue 3.2.
- Build on the Power Shift project and commission further research into the risks and opportunities for vulnerable consumers from DER. This work should include a focus on opportunities from DER for customers with life support equipment. This responds to priority issues 3.4 and 4.3 as well as recommendation 6.6 of the Finkel Review.
- Support National Shelter in advancing policy development of minimum energy performance standards for rental housing. This responds to priority issues 3.1 and 5.3.
- Support Financial Counsellors Australia to develop policy on how the safety net can respond to the increasing evidence of a cohort of customers unable to afford ongoing consumption let alone repay debt. This responds to priority issue 4.1.
- consolidate, curate and publish a national picture of energy consumer protection data on its website. Similar to the Energy Security Board's *Health of the National Electricity Market* report (Energy Security Board, 2017), this could be a *Health of the NEM's Safety Net* report. As part of this, commission research from ACOSS that reviews existing energy affordability research and, when the ABS publish data from the most recent Household Expenditure Survey, contrast energy consumption and affordability with housing and poverty research in the *Poverty in Australia* series. A critical component of this must be to identify attributes of households that are vulnerable to debt and disconnection but not eligible for existing energy concessions. This responds to priority issues 4.4, 5.1, 5.2, 5.3 and 5.4

8.3 Community Sector

- Australian Council of Social Service (ACOSS), as the peak body for the community sector, consult its membership to develop a position on behalf of vulnerable consumers on the recovery of other costs on energy bills. This responds to priority issue 1.4.
- ACOSS, with support from ECA should review existing energy affordability research and, when the ABS publish data from the most recent Household Expenditure Survey, contrast energy consumption and affordability with housing and poverty research in the *Poverty in Australia* series. This responds to priority issue 5.4.
- National Shelter (as the non-government peak organisation that aims to improve housing access, affordability, appropriateness, safety and security for people on low incomes), with support from Energy Consumer Australia, to advance policy development of minimum energy performance standards for rental housing. An independent review of the *Greenhouse and Energy Minimum Standards Act 2012* (GEMS Act) was announced in January 2018 and this is a key opportunity to advance this issue (CoA, 2018). This responds to priority issue 3.1.
- Financial Counsellors Australia (FCA), with support from ECA and the AEC, should lead policy development on how the safety net can respond to the increasing evidence of a cohort of customers unable to afford ongoing consumption let alone repay debt. This responds to priority issue 4.1.

8.4 CoAG Energy Council

As the nation's peak energy policy forum, CoAG Energy Council must respond decisively to the findings of the ACCC Inquiry into Electricity supply and prices. Further,

- It is recommended that CoAG Energy Council commit further funds to ECA in support of the extensions to Power Shift detailed herein.
- It is recommended that MEPS for rental housing become a priority measure of the National Energy Productivity Plan. This responds to priority issues 3.1 and 5.2.

8.5 Australian Energy Regulator

- It is recommended that AER's bill benchmarking work be expanded to develop benchmark consumption profiles for different households. This responds to priority issue 3.3.

8.6 Australian Energy Council

As the industry peak body for the competitive parts of the market, the AEC will need to take a leadership role in the industry's obligations under the shared responsibility model. Key

recommendations are:

- Support ECA in a project to identify vulnerable households with load profiles that would make 'opt-in' to demand tariffs cost effective.
- Support Financial Counsellors Australia to develop policy on how the safety net can respond to the increasing evidence of a cohort of customers unable to afford ongoing consumption let alone repay debt. This responds to priority issue 4.1.

8.7 Further Academic Research

Considering energy affordability in the context of housing affordability and household size requires comprehensive statistical analysis that was beyond the scope of this thesis. and the recommendations reflect this by incorporating energy affordability research into the Poverty in Australia research by ACOSS and the Social Policy Research Centre.

Beyond this, there are other aspects that would complement the foundation that this thesis' safety net framework provides.

Access to technology is clearly emerging as the key driver of a redistribution of electricity expenditure between households. And, clearly, the ability to take advantage of these developments pivots on access to and affordability of these technologies. Advanced metering is one example where aspects of the safety net – such as stable pricing – can be supported. Further research in this area – combining technical and behavioural disciplines - is warranted.

The term *no regrets* has seen wide contemporary use in relation to climate change related risk management and links to poverty and vulnerability (Heltberg et al., 2009) and the notion of *no regrets* actions to advance both social policy and energy policy is an appealing concept. It acknowledges that not everything that advances the objectives of social policy will also advance the objectives of energy policy or vice-versa but that when the opportunities arise, they can be and should be prioritised. Prominent infrastructure regulation academic Paul Joskow once referred to a key regulatory priority for developing economies as crafting regulatory mechanisms “ ... *that balance efficiency and distributional goals*” (Joskow, 1999) and it is felt that such *no regrets* opportunities are a way of doing exactly that without distorting the efficiency basis that has taken so long to reach prominence in developed economies. The recommendation to identify those households with consumption profiles that should incur lower costs under cost reflective tariffs (Priority issue 3.3) is an example of this. There are likely to be more and this is considered a prospective area of future research.

International perspectives have not received the comprehensive review that they deserve. Further research into safety nets and shared responsibility in other liberalised markets will need to be put in their local context but it is expected that the framework applied here (the five outcomes and the initial steps of theoretical policy cycle) will be equally applicable in a range of settings. It is expected that useful lessons are there to be identified, analysed and assessed. The repeated application of the framework can only benefit its refinement before a repeat application to Australia's National Electricity Market.

Reiterating earlier statements, the multi-disciplinary nature of the topic is a defining and positive feature of the work that must also be acknowledged as a limitation. The nature of the topic is better suited to a research collaboration rather than a single researcher's thesis and this would go a long way to overcome these limitations in future applications of the framework.

8.8 Final remarks

In conclusion, a shared responsibility for the consumer safety net of a liberalised electricity market requires a robust framework that allows for a comprehensive perspective and the allocation of roles and responsibilities in responding to the issues identified. No recommendation has been made for a central entity to manage and coordinate the activity, but the proposed framework and the analysis provided should be considered a solid foundation upon which further work by multiple stakeholders can pursue the interests of the market's most vulnerable consumers. The unique contribution is the foundational nature of the approach.

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10 Appendix A – Relative Energy Poverty in Australia

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.

Acknowledgement and Disclaimer

This project was funded by the Consumer Advocacy Panel (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

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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 ago⁵³ 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 Morris⁵⁴ 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 economies⁵⁵. 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 2011-12⁵⁶. This research project has sought to apply some of the recommendations and lessons from the UK experience to Australia's energy markets.

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

⁵³ 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.

⁵⁴ Chester, Lynne and Morris, Alan, 2012, 'A new form of energy poverty has become the scourge of liberalised electricity sectors'

⁵⁵ See, for example, The United Nations Sustainable Energy For All initiative at <http://www.sustainableenergyforall.org/>

⁵⁶ 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>

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 measurement⁵⁷, 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 12: 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

⁵⁷ 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

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 poverty⁵⁸. 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)⁵⁹.

The consideration of fuel poverty as a relative issue is consistent with the findings of Dilnot and Helm (1987)⁶⁰ in relation to energy as a *merit good*⁶¹. 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 indicator⁶²:

“... 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 that 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.

⁵⁸ Fuel Poverty: a Framework for Future Action, UK Department of Energy and Climate Change July 2013, p12

⁵⁹ 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

⁶⁰ Dilnot and Helm *Energy Policy, Merit Goods and Social Security* in Fiscal Studies August 1987 Volume 8, Issue 3 p29-48.

⁶¹ 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.

⁶² 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 (CoA 2012a)⁶³:

“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).

The Council of Australian Governments (COAG) Standing Council on Energy and Resources (SCER) is

⁶³ Energy White Paper 2012 available from www.ret.gov.au/energy/facts/white_paper/Pages/energy_white_paper.aspx

Australia's principal energy policy forum. In relation to the NECF, the SCER states⁶⁴:

“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 obligations⁶⁵.”

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)⁶⁶:

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 regard⁶⁷:

“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

⁶⁴ <http://www.scer.gov.au/workstreams/energy-market-reform/national-energy-customer-framework/>

⁶⁵ Community service obligations primarily refer to energy concessions and state-wide price equalisation schemes.

⁶⁶ AER webpage “Experiencing trouble paying your energy bills?” www.aer.gov.au/consumers/my-energy-bill/problems-paying accessed 15.09.2013

⁶⁷ http://eraa.com.au/wp-content/uploads/Hardship_Support.pdf accessed 15.09.13

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 46 (over 40% in nominal terms). As well as persistent media and political commentary on price rises⁶⁸, 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 47 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.

⁶⁸ As Simshauser and Nelson (2012) say: “.. the political economy of energy pricing in Australia has never been so controversial.”

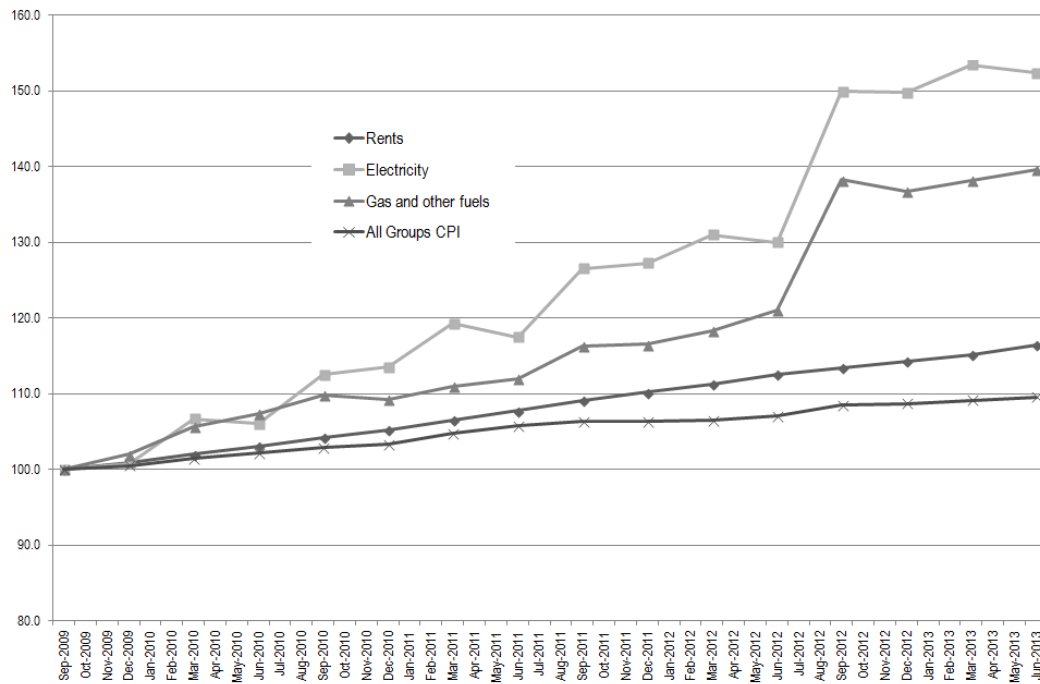


Figure 46: Price inflation since the 2009-10 Household Expenditure Survey (source: ABS 6401.0 Consumer Price Index, Australia)

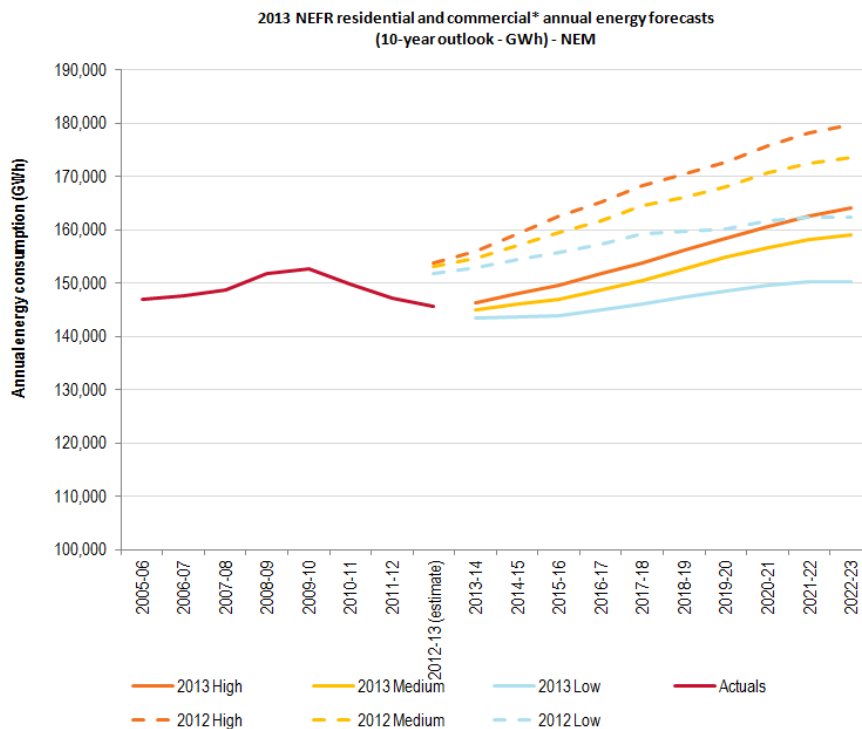


Figure 47: Residential and commercial electricity consumption trends since the 2009-10 Household Expenditure Survey (source: AEMO National Energy Forecasting Report 2013)⁶⁹

⁶⁹ <http://www.aemo.com.au/Electricity/Planning/Forecasting/National-Electricity-Forecasting-Report-2013>

Figure 48 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.

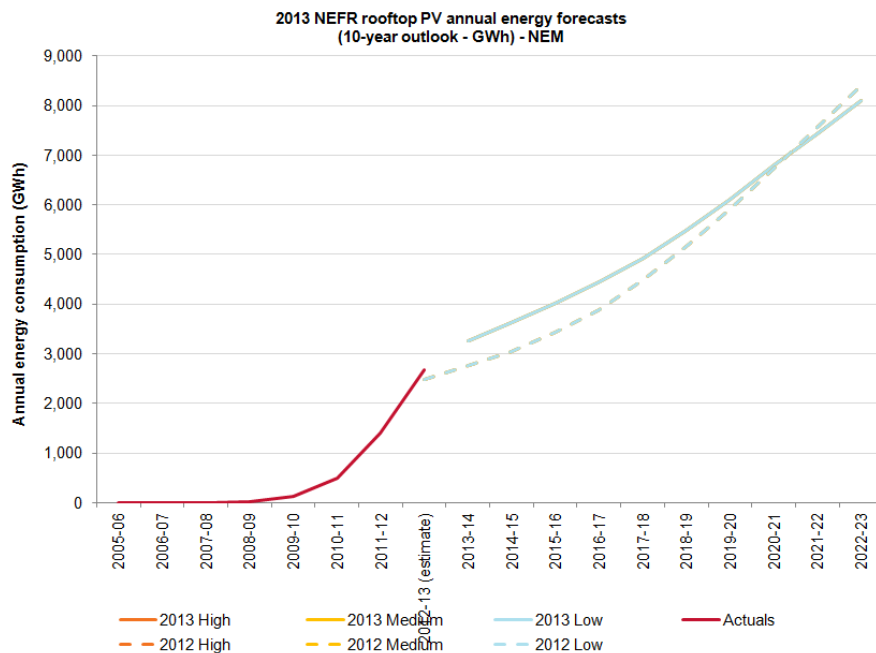


Figure 48: Small scale solar power system uptake trends since the 2009-10 Household Expenditure Survey (source: AEMO National Energy Forecasting Report 2013)⁷⁰

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.

⁷⁰ <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 57.

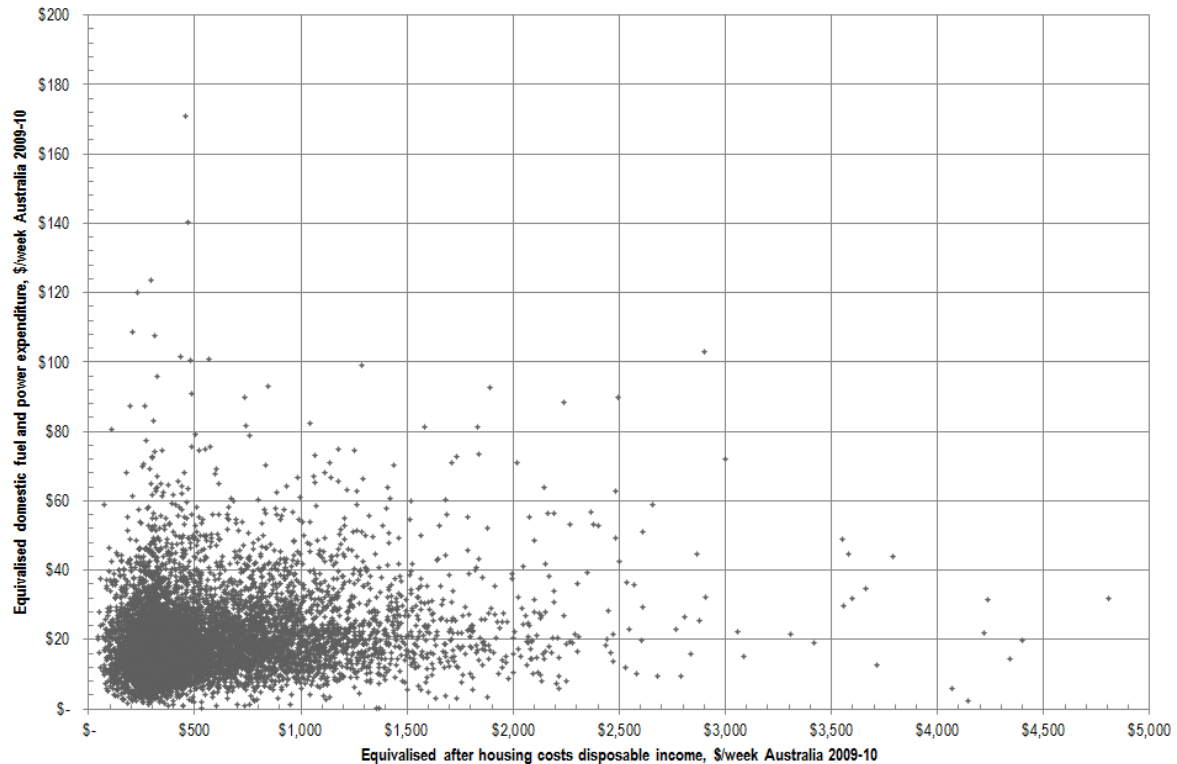


Figure 49: Scatter diagram of equivalised energy expenditure vs capacity to pay 2009-10 Household Expenditure Survey

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 50.

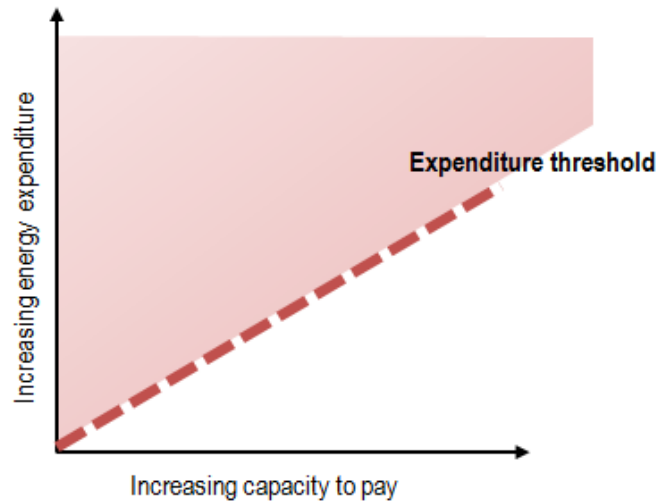


Figure 50: Illustration of 'energy poverty' defined by exceeding an expenditure threshold expressed as a % of income (or capacity to pay)

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 51 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.

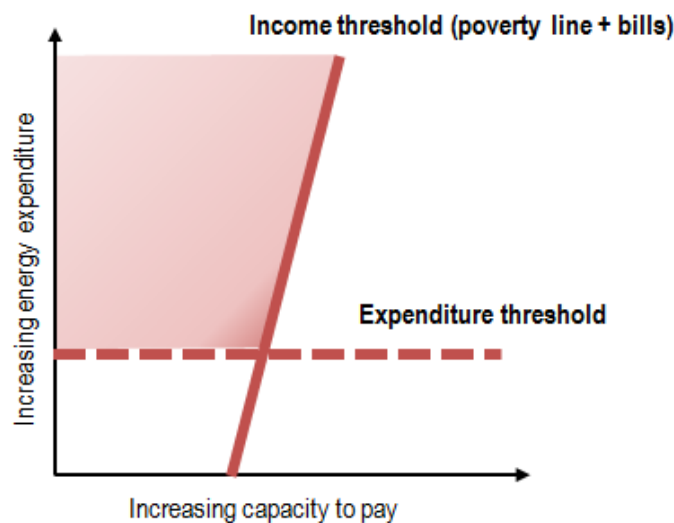


Figure 51: Illustration of 'energy poverty' defined by exceeding an expenditure threshold expressed as a fixed amount and falling below an income threshold

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 52.

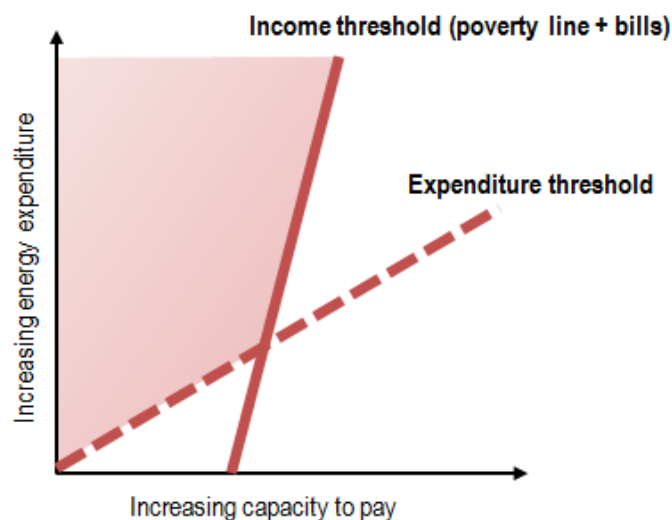


Figure 52: Illustration of 'energy poverty' defined by exceeding an expenditure threshold expressed as a % of income (or capacity to pay) and falling below an income threshold

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)⁷¹ 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 Indicators⁷² 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, three objective and two subjective, can therefore be identified and compared. These are shown in Table 13.

⁷¹ Review of the UK fuel poverty measure, Report for Ofgem, Gill Owen, Sustainability First March 2010 from <http://www.sustainabilityfirst.org.uk/publications.htm>

⁷² 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 13: 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 poverty⁷³ 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 Australia⁷⁴. Combined with the analysis in this report, a particular focus on the elderly living alone may be justified.

G2. Disability Support Pension Recipients

Findings

Disability Support Pension recipients most likely to be in relative energy poverty are those living alone,

⁷³ For example, John Hills 2012 "Getting the measure of fuel poverty. Final report of the Fuel Poverty Review" p15

⁷⁴ This work is being coordinated by the National Climate Change Adaptation and Research Facility (NCCARF; 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.

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”⁷⁵ 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).

⁷⁵ <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 England⁷⁶ in July 2013. The new policy follows the conclusion of the independent Hills Review of Fuel Poverty⁷⁷ 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 & Morris⁷⁸ 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 Nelson⁷⁹. 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

⁷⁶ <https://www.gov.uk/government/publications/fuel-poverty-a-framework-for-future-action>

⁷⁷ <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.

⁷⁸ Chester, Lynne and Morris, Alan, 2012, ‘A new form of energy poverty has become the scourge of ‘liberalise electricity sectors’

⁷⁹ 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>

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.

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”⁸⁰ 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 53) finds a household to be fuel poor if:

- c. Their income is below the poverty line (taking into account energy costs); and
- d. 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 53, 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.

⁸⁰ <https://www.gov.uk/government/consultations/fuel-poverty-changing-the-framework-for-measurement>

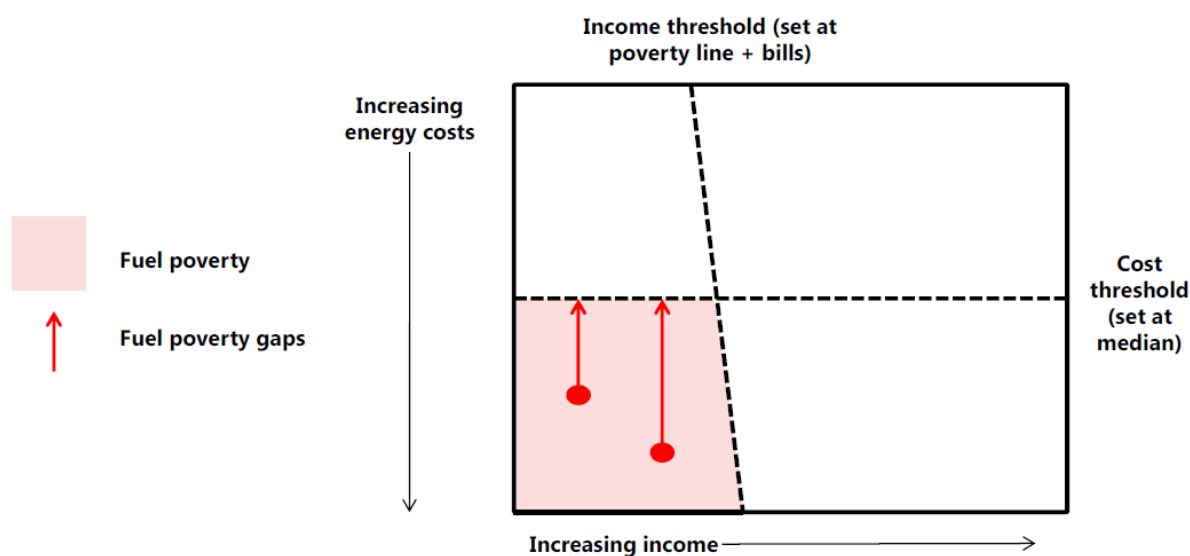


Figure 53: The low income high costs definition (source: UK Department of Environment and Climate Change, 2013)

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) income⁸¹. 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

⁸¹ 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

costs incurred. In this way, the definition captures those who economise to the point of being detrimental to their health.

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 considered⁸². 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.

⁸² 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)⁸³.

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)⁸⁴, 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 income⁸⁵ 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.

⁸³ 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.

⁸⁴ 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.

⁸⁵ 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 expenditure⁸⁶.

- Variable = *dispsch8* "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 combines⁸⁷:
 - 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)⁸⁸ adopted by the Australian Council of Social Service (ACOSS) for their 2012 "Poverty in Australia" report⁸⁹. 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

⁸⁶ ABS 6503.0 SIH and HES User Guide 2009-10 page 2

⁸⁷ ABS SIH and HES User Guide 2009-10, p102

⁸⁸ 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.

⁸⁹ Available from <http://acoss.org.au/policy/poverty/>

median of this adjusted measure is then derived and the poverty line is set as a percentage of the new median.

The equivalised AHC income measure is calculated as $EAHCDI = (dispsch8 - exp01)/EQUIVH$. The attributes of this variable are shown in Figure 54.

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 54: 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 \$584.80⁹⁰. 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 dwelling⁹¹.

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.

⁹⁰ 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

⁹¹ ABS Household Expenditure Survey and Survey of Income and Housing, User Guide 6503.0 2009-10 page 101.

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

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 million⁹² 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 be 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 publications⁹³ 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 55. households

⁹² 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”.

⁹³ Refer to OECD (2013), *OECD Framework for Statistics on the Distribution of Household Income, Consumption and Wealth*, OECD

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.

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
Estimated equivalence scale quintiles 1 & 2		1.00	1.53	1.77	2.13	2.55	2.75
Modified OECD Equivalence Scale		1.00	1.49	1.90	2.25	2.63	3.02
Square root scale		1.00	1.41	1.73	2.00	2.24	2.45

Figure 55: Derivation of an estimate of an energy expenditure equivalence scale, Australia 2009-10

As can be seen in Figure 56 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.

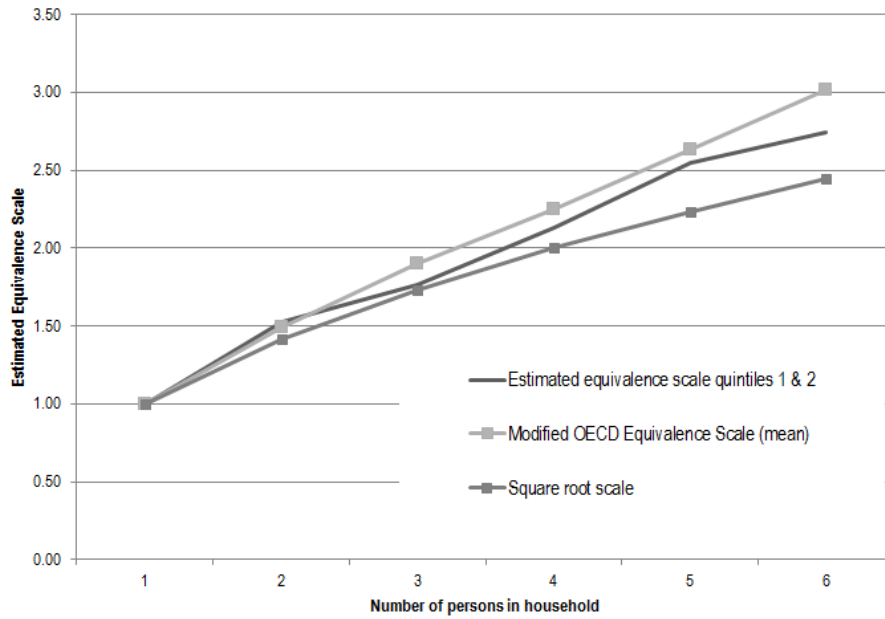


Figure 56: Estimated energy expenditure equivalence scales, Australia 2009-10

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

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 57.

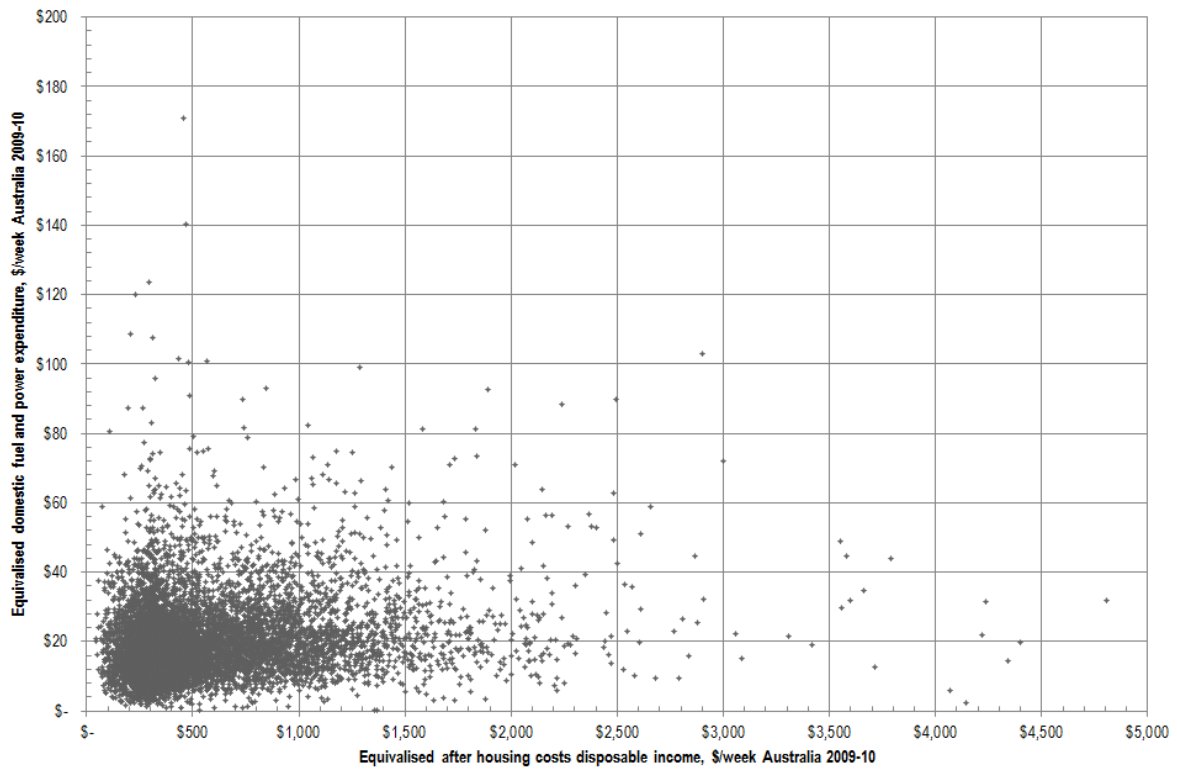


Figure 57: Scatter diagram of equivalised energy expenditure vs capacity to pay 2009-10 Household Expenditure Survey

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 58:

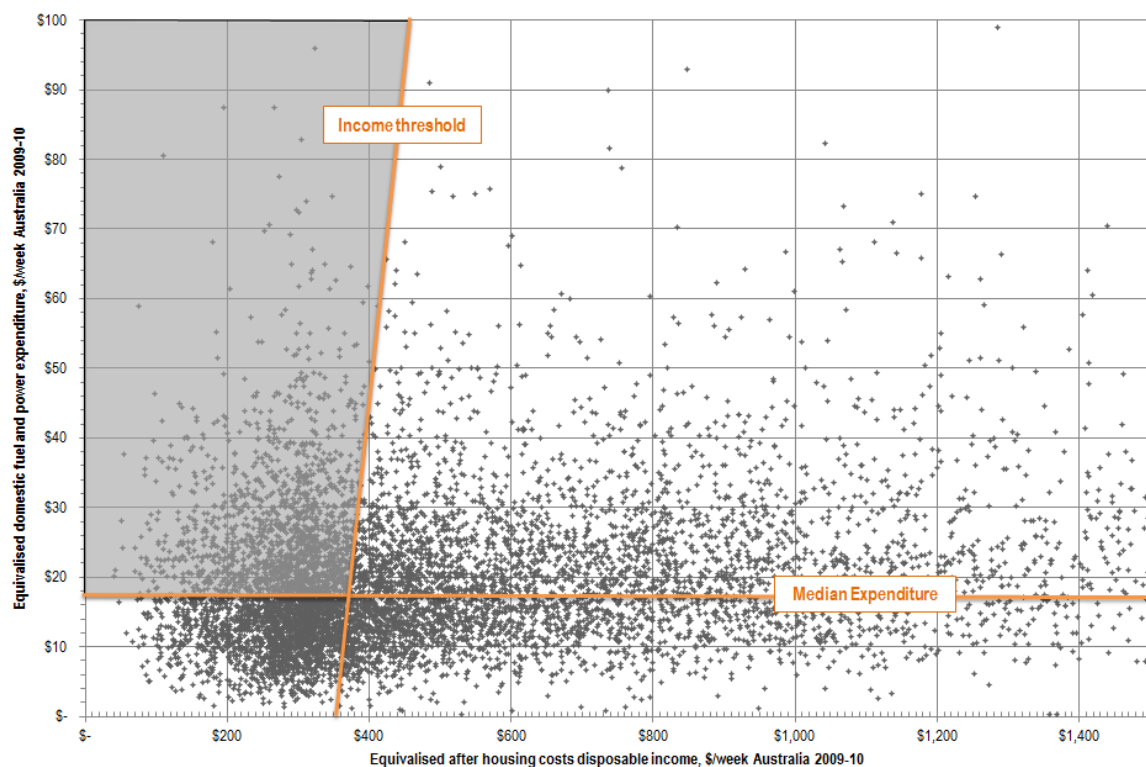


Figure 58: Scatter diagram of Figure 57 with income and expenditure thresholds shown

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 58) 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 59. 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%.

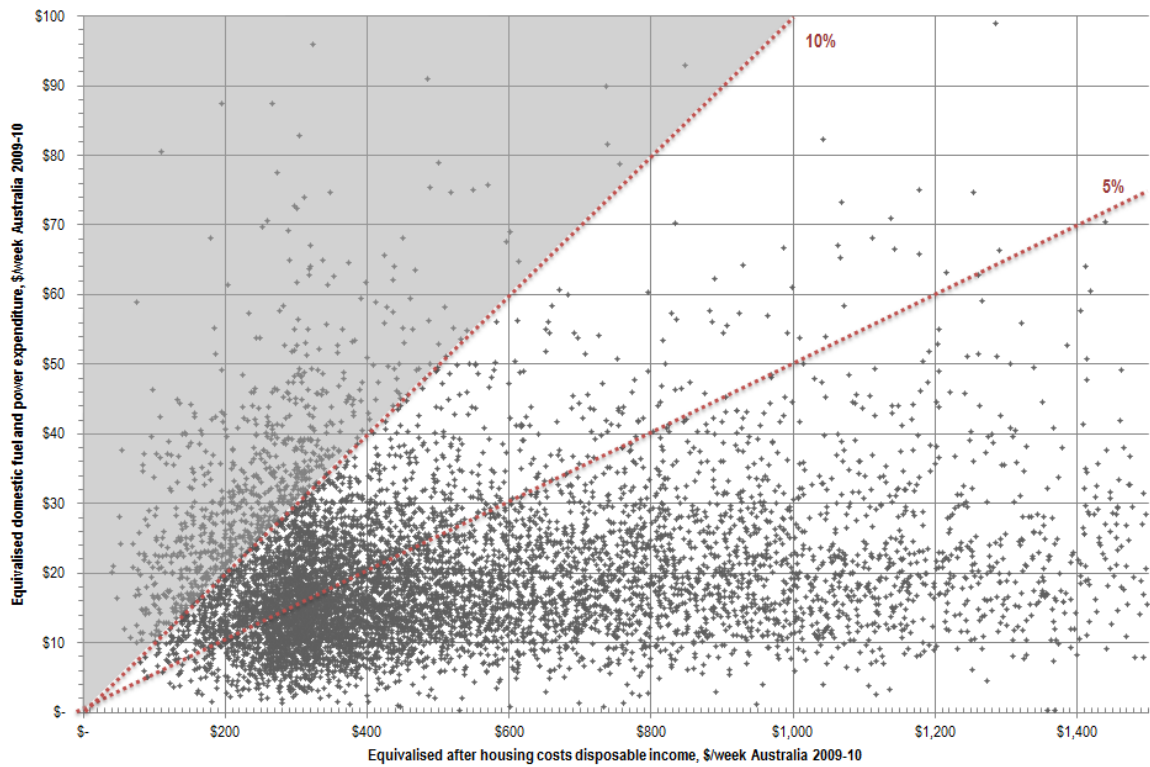


Figure 59: Scatter diagram of equivalised energy expenditure vs capacity to pay with various thresholds shown

A hybrid approach has also been examined that combines the expenditure ratio with the income threshold to identify the cohort illustrated in Figure 60.

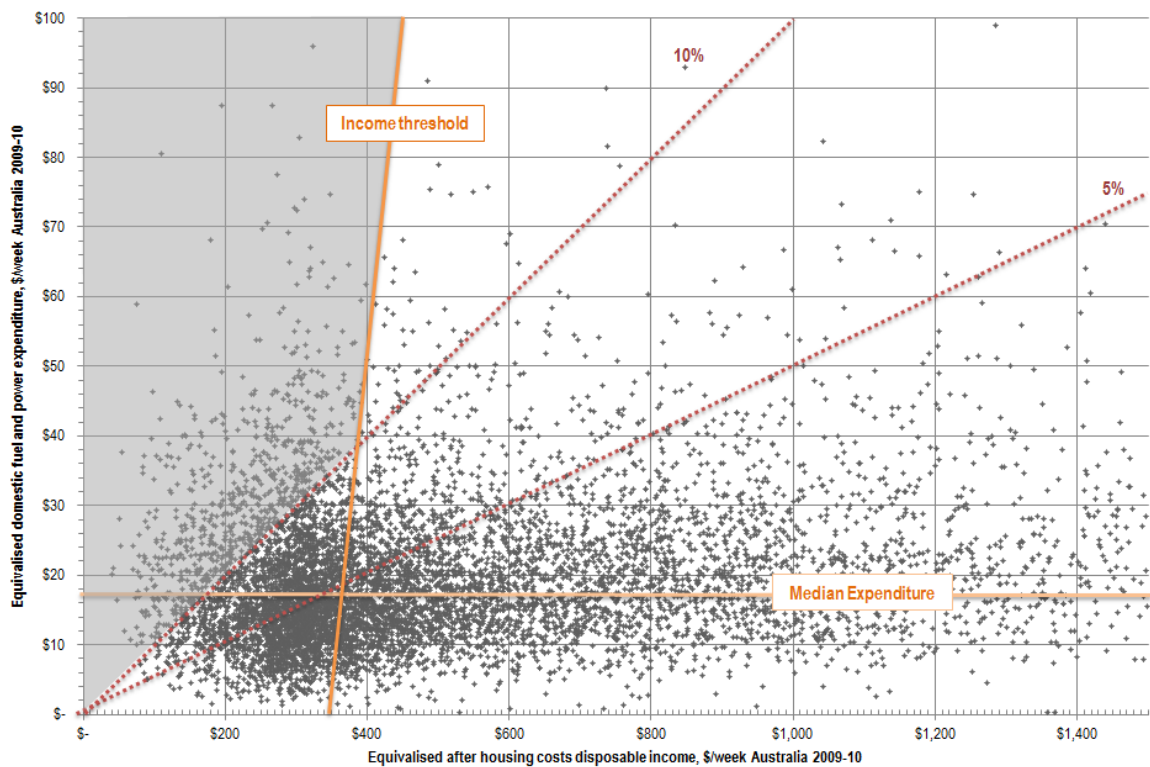


Figure 60: Scatter diagram of equivalised energy expenditure vs capacity to pay with hybrid cohort illustrated

In a review of the UK fuel poverty measure for UK energy regulator OFGEM, Owen (2010)⁹⁴ 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 Indicators⁹⁵ 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 [*cflectr*]
- “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 14: 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

⁹⁴ Review of the UK fuel poverty measure, Report for Ofgem, Gill Owen, Sustainability First March 2010 from <http://www.sustainabilityfirst.org.uk/publications.htm>

⁹⁵ 6530.0 HES Summary of Results, p59

- 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.

A. State or territory of usual residence

Table 15 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 15: 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 project⁹⁶ and the recent ABS Household Energy Consumption Survey (HECS)⁹⁷ 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.

⁹⁶ Refer to the technical reports of the AER’s consultants ACIL Tasman at <http://www.aer.gov.au/node/9751>

⁹⁷ Australian Bureau of Statistics 4670.0 - Household Energy Consumption Survey, Australia: Summary of Results, 2012

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)⁹⁸.

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 regimes⁹⁹. However, the full distributional impact of these changes and of price rises since 2009-10 will be revealed in the next Household Expenditure Survey¹⁰⁰.

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.

⁹⁸ 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

⁹⁹ 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>

¹⁰⁰ 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.

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

Table 16 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 16: 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 17 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 17: 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 59**.

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 18 presents the composition of the five cohorts (columns 1-5) by housing status 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)	
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	70.4%	58.4%	62.1%	52.8%	70.4%	54.9%	44.2%	37.5%
	Real estate agent	16.8%	16.9%	15.3%	20.9%	16.8%	20.4%	30.2%	23.6%
	State and territory housing authority	4.5%	13.4%	10.2%	9.4%	4.5%	8.6%	10.9%	19.3%
	Person not in same household - Parent/Other relative	2.0%	2.3%	2.9%	1.6%	2.0%	1.4%	3.0%	9.6%
	Person not in same household - Other person	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%
	Private Rental subtotal	22.3%	24.2%	23.1%	33.7%	22.3%	32.8%	40.3%	31.2%

Table 18: 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 19 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 19: 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 *wklyel*. 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)¹⁰¹.

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 jurisdictions¹⁰². 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 concession¹⁰³ in 2009-10. The Essential Services Commission of South Australia (ESCOSA) report a figure of 196,000 in the annual market performance report for 2009-10¹⁰⁴. Media reports in September 2013¹⁰⁵ 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 issues¹⁰⁶, 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 20 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.

¹⁰¹ ABS 6530.0 Household Expenditure Survey and Survey of Income and Housing User Guide 2009-10, p38

¹⁰² 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>

¹⁰³ 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.

¹⁰⁴ www.escosa.sa.gov.au/electricity-overview/reporting-and-compliance/annual-performance-reports.aspx

¹⁰⁵ 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/>

¹⁰⁶ 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 20: Indicators of energy concession targeting, Australia 2009-10

Figure 61 illustrates the expenditure vs capacity to pay for concession eligible households.

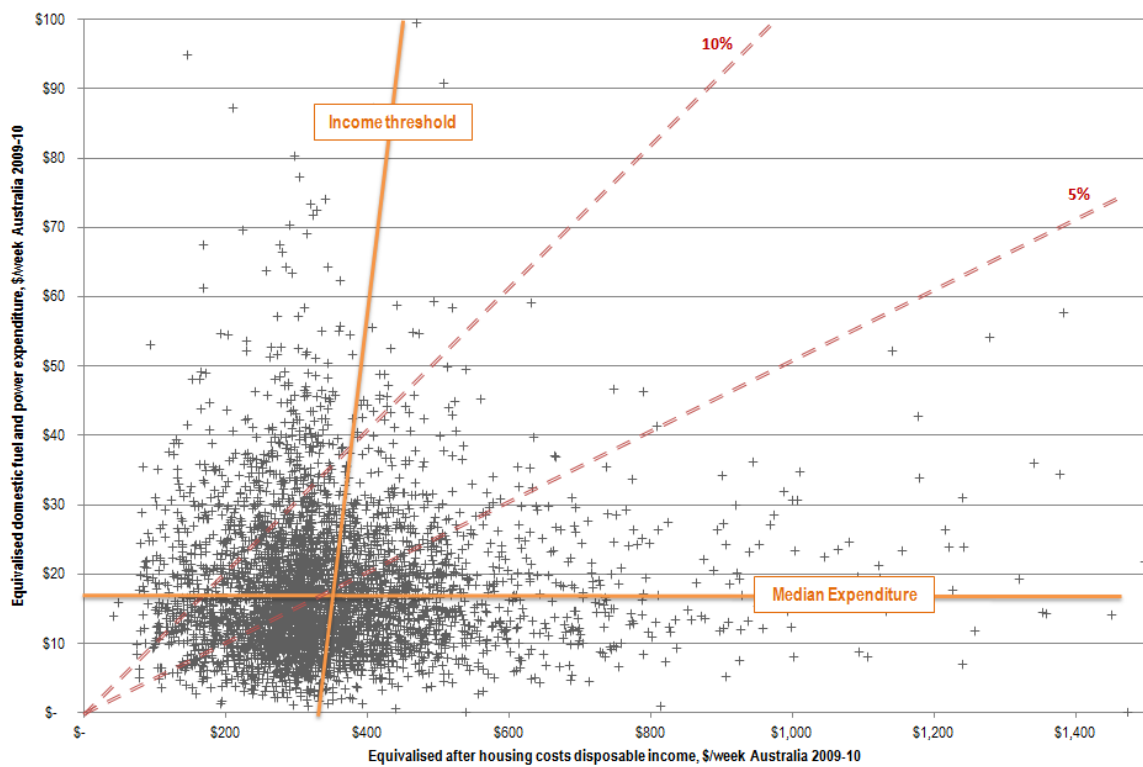


Figure 61: Scatter diagram of equivalised energy expenditure vs capacity to pay for concession eligible households

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 21 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 21: 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 22 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 22: 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 21. 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 23.

	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 23: Affordability indicators of Aged Pension Recipients, Australia 2009-10

The expenditure vs capacity to pay scatter plot is provided as Figure 62 and illustrates that this cohort tends to consume below the median expenditure and fall below the income threshold.

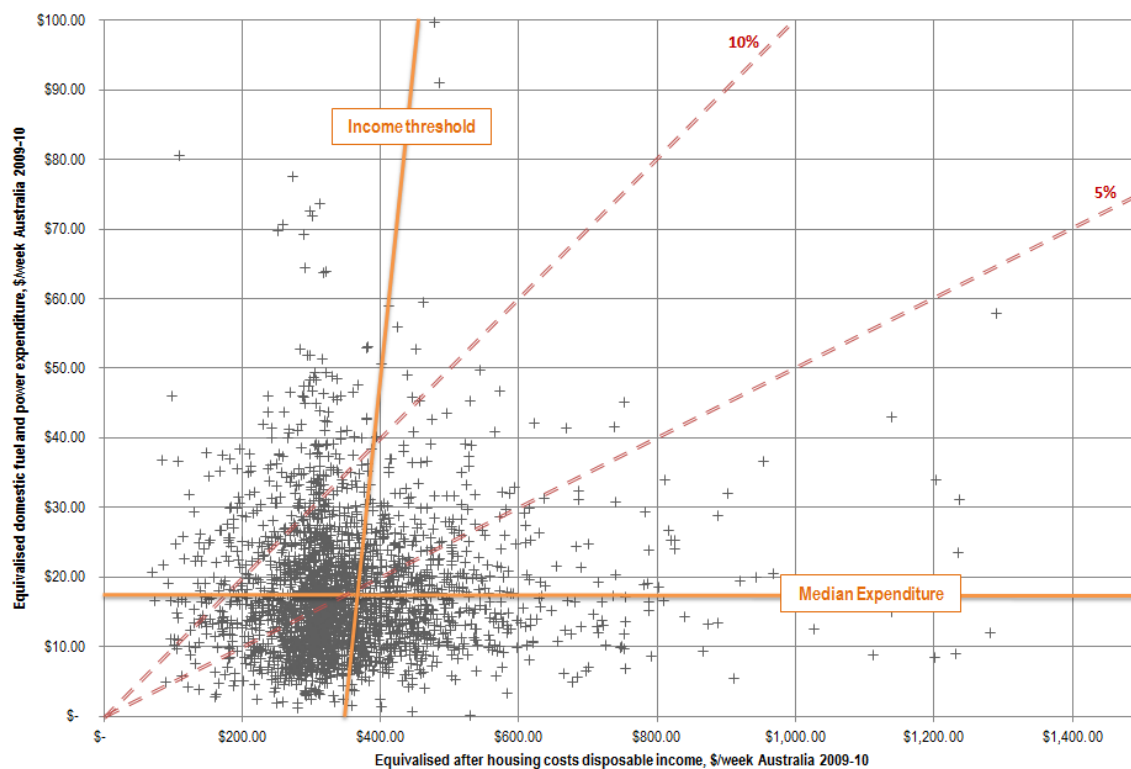


Figure 62: Scatter diagram of equivalised energy expenditure vs capacity to pay for Aged Pension recipients (ABS Household Expenditure Survey 2009-10)

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 63. 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 Australia¹⁰⁷. Combined with the analysis in this report, a particular focus on

¹⁰⁷ This work is being coordinated by the National Climate Change Adaptation and Research Facility (NCCARF; 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.

the elderly living alone can be justified.

		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%	
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 63: 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 24. 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 24: 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 64 and illustrates that this cohort tends to fall well below the income threshold but have expenditure around the median.

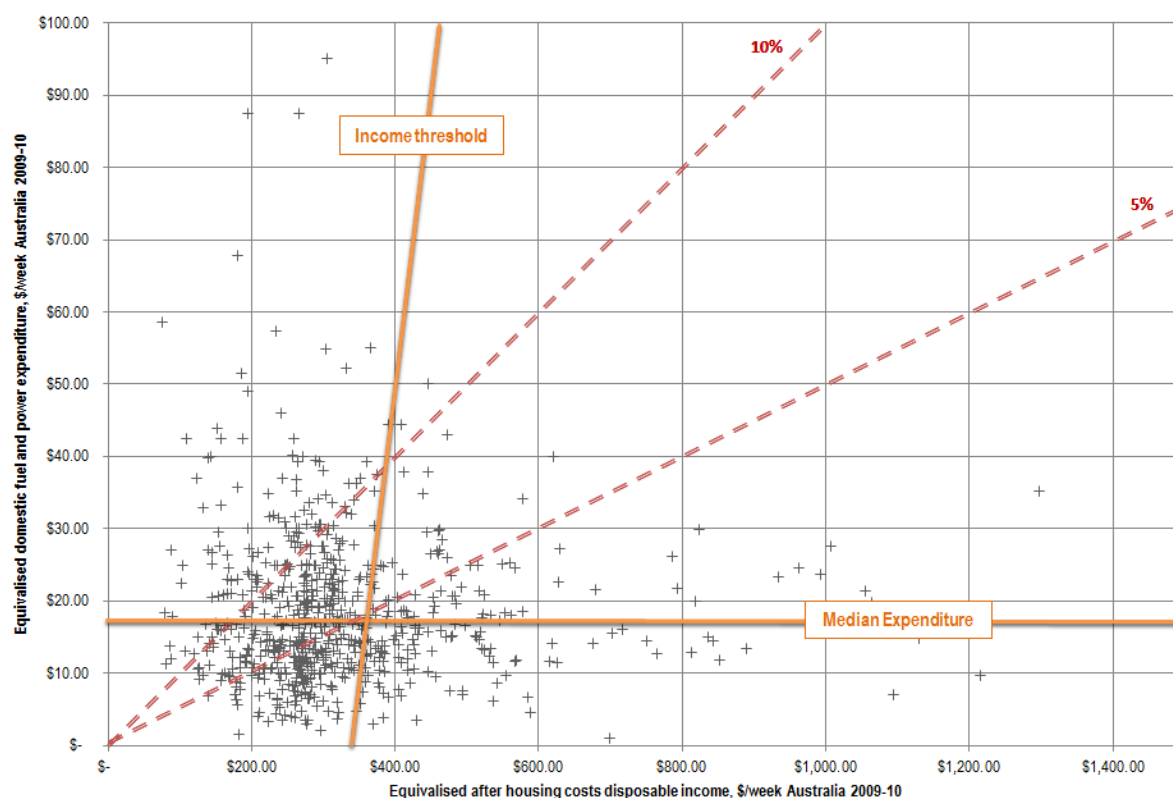


Figure 64: Scatter diagram of equivalised energy expenditure vs capacity to pay for Disability Support Pension recipients (ABS Household Expenditure Survey 2009-10)

The full set of results can be found in Figure 65. 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 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%
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 65: 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”¹⁰⁸ 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.

¹⁰⁸ <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 25. 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
dependents under 15 years	\$ 546	\$ 17.32	3.2%	4.0
Thresholds	\$ 346	\$ 17.37		

Table 26: Affordability indicators of Households with dependents under 15 years, Australia 2009-10

The expenditure vs capacity to pay scatter plot of households with children is provided as Figure 66 and shows that this cohort tends to have a similar range of expenditures as the others but a much broader range of incomes.

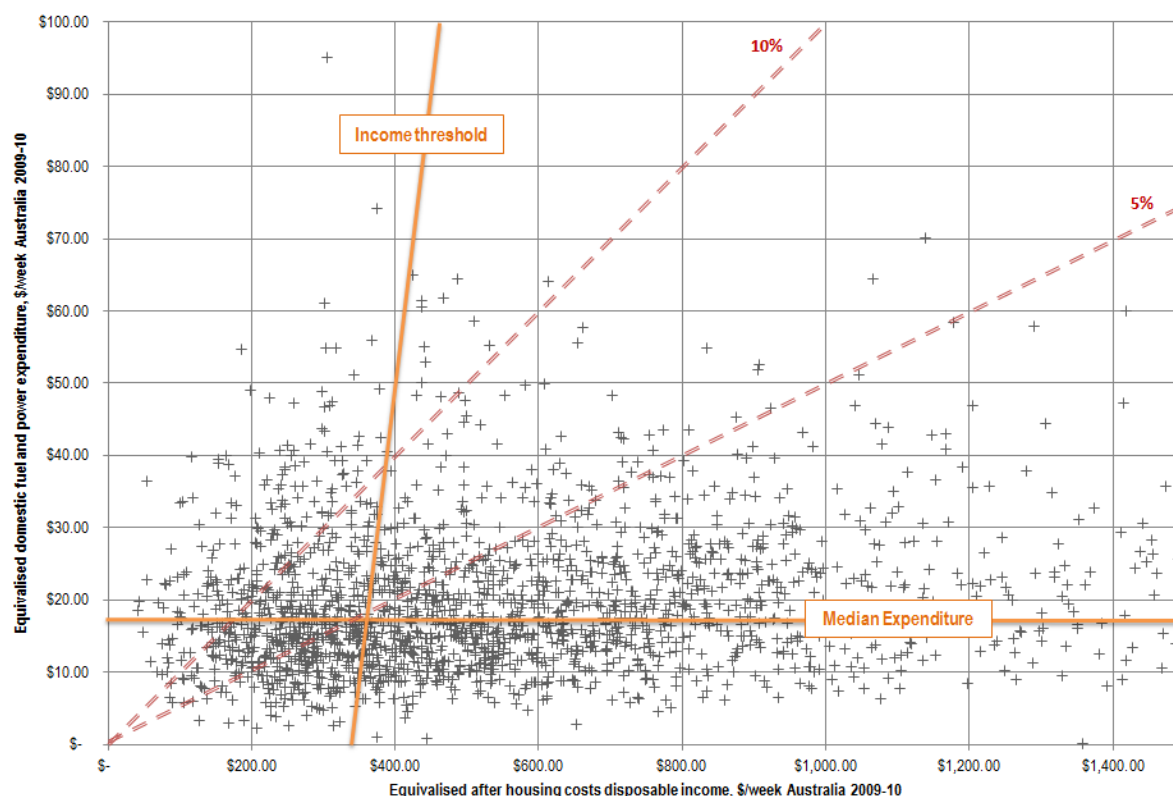


Figure 66: Scatter diagram of equivalised energy expenditure vs capacity to pay for Households with children (ABS Household Expenditure Survey 2009-10)

The full set of results can be found in Figure 67. 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 Nelson¹⁰⁹, 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.

¹⁰⁹ 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	-	-	-	-	-	-	-
	Not determined	-	-	-	-	-	-	-
	Main source of current HH income	Household has zero or negative income	-	-	-	-	-	-
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%	.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 67: 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 19). As shown in Table 27, 62.6% of this subset report receiving ‘no social assistance benefits in cash’ and are analysed separately in Table 28.

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%	
LDLRDHC	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%	53.5%	
	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 27: 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%
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%
LDRDHCF	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%
	<i>Private Rental Subtotal</i>	<i>26.0%</i>	<i>39.5%</i>	<i>44.7%</i>	<i>41.9%</i>	<i>44.9%</i>	<i>58.8%</i>
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 28: Affordability indicators of Households who receive no social assistance benefits in cash, Australia 2009-10

11 Appendix B – Energy Security Discussion Paper 2012

For a public policy objective around access and affordability, the responsibilities appear to lie across a spectrum from (almost) purely energy policy at one end, to (almost) purely social policy at the other. In between, there are a number of roles and responsibilities that are divided up between the policy portfolios and between levels of government.

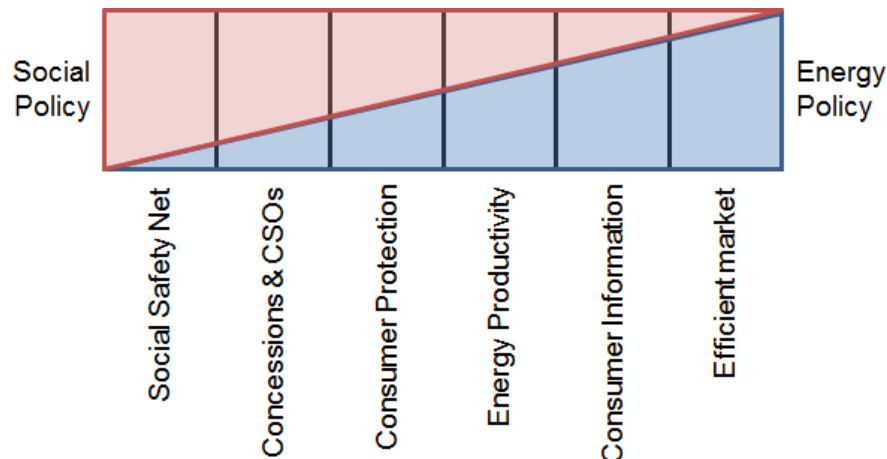


Figure 68: illustrative spectrum of public policy responsibilities shared between energy and social policy domains

Figure 68 provides a basic representation of the policy interface. The broad objectives of the interface being related to *maintaining* or *preserving* affordability and access for vulnerable households. The model identifies six discrete public policy responsibilities shared between the two policy domains. Each of these is described briefly below.

Social Safety Net – refers to the Commonwealth Government lead provision of income support to ensure a general minimum income. This also covers the Utilities Allowance provided to some recipients. As illustrated, this is a Social Policy lead domain. The role of energy policy in this domain can be considered to be advocacy for adequacy. As stated in the Energy White Paper and in the other quotes provided earlier, the market intends to rely on the provision of an adequate safety net to preserve affordability. In this case, it is incumbent upon energy policy to maintain some level of engagement to ensure that this linkage is preserved.

Concessions and CSOs – refers to the State Government lead provision of energy specific community service obligations. These are usually in the form of a general energy or utilities concession as well as more targeted support for specific needs such as medical heating and cooling needs. Further, most jurisdictions require some sort of ‘statewide’ pricing equalisation. The depiction of the model implies that this domain is led by Social Policy but, since it refers to energy affordability specifically (as opposed to the general social safety net that seeks to

provide adequate economic resources to consume a range of goods and services) an increasing role for energy policy is required.

Consumer Protection – refers to the various provisions to uphold the rights of consumers against unfair practices; only some of which is specific to the provision of energy. This also covers the provision of independent dispute resolution. This domain focusses on the access objective and is generally unrelated to matters of price except for those related to market power or other anti-competitive behaviour. ACL and NECF. Why ACL does not cover some energy consumer issues – industry specific requirements ... Again, the depiction of the model implies that this domain is led by Social Policy but, since it refers to energy affordability specifically (as opposed to general consumer protections provided through the Australian Consumer Law) an increasing role for energy specific policy is required.

Energy Productivity – is a term taken from the Energy White Paper and refers to a range of matters related to energy consumption and includes energy efficiency policy, demand management/participation in the NEM as well as housing policy. Public policy intervention is generally limited to the extent that markets fail to deliver efficient outcomes. This domain also relates to Governments as housing providers and funders as well as Governments as regulators of energy performance of dwellings. The model depiction shows that this domain is considered to be led by energy policy but with a significant role for social policy to ensure that activities and information are appropriately targeted and accessible for consumers considered to be vulnerable.

Consumer Information – refers to a range of activities that allow consumers – both individually and in aggregate – to engage with the energy markets. The scope of this domain includes the ability for consumers to exercise effective choice in the market, to know enough about their own consumption patterns and needs to elicit efficient prices and for independent monitoring and analysis of market performance and trends. This domain must also recognise the diversity of general literacy and numeracy in the community as well as the increasingly popular terminology of energy literacy or utility literacy. This is an area of active reform as part of the NECF. Examples of activities include recent calls for accreditation of energy contract comparison sites (see Choice, CALC, CUAC). The model depiction shows this to be led by energy policy due to the rather energy specific and technical nature of the information in question but with a role for social policy to ensure that this information is provided to consumers in an appropriate and accessible way and to ensure information is collected in a way that effectively informs social policy development.

Efficient Market – refers to the out-turn of the competitive and regulated aspects of the energy markets in terms of both cost and price. Referring back to the discussion of market objectives

in Chapter 3, the markets are tuned to deliver energy at least cost (reflecting productive and dynamic efficiencies) and at efficient prices (reflecting allocative efficiencies). The terms and conditions of contract are largely allocated to the Consumer Protection domain.

The model depiction shows this as being led by Energy Policy. The small wedge indicating a role for social policy can be considered to focus on allocative efficiency and pricing outcomes that do not un-necessarily disadvantage vulnerable consumers. This is recognition that all consumers (from households to industry) benefit from overall cost efficiencies. However, even given overall efficient costs, discretion exists in the recovery of these costs from consumers and perverse cross subsidies can and do exist that can, often inadvertently, exacerbate vulnerability and disadvantage. Ensuring that energy market reform prioritises outcomes that deliver both efficiency and equity dividends is an appropriate role for social policy in this domain. This is probably more likely to take the form of advocacy rather than direct intervention.

Refining the model

After the above model had been discussed with colleagues it became evident that some refining and initial simplification was possible. At the social policy lead end of the spectrum, the domains of the Social Safety Net and Concessions & CSOs were initially separated to reflect the jurisdictional distinctions of being led by the Commonwealth and State & Territories respectively. This level of distinction was considered not necessary for an initial depiction of the policy spectrum. It was therefore proposed to combine these into a domain simply called Safety Net and to rationalise the categories from six to five.

Further, it is possible to depict these categories or domains in terms of their overall contribution to the aggregate objective of access and affordability; the joint policy outcomes. For example:

- Safety Net becomes adequate and targeted safety net
- Consumer Protection becomes robust consumer protection
- Energy Productivity becomes energy used efficiently [needs over wants; least cost demand; quantity and time of use].
- Consumer Information becomes informed and engaged consumers
- Efficient Market becomes efficiently priced energy

Revisiting the objectives of affordability and access, these terms are reminiscent of the language used in international development and anti-poverty policy; particularly in the context of 2012 being the United Nations International Year of Sustainable Energy for All. The idea being conveyed by these terms aligns with what the International Energy Agency (IEA) refers

to as *energy security*, broadly defined as **adequate**, **affordable** and **reliable** supplies of energy (IEA, 2009b).

Energy Security is a term usually applied at the nation-state level and most commonly in the context of international oil markets. In the last decade however, energy security concepts have been seen applied to other forms of energy (Yergin, 2006), including Australia's own National Energy Security Assessment (CoA, 2011b), although largely still at the nation-state level. More recently, the term and concepts have begun appearing in the context of poverty and sustainable development (IEA, 2010; Slay, 2009).

Slay (2009) for example has argued the need to “... *disaggregate concerns about energy security ... from the nation-state to the households, and particularly to poorer households...*” in discussions of transitioning economies of the former Soviet Union.

With reference to Australia's most recent Energy Policy White Paper process, this *energy security* concept is not wholly incompatible with the stated broader national energy policy objectives of providing *accessible, reliable and competitively priced energy* (CoA, 2011a). What we have been able to observe though is that the concept of *affordable* has been considered to be more appropriately substituted with a concept of *competitively priced* at the market level. As will be expanded on though, for residential consumers and particularly for those *at the margins* (those regarded as *vulnerable to disconnection* for an inability to pay) affordability is a fundamental. However, as should be clear by the analysis to this point, the stated and intended role of the competitive market is to deliver electricity efficiently, the public policy objective of affordability involves forces over which the market may not reasonably be expected to have control. This is not to say that the market is absolved of responsibility in this regard; just there are other policy instruments that can more effectively (and efficiently) deliver key aspects of this objective.

Noting the semantic issues of this subject matter, this framing of *energy security* for households is considered to be a useful one, particularly when seeking to add *affordability* to the list of energy policy objectives (as opposed to energy market objectives).

Another impetus for considering an alternate framing such as energy security, is the observation that Australia's electricity markets have so far not offered a *basic* electricity product: the equivalent of the standard home telephone, the *no-frills* or *home-brand* supermarket staples, the base-model automobile etcetera. The energy security component of *adequate* is what pertains to this. Is it reasonable that the electricity service on offer, even if efficiently priced, is the only alternative to disconnection? Is there room for another option

between the two that is adequate for basic needs and priced accordingly?

Historically, the closest would probably be pre-payment meters however, their introduction into competitive markets has been resisted by social policy advocates due to the ever-present self-disconnection capability and that the cost of the technology (at least at the scale of voluntary adoption in a competitive market) has resulted in electricity prices that are not particularly competitive. The introduction of pre-payment meters into South Australia by the Tasmanian Government owned energy business Aurora in 2006 had limited success. Customer numbers peaked at around 3,500 in 2009-10 (less than 0.5% of households) - and are now declining rapidly as they withdraw from the state¹¹⁰. The offer obviously had some appeal to lower income households though as the majority of pre-payment customers were concession card holders, averaging over 55% across this period compared to an average 30% of all customers (ESCOSA, 2011). The prices offered in 2012 exceeded those of the standing contract available under the regulated offer from AGL Energy (AGL, 2012c; Aurora, 2012).

The United Nations Secretary-General's Advisory Group on Energy and Climate Change (AGECC) released the report *Energy for a Sustainable Future* in April 2010 (UN, 2010) in response to the role of energy in the achievement of the Millennium Development Goals (MDG). The report is now part of a global movement to expand access to electricity across the developing world with 2012 declared the International Year of Sustainable Energy for All by the UN General Assembly (UN, 2011). The AGECC report's call for universal energy access spawned the United Nations Energy Access Facility (UN-EAF) which is described as:

" .. a collaborative programme of UNDP, UNEP and UNIDO in collaboration with governments and private sectors partners aimed at supporting developing countries in dramatically expanding access to modern and clean energy services for the poor to help achieve the Millennium Development Goals (MDGs)."

The report also provided a useful depiction of the levels of access to energy services to describe the natural progression from ensuring access in order to meet basic human needs through to the needs of participation in modern society.

¹¹⁰ Aurora website <http://www.auroraenergy.com.au/your-home/products-and-offers/npayg/> accessed September 25th, 2012: "Current customers of Aurora PAY AS YOU GO have been advised that the product is no longer available in South Australia. If you still have Aurora PAY AS YOU GO installed and have not arranged to transfer to a new retailer, please do so as a matter of urgency."

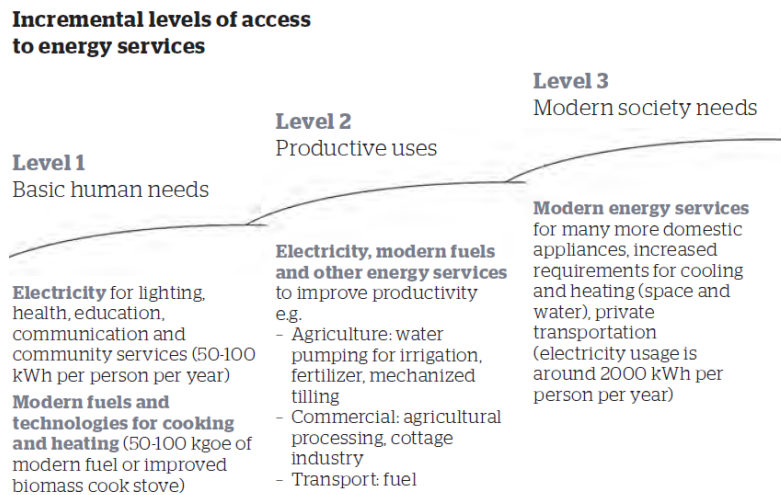


Figure 69: Depiction of the conceptual levels of energy access. Source: (UN, 2010)

This depiction of Figure 69 also illustrates the idea that a certain level of access is required in order to meet basic needs and that it is possible to conceive of *discretionary* vs. *essential* consumption of energy. This is not a new concept by any means but one that has achieved limited traction in policy debates in developed economies and competitive markets. Water industry reforms in Australia however have tended to accept this more willingly. In the case-study state of South Australia for example, it is possible only to impose a flow restriction on potable water in cases of failure to pay and even then as a last resort, but not to permit outright disconnection. In the regulated water markets of the neighbouring state of Victoria, this flow restriction is prescribed to be a minimum 2 litres per minute (ESCV, 2010b).

This '*partial disconnection*' does not have an energy equivalent in Australia as yet although load limiting devices have been deployed in developing countries (Smith, 1995) in order to manage electrification capacity and in the US as an alternative to disconnection (WEC, 2010). It is also understood to be a smart meter functionality that has attracted some regulatory interest (Ofgem, 2010) and consumer research (Ofgem, 2011) in the UK. The potential has also been raised in the roll-out of smart meters in Victoria where the use of capacity control for credit management purposes has been banned until December 2013 (ESCV, 2010a) while further investigations into consumer protection issues are investigated.

However, the use of smart meters for *supply capacity control* (ESCV, 2011), or *trickle disconnection* as it also referred to (CUAC, 2011), is not the only application of quite similar functionality. The use of similar controls applied to individual appliances is referred to as *Direct Load Control* or *DLC* and has successfully achieved meaningful reductions in peak demand from appliances such as air-conditioners and pool pumps (ETSA Utilities, 2011; IEA, 2009a; Johnston, 2010; Utilities, 2011). The prospect of smart meter roll-outs in the UK and in Australia are seeing the consumer issues of these control features explored in more depth

and it is clear from the regulatory literature so far that valid concerns exist even if there appears to be a *slippery slope* or *thin edge of the wedge* basis for some of the concerns, it would be naive to dismiss them out of hand. The following does not attempt to resolve all of these issues but to highlight the potential benefits should it be also possible to address these consumer protection issues.

The pursuit of *energy security* for vulnerable consumers also makes this shortcoming quite clear. An electricity product based on energy security would aim for a price-service mix that better suited the adequacy, reliability and affordability requirements of this consumer cohort. Such consideration could be expected to contribute to the *adequate* and *affordable* dimensions of *energy security* as well as the allocative efficiency dimension of the NEO.

Faruqui's dynamic pricing research (Faruqui A, 2012; Faruqui A et al., 2010) reiterates an observation, in the US context at least, that lower income households tend to have flatter than average load profiles – better *capacity factors* or *load factors* in the industry language. Part 2 of this thesis, and Chapters 10 and 11, in particular will present, analyse and discuss load factors in our case-study market of South Australia and illustrate that the peak demand phenomenon in this market is driven by the climate and, in particular, the combination of sustained heat waves and high air-conditioner penetration. Further it will be shown that tenants of public and social housing are a cohort that, due to relatively low penetration of air-conditioning capacity and smaller homes, do not have the physical capacity to contribute to the average load factor and that, based on indicative values of capacity are extremely likely to be providing a cross-subsidy to other consumers.

The Australian Government's DRAFT Energy White Paper made reference to this apparent cross-subsidy that exists within the 'small customer' cohort. The paper makes an assertion that a key factor behind the growth in peak demand is inefficient pricing structures that are not cost reflective and that this (CoA, 2011a):

“... results in some consumers paying more than they should, and effectively cross-subsidising those who are driving the growth in peak demand.”

The document expands on this somewhat when it states:

“This means that the less well-off, who generally do not run multiple air conditioners and television sets, are cross-subsidising those consumers who do.”

The South Australian Government has made a similar observation (Government of South Australia, 2011):

“Households that do not run their air conditioners during peak periods or do not have one at all are largely subsidising the cost to the network to service other households’ air conditioners operating during those peak periods.”

Given that tenants of public and social housing have demonstrably low incomes and, as shown are already paying a higher proportion of income on energy and housing costs, it would appear that unwinding this cross-subsidy could be a *no regrets* way of improving affordability and hence energy security while enhancing allocative efficiency in the market.

The term *no regrets* has seen wide contemporary use in relation to climate change related risk management and links to poverty and vulnerability (Heltberg et al., 2009) and the notion of *no regrets* actions to advance both social policy and energy policy is an appealing concept. It acknowledges that not everything that advances the objectives of social policy will also advance the objectives of energy policy or vice-versa but that when the opportunities arise, they can be and should be prioritised.

Prominent infrastructure regulation academic Paul Joskow once referred to a key regulatory priority for developing economies as “ ... *crafting regulatory mechanisms that balance efficiency and distributional goals*” (Joskow, 1999) and it is felt that such *no regrets* opportunities are a way of doing exactly that without distorting the efficiency basis that has taken so long to reach prominence in developed economies.

Returning to the Social/Energy Policy model, the end result of this refining is depicted in Figure 70:

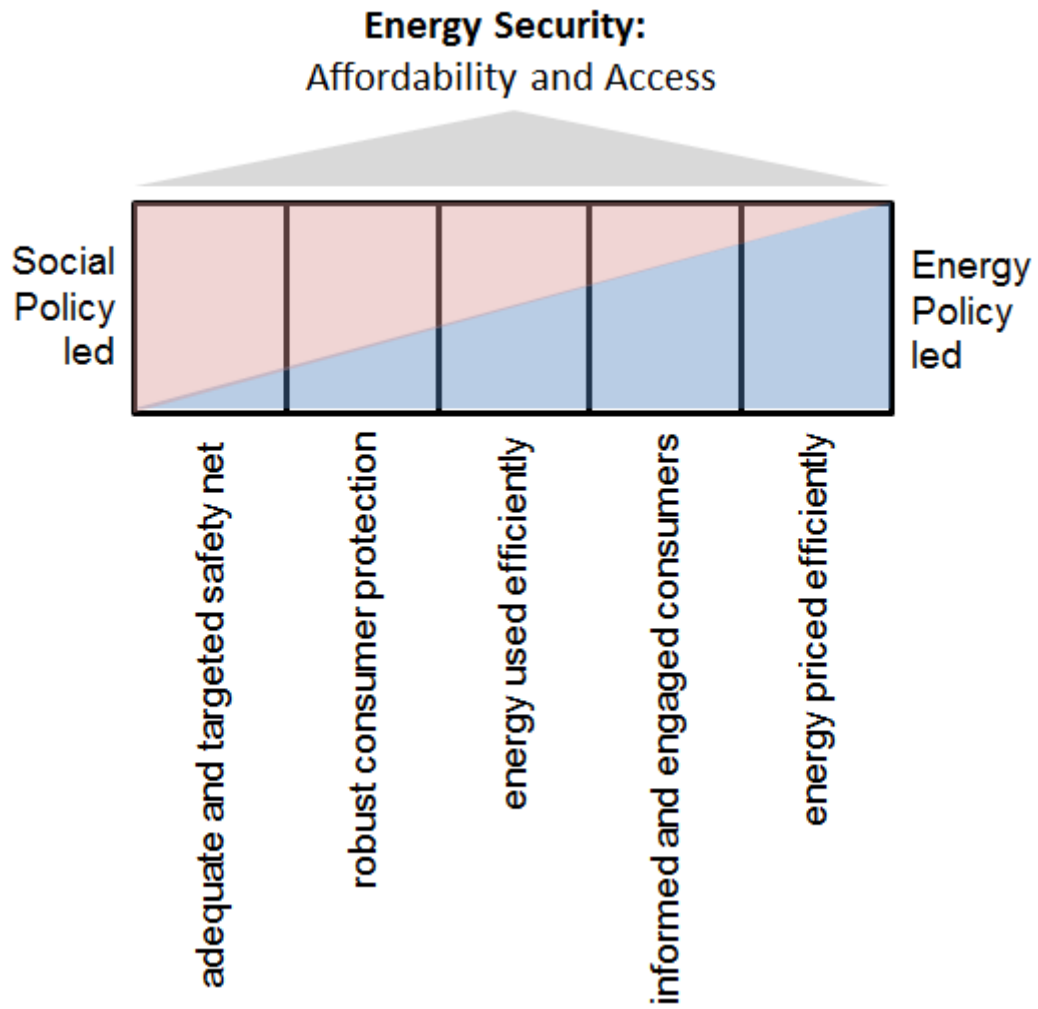


Figure 70 – An Energy Security typology of the Social/Energy Policy spectrum

12 Appendix C – Summary of Studies seeking to estimate the impacts of different climate policies on electricity prices.

Four studies are selected for thorough analysis as they comprise a representative spectrum of approaches (Jacobs for the Climate Change Authority, CSIRO and the Energy Networks Association, Frontier Economics for the AEMC and Jacobs for The Climate Institute). Other studies which used a variant of one of these approaches are discussed more briefly.

12.1 Jacobs for the Climate Change Authority

In December 2014, the then Minister for the Environment asked the Climate Change Authority (CCA) to conduct a Special Review into Australia's policies and future targets for reducing greenhouse gas emissions. The CCA subsequently commissioned Jacobs to undertake electricity market modelling of 7 alternate climate policy options against a reference case (Jacobs 2016b) and Victoria University to model economy wide impacts.

The emissions reduction target is based on cumulative emissions derived from a target consistent with global efforts to limit warming to 2°C. An electricity sector emissions constraint of 1,580 Mt CO₂-e over the period 2020 to 2050 is imposed in each case (Jacobs 2016b, p2). This results in electricity sector emissions of around 50Mt CO₂-e by 2030 under most scenarios, down from 2005 electricity emissions of 197Mt CO₂-e (AGEIS 2016) or a reduction in the order of 75% compared to the less aggressive 28% from 2005 of the current Australian government target.

The modelling by Jacobs illustrates the relative impacts of different targets¹¹¹. Jacobs state that (p21) "... the reference cases for each set of results are not projections of the sector under 'business as usual' but designed so that differences between the policy cases are due specifically to the policies rather than the policies and other features." Their '3 degrees of warming' scenario increases projected residential retail prices by up to 15% relative to their reference case (**Figure 71**). Their '2 degrees of warming' scenario increases projected residential retail prices by around 12% to 23% relative to their reference case (**Figure 72**)

The CCA work also suggests that, depending on the policy tools applied, the impact on long run costs to consumers of stronger targets is not as pronounced as the price outcomes in the period to 2030. For example, **Figure 73** illustrates how the price trajectory from an Emissions Intensity scheme is quite different under the two different emissions targets. By contrast, the modelling results for the 'technology pull' option similar to the reverse auctions used by the ACT to pursue their renewable energy target shows similar gradual increases in prices under

¹¹¹ The 3°C scenario includes a carbon budget of 2,800 Mt CO₂-e by 2050 compared to 1,580 Mt for the 2°C.

the two different emissions targets (**Figure 74**).

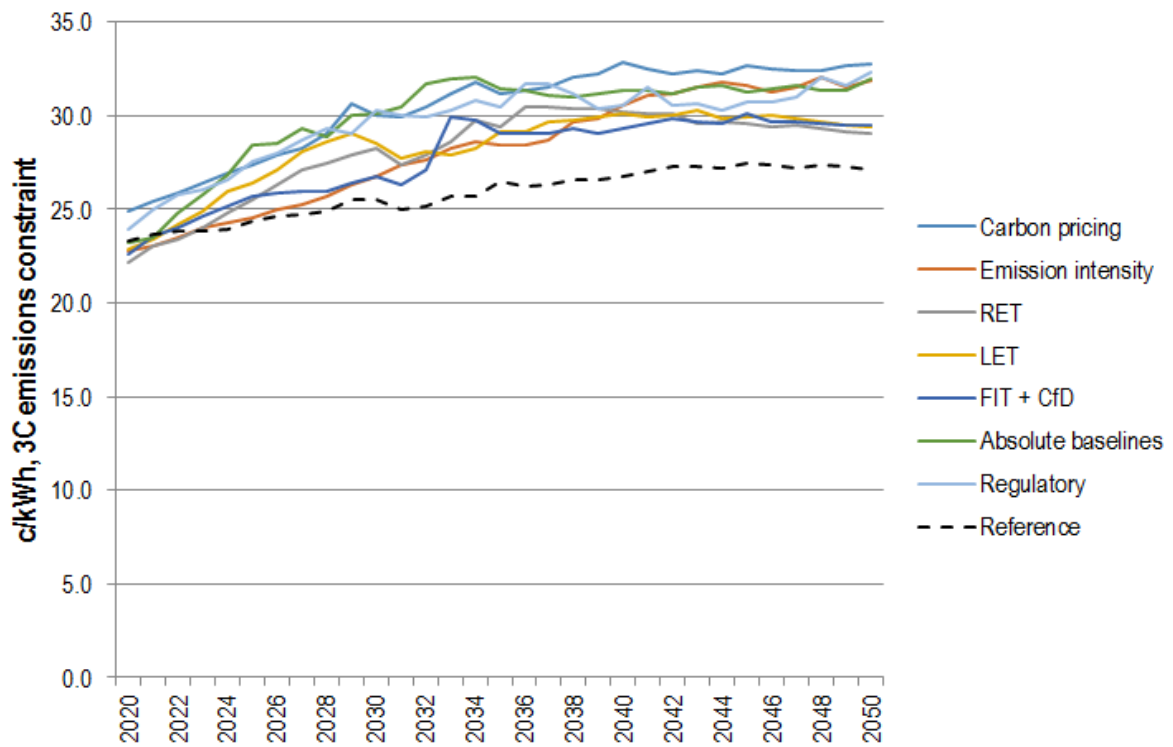


Figure 71: Illustrative impacts on national average residential electricity prices – 3°C of warming scenario
(Source: Jacobs 2016b)

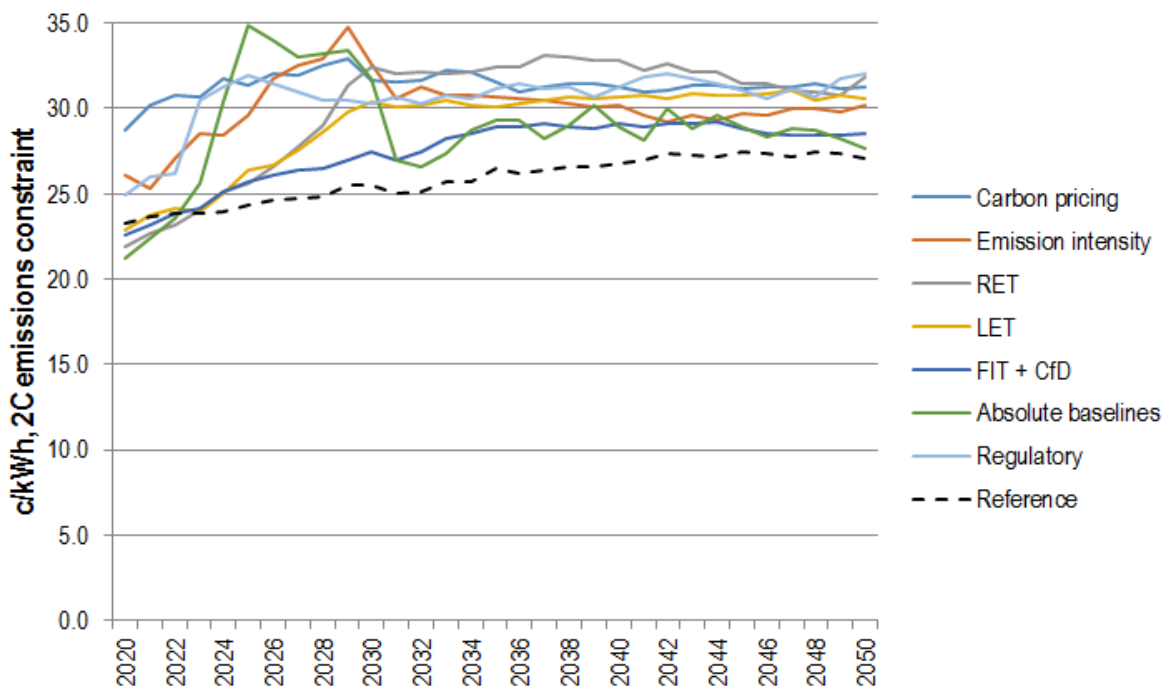


Figure 72: Illustrative impacts on national average residential electricity prices – 2°C of warming scenario
(Source: Jacobs 2016b)

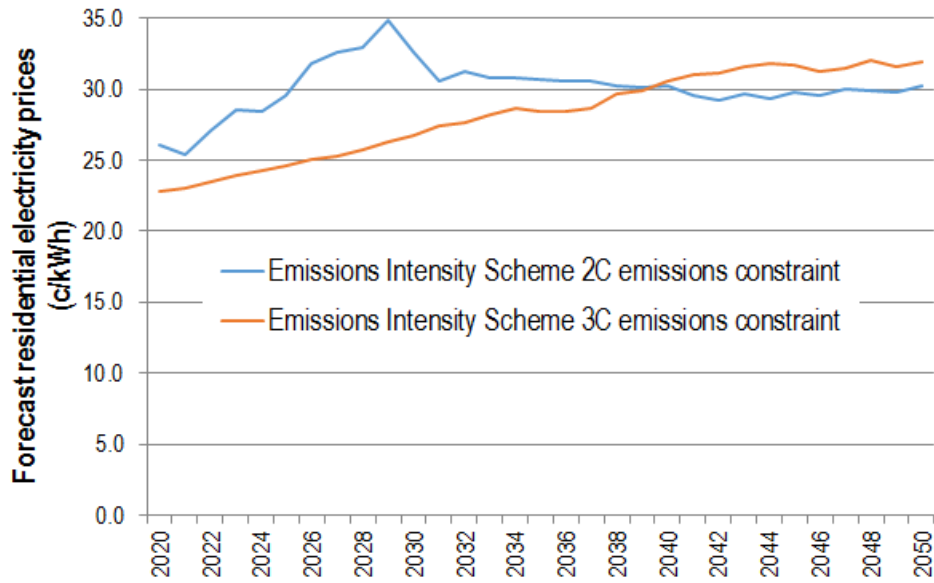


Figure 73: Illustrative impacts on national average residential electricity prices from identical Emissions Intensity Schemes under different emissions reduction targets (Source: Jacobs 2016b)

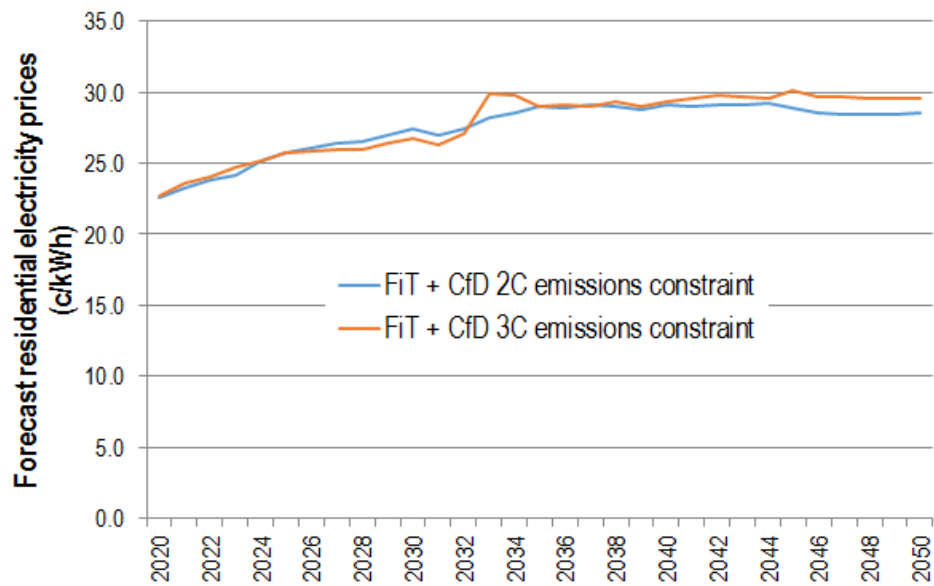


Figure 74: Illustrative impacts on national average residential electricity prices from identical Feed-in + Contract for Difference schemes under different emissions reduction targets (Source: Jacobs 2016b)

12.2 Electricity Network Transformation Roadmap: ENA and CSIRO

Energy Networks Australia (the peak body representing electricity transmission and distribution and gas distribution businesses) and the CSIRO have developed an Electricity Network Transformation Roadmap (*the Roadmap*). The Key Concepts Report was developed over 2 years and published in December 2016. It was described as “... a comprehensive plan to keep the lights on, bills affordable and decarbonise electricity.”¹¹²

The report describes a transformation of the electricity system driven by customers taking control of their energy use, embracing new technologies and supporting action on climate change. The future described by *the Roadmap* – the *Whole of Roadmap* scenario – is contrasted with a counterfactual scenario in order to demonstrate the economic benefits available. The Whole of Roadmap scenario includes three key elements:

- Network tariff reform proceeds on an opt-out basis and distributed energy resources are harnessed to deliver reductions in peak demand and, consequently, reductions in capacity at individual substations. The counterfactual scenario relies on the current ‘opt-in’ approach to cost reflective pricing.
- Further improvements in the utilisation of existing network capacity through 20% adoption of electric vehicles by 2035 – sharing fixed costs and reducing consumption charges for all consumers. The counterfactual scenario assumes that electric vehicles are not embraced by consumers.
- Electricity sector decarbonisation achieves a 40% reduction from 2005 levels by 2030 then accelerates to net zero emissions by 2050. Orchestration of distributed energy resources is a critical component. The counterfactual scenario delivers abatement of 35% by 2030 and 65% by 2050.

The *Whole of Roadmap* scenario delivers \$414 annual savings in average household electricity bills by 2050¹¹³ compared to the counterfactual while retaining security and reliability.

12.3 Frontier Economics for AEMC

The AEMC report *Integration of energy and emissions reduction policy*¹¹⁴ responds to a request from the COAG Energy Council to examine the potential impacts of alternate emissions reduction policies on the National Electricity Market. The focus is on the

¹¹² ENA/CSIRO Media release 6 Dec 2016 “No choice needed between Energy Security or Low Emissions – if we act now”

¹¹³ More modest savings are also available by 2030

¹¹⁴ AEMC 2016, *Integration of energy and emissions reduction policy*, Report, 09 December 2016, Sydney

mechanisms rather than the targets and the AEMC concludes that an Emissions Intensity Target (EIT) has the lowest cost of abatement to meet a given emissions target than the alternatives considered: an expanded large-scale Renewable Energy Target (LRET) and a Regulated closure program for high-emissions generators (REG).

Frontier Economics' Table 1 provides a high level summary of results for their base case:

Table 1: Summary of Base Case results

Case	Consumer impact ¹ (NPV, Real2016\$m, 2020-2030): change on BAU	Cost of abatement (Discounted), \$/tCO2 reduced	Resource cost (NPV, Real2016\$m, 2020-2030): change on BAU	New investment (MW) to 2030			Retirements (MW) to 2030	Average Output mix (2020-2030 average, %)		
				Gas	Renew	Total		Coal	Gas	Renew
BAU	0	0	0	1,341	4,809	6,150	406	75%	5%	20%
EIT	(\$4,945m)	\$30.4/t	\$5,546m	7,590	5,441	13,031	6,852	60%	19%	21%
REG	\$10,843m	\$34.2/t	\$5,838m	7,212	5,266	12,478	6,406	62%	17%	21%
LRET	\$1,062m	\$75.7/t	\$11,248m	0	26,166	26,166	2,559	65%	2%	33%

Source: Frontier Economics

The table illustrates that an EIT results in the least amount of costs being transferred to consumers. The modelling showed that consumers would in fact be better off over the period 2020-2030 as the costs of the transition are absorbed as losses by incumbent thermal generators (Frontier Economics 2016, page ii). The table also illustrates the significant retirement of capacity under both the EIT and REG options and how this is primarily replaced by Gas-fired generation.

The base case EIT certificate price (an implied carbon price since each certificate represents a tonne of CO2 equivalent) range from \$28 in 2020 to \$40 in 2030. This is comparable to the basis for AEMO's estimated residential price impacts (Jacobs 2016a). A scenario representing a higher abatement task (50% by 2030) delivers EIT certificate prices from \$35 (2020) to \$52 (2030).

12.4 The Climate Institute

A *Switch in Time* study commissioned modelling by Jacobs that provides guidance on the ability of various policy combinations to meet a "2°C carbon budget" over the study period. The carbon budget is derived in the same manner as that in the CCA's modelling. (The difference between them is the result of an extra year's electricity emissions in the TCI budget - 1,760 Mt CO2-e between 2020 and 2050 (TCI, p8) compared with 1,580 Mt between 2021 and 2050 in the modelling for the CCA.)

The work finds a carbon price rising to \$40 per tonne by 2030 would produce emission reductions similar to the government's current national 2030 target of 26-28 per cent below 2005 levels. This is consistent with the range of costs used in the modelling of residential prices by Jacobs for AEMO (Jacobs 2016a). TCI describes this as the 'Weak Start Carbon Price' scenario, noting that over 90% of the carbon budget is consumed by 2030, necessitating a major policy adjustment at that point that results in a carbon price of \$120 and a rapid and disruptive decarbonisation of the generation mix.

TCI recommend a number of measures complementary to a 'weak' carbon price including a structured closure of older power stations that would reduce electricity emissions by 45% below 2005 levels in 2030 and represent greater progress towards the stated carbon budget. Further measures are proposed in order to achieve deeper emissions cuts.

12.5 Jacobs for the Energy Networks Association

The Energy Networks Association also commissioned Jacobs to model alternate policies against two emissions reduction targets: Australia's current commitment of 26-28 percent below 2005 levels by 2030, and a 45% reduction, consistent with ALP pre-election policy. This study has all stationary energy consumption in its scope, not just electricity. Policy scenarios comprised 'Business as usual' - existing policies with the federal safeguard mechanisms adjusted downward to meet the emissions reduction target and the extension of the RET in the 45% target scenarios; 'Technology Neutra' - the safeguard evolves into a baseline and credit scheme, existing renewable policies are adjusted to support gas as well, and a LET (low emissions target) is added in the 45% scenario; and "Carbon price' - a carbon pricing trajectory consistent with the emission reduction targets.

Emissions within the electricity sector fall by more than the overall target, declining by 35% below 2005 levels in the 26-28% scenarios, and 47-58% in the 45% scenarios. Electricity prices rise the least in the Technology neutral scenarios. For the 28% target residential retail prices rise by 5-10% over the 10 years to 2030; for the 45% target residential retail prices rise by 10-20%. By comparison, prices in the Business as usual scenarios rise by 20% for the 28% target and 10-20% for the 45% target. This is an illustration of the fact that a more efficient policy can achieve a more ambitious emissions reduction target at less expense to households than a less ambitious target pursued via a less efficient policy.

12.6 CSIRO National Outlook

The National Outlook 2015 is the first release of its kind and aims to demonstrate that Australia is able to pursue economic growth with more sustainable resource use and environmental pressure. The study has a particular focus on the water-energy-food nexus. Of specific relevance, the study finds that (CSIRO 2015, p16):

“Despite rising unit prices and demand across all scenarios, energy affordability for Australian households changes only modestly, with greater energy efficiency more than offsetting higher electricity prices over the long term in most cases. ... Much larger improvements in the affordability of electricity could be achieved through better managing peak demand, and associated network infrastructure costs”

This was elaborated on by CSIRO researchers in an associated paper published in *Energy Policy* (Graham et al, 2015). As was the case for AEMO’s price forecasting (Jacobs 2016a), the modelling employs a carbon price as a proxy for the impact of a range of potential climate policy measures. Emphasising the potential relative contributions to residential electricity unit prices, the medium carbon price, low peak demand scenario leads to a fairly similar outcome as the case with no carbon price and no management of demand growth.

12.7 Jacobs for AEMO

This modelling of future retail electricity prices (Jacobs 2016a) was performed for the Australian Energy Market Operator (AEMO) to inform AEMO’s 2016 National Electricity Forecasting Report (NEFR). The modelling assumes a 28% reduction in greenhouse emissions from the National Electricity Market by 2030 in line with the current national target.

The modelling incorporates a carbon price in the wholesale electricity market as a proxy for a range of potential measures to achieve the target. The values chosen were a carbon price of \$25/t CO₂-e in 2020 escalating in a linear fashion to \$50/t by 2030 (and remaining at this level thereafter). The abatement target is largely achieved through the closure of coal-fired power stations as a consequence of the rising carbon price and their replacement with lower emission generation.

The residential price findings show a significant diversity in price levels for the five NEM States after 2016 but similar trends: modest increases or falls from 2016 to 2020, steady growth to around 2030.

12.8 ClimateWorks Australia Pathways to Deep Decarbonisation in 2050

ClimateWorks Australia, ANU, CSIRO and CoPS produced a study of deep decarbonisation across the Australian economy. Within the electricity sector, three different decarbonisation pathways were explored (100% renewable energy, inclusion of nuclear, inclusion of carbon capture and storage), with shifts in generation driven by a strong and rising carbon price. The study notes that the three pathways all arrive at a similar long-run marginal cost of electricity supply of \$150/MWh. This increase in generation cost contributes to an increase in residential retail electricity unit costs to around 38c/kWh in 2012 dollars by 2050. However, by increasing energy efficiency in the home and car, the analysis found that overall household energy costs could be reduced by more than 11%.

12.9 ISF for GetUp! And Solar Citizens

The ISF Study was commissioned to inform the Home Grown Power Plan produced by GetUp! And Solar Citizens and presents a model for a transition to a renewable energy system. The study presents a Renewable scenario and an Advanced Renewable scenario as well as a reference scenario representing the status quo. The Renewables scenario is focused on renewable energy only in the stationary energy sector while the Advanced Renewable scenario presents a decarbonized electricity sector by 2030 and a fully renewable energy system (including transport and industry) by 2050. Scenarios include strong improvements in energy productivity.

The study does not present impacts on residential electricity prices but notes that longer term investment costs under the renewables scenarios is lower than the long term savings in fuel costs compared to the reference case. While such net present value comparisons are important insights, other studies that include a time series of price impacts are more directly relevant to this research topic.