



LOW CARBON LIVING
CRC

RP3038: Lower income barriers to low carbon living Policy pathways to addressing barriers



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Peer Review Statement

This report has been reviewed by the Program Leader. The responsibility for what appears in this report, however, rests with the authors.

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Acronyms

ABCB	Australian Building Codes Board
ABS	Australian Bureau of Statistics
BASIX	Building Sustainability Index
CEFC	Clean Energy Finance Corporation
COAG	Council of Australian Governments
COTA	Council on the Ageing
CPI	Consumer price index
EFP	Expenditure Fuel Poverty
ETS	Emissions Trading Scheme
EU	European Union
FFP	Feel Fuel Poor
HESS	Home Energy Saver Scheme
IMF	International Monetary Fund
kWh	kilowatt hour
LIEEP	Low Income Energy Efficiency Program
NatHERS	Nationwide House Energy Rating Scheme
NILS	No interest loan scheme
NSW	New South Wales
PV	Photovoltaic
SA	South Australia
TAS	Tasmania
UK	United Kingdom
VEET	Victorian Energy Efficiency Target
WA	Western Australia

Introduction

This is the second and final report for the Cooperative Research Centre for Low Carbon Living research project RP3038, [Lower income barriers to low carbon living](#). The first report, Summary of focus group and survey findings (Liu & Judd 2016), detailed the findings from our focus group discussions with lower income households across four Australian jurisdictions. This final report focuses on the suggestions put forward by these lower income households during the focus group discussions and the stakeholders during their interviews on how assistance programs relating specifically to low carbon living may be improved. These suggestions were collated, categorised and discussed with policymakers and service providers in four policy workshops in August 2016, the outcomes of which are detailed in this final report.

Overall, policy suggestions could be broadly grouped into three categories (information format and distribution, financial assistance, and political will and leadership), encompassing ten topics in total. These categories and topics are included in Appendix 1 and discussed in greater detail later in this report.

Methodology

This project employed four complementary methods in assessing the barriers that lower income households faced in transitioning to low carbon living, and potential policy outcomes that may assist this transition. Fieldwork was conducted in eight different metropolitan and regional areas across three states (NSW, SA, TAS) and one territory (NT).

The four methods were:

1. Literature and policy reviews,
2. Focus group discussions with lower income households, including a short socio-demographic survey,
3. Stakeholder interviews, and
4. Policy workshops.

The first three methods were described in detail in our first report. Below we provide more details on one aspect of the focus group discussions – carbon reduction scenarios – and the policy workshops, which took place following the completion of the first report.

Carbon reduction scenarios

Three carbon reduction scenarios were presented to lower income households during the focus group discussions. We estimated the amount of carbon reduction achievable if a policy redirection was put in place to assist lower income households under these circumstances. The results of the reduction estimation are presented in this final report.

The three scenarios concerned:

1. the installation of a photovoltaic (i.e. solar panels) domestic electricity generation system
2. the installation of a solar hot water system, and
3. the purchase of energy efficient whitegoods through a no interest loan scheme.

Each scenario was first presented to the participants in a cost-neutral setting (i.e. cost of installation or purchase was the same as the amount in electricity they would save) followed by a financially better-off setting (i.e. the amount of electricity saved was higher than the cost of installation/purchase).

Slightly varied scenarios were presented to owner-occupiers compared to renters. These variations reflected their ability to make decisions regarding their homes, especially in relation to installing the systems, or not, and repayment methods. These scenarios are included in Appendix 2.

Participants were asked in each instance if they would take up the offers. Many participants accepted the scenarios presented to them and decided whether they would take up the offers based on the information presented; some asked for further details (e.g. duration of repayment period and terms of the subsidy) and accepted the scenarios on additional conditions that they put forward. These conditions were discussed in the policy workshops.

Some assistance programs (e.g. no interest loan schemes) are already accessible by some lower income households. The reduction estimation was, therefore, modelled on a wider distribution of such assistance schemes through extended government and non-government support. We estimated the reduction at three different levels of up-take: 25% (i.e. one-quarter of all lower income households accessed the reduction assistance), 50%, and 100%.

At the conclusion of the scenario discussions, we further asked our participants the maximum increases to their weekly (renters) or monthly (owner-occupiers) spending on these schemes that they could afford before getting into financial hardship. These limits are also discussed in this final report.

Policy workshops

Four policy workshops were held, one each in the capital city of our four case study states/territory. These were Sydney (NSW), Adelaide (SA), Hobart (TAS) and Darwin (NT). Each workshop involved between 4 and 11 discussants, and lasted between two and three hours. All four workshop discussions were recorded using a digital voice recorder and were professionally transcribed.

Representatives of the public, private and non-profit sectors were invited to contribute to the workshop discussions. They included:

- Public state agencies with policy responsibilities over environmental sustainability, energy

- efficiency, and assistance to lower income households more generally,
- Social services, sustainability and welfare advocates,
- Community housing providers,
- Charitable organisations,
- Environmental consultants, and
- Utility suppliers and retailers.

The aims of the workshops were to:

1. Present findings of the focus group discussions and stakeholder interviews, focusing particularly on the barriers that:
 - a. lower income households faced in transitioning to low carbon living, and
 - b. the non-profit sector faced in providing assistance.
2. Discuss potential policy outcomes for:
 - a. improving lower income households' access to existing assistance programs,
 - b. improving the efficiency of current assistance programs,
 - c. ensuring more equitable access to assistance programs,
 - d. increasing the impacts of assistance by introducing new programs or adjusting current programs, and
 - e. improving channels of information distribution that would assist lower income households to transition to low carbon living and minimise the impacts of energy deprivation.

In all, 31 public, private and non-profit sector representatives participated in and contributed to the four workshops. Unfortunately no representatives from the utility retailers or hardship program teams were able to join us in any of the four policy workshops.

Prior to concluding the workshops, we asked each participant to nominate anonymously up to three priority areas that, if implemented, would make the most significant improvements to lower income households adopting low carbon living and address energy deprivation. These were then post-coded into nine categories (see Appendix 3).

Our analysis of these discussions are detailed in this report.

Ethics clearance

This research obtained ethics clearance from the UNSW Built Environment Human Research Ethics Advisory

Panel. The focus group discussions and stakeholder interviews were approved under application 155113 and the policy workshops were approved under application HC16422.

Structure of the report

The main body of this report contains six chapters. Following this introduction is a **brief summary of focus group and survey findings** as reported in our first report (Liu & Judd 2016) to provide context to the discussions that ensue. The **literature review** also provides the theoretical approach taken in analysing the information we collected. It focuses on the concept of energy poverty and its evolution since its early 1990s origin. While it was noted in our earlier report that no households in Australia across the five income quintiles were experiencing energy poverty according to this early international definition (Simhauser, Nelson & Doan 2011), its wider applicability as a concept has also been questioned (e.g. Buzar 2007a; Kowsari & Zerrifi 2011; Pachauri & Spreng 2011). In this chapter, we trace the origin and evolution of this concept, as well as discuss in detail other related terms (such as energy deprivation and energy justice) that currently shape the more qualitative outcomes of energy costs on domestic households.

The majority of this report comprises **three chapters detailing the findings of our policy workshops**. A number of suggestions on how assistance programs relating to low carbon living were put forward by participants of our focus group discussions as well as stakeholder interviews. We collated these suggestions and grouped them under three categories – information, financial assistance, and political will/leadership. These categories were further differentiated into ten topics, each of which were discussed at the four policy workshops in August 2016. These three categories and ten topics are reported thematically across three chapters, including our policy workshop discussants' responses on the feasibility of putting these suggestions into practice to assist lower income households adopt low carbon living, and the likelihood of them being taken up by the general community.

These are followed by our **carbon reduction estimation**, which reports on the potential savings of carbon emission from wider implementation of three assistance programs at three different up-take levels.

This final report concludes with a **short summary of our overall research findings** and avenues for moving forward in assisting lower income households transition to low carbon living.

Summary of focus group and survey findings

Our first report documented the findings from our focus group discussions with lower income households across eight metropolitan and regional settings in four different Australian climatic zones. The discussions focused on:

1. the financial and non-financial barriers these lower income households faced regarding energy consumption,
2. the assistance programs that they were able to access, and
3. the implications of high energy costs beyond carbon reduction.

The outcomes of these three aspects are summarised below.

Overall, there were only vague understandings amongst our focus group participants of what the term 'low carbon living' meant, with many finding it difficult to relate the concept of 'carbon' to everyday living. Discussions instead often focused on reducing energy consumption and switching to renewable sources. In the broader Australian context, such actions would allow these lower income households to transition to low carbon living, as the majority of our electricity is produced via burning coal.

Despite their relatively limited understanding of the term 'low carbon living', support for this concept was strong, with considerations for future generations cited as the most common motivation.

Financial and non-financial barriers to low carbon living

Similar to international findings, our participants recalled a range of financial and non-financial barriers to their adopting of low carbon living.

Financial barriers ranged from the high and continually increasing cost of energy, which had prohibitive effects on their abilities to implement a range of energy efficiency measures. These included the purchasing of energy efficient products, from white goods to more significant investments such as solar panels.

Non-financial barriers were more varied, but tenure was noted as a major barrier, with many of our participants residing in social and private rental accommodation (76%). Our participants noted their landlords' unwillingness in implementing more energy efficient measures such as insulation, reflecting international evidence on split incentives being a major barrier to low carbon living (Bird & Hernández 2012). Other non-financial barriers included personal pride and embarrassment, leading to their unwillingness to ask for help, and a lack of access to reliable information.

Assistance programs available

A range of assistance programs were currently available to aid lower income households (and the public more generally) to adopt low carbon living. We provide a more detailed review of these programs later in this report.

In terms of the types of assistance currently accessed by our participants, assistance in paying their utility bills and light bulb exchange were the most common, with around one-third of our participants having accessed either of these types of assistance. Other programs such as energy audits, solar panel subsidies and fridge buy-backs were less commonly taken up, reflecting (1) the majority of our participants being renters and therefore not having control over the installation of solar panels, and (2) their lack of knowledge of programs such as the energy audits.

Implications beyond carbon reduction

As a result of high and rising energy costs, our participants adopted a range of compensating behaviours to lower their usage. These included:

- *Being selective with their heating and cooling*, such as only heating/cooling one room, limiting the duration heaters/air-conditioners were switched on, and opting to put on warm clothes as a first option.
- *Finding alternative means to heating and cooling*, such as visiting air-conditioned shopping centres, or switching to woodfire.
- *Reducing their energy usage*, by not having appliances on standby mode, limiting the use of lighting, or going to bed early.
- *Prioritising bill payment and reducing spending on other essentials*, including food and sometimes medication.
- *Prioritising bill payment and seeking assistance on other daily essentials*, such as by receiving food parcels.

Such compensating behaviours had led many lower income households to have very small carbon footprints, but concurrently they could also have significant impacts on their physical, psychological and social health and wellbeing. This is especially so when the skipping of meals and medication became a regular occurrence. Their inability to comfortably warm their homes in winters had also led to more frequent visits to doctors. Many of our participants had a very limited social life, missing out on important family activities, as well as longer term impacts on their children's education such as not being able to afford school or extracurricular activities or providing them a comfortable environment in which to study.

Suggestions were put forward by our participants on how assistance could be improved. These were discussed at the four policy workshops, the outcomes of which are detailed in this report.

Literature review

In Australian and international literature, the cost of energy is often cited as a major prohibiting factor on the quality of life of many lower income households. Some of the implications of energy costs on lower income households have already been explained in this project's first report (Liu & Judd 2016). This was predominantly done through a qualitative lens. There are, however, international measures and indicators of the impacts of energy costs on households (lower income or otherwise), including Boardman's (1991) introduction of the term 'energy poverty'.

In this chapter, we provide a brief overview of how these measures and indicators had emerged in the quarter century since Boardman's early definition. We also trace the evolution of these measures and indicators across different national contexts, and how these have informed the analytical approach taken in our research.

The evolution of 'energy poverty'

Attempts to measuring the impacts of energy costs on lower income households first emerged in the early 1990s. Brenda Boardman (1991) introduced the term 'energy poverty', which was defined as situations where 10% or more of a household's disposable income is spent on energy. This definition, while relatively easy to calculate and for the general public to comprehend, has been disputed as being too simplistic and does not necessarily reflect varying local contexts and the wider outcomes of energy costs on lower income households. For example, Pachauri and Spreng (2011: 7497) noted that "like sustainability, energy poverty is not easily boiled down to one number and it is difficult to trace back changes in energy poverty levels to specific efforts since other factors such as general economic growth, social and infrastructural development also influence it."

Other studies, such as Simhauser, Nelson and Doan (2011) in Australia and Bouzarovski and Petrova (2015) more generally, noted that this early definition of energy poverty is very context specific. Particularly, Boardman's (1991) original definition related specifically to the United Kingdom (UK) context, where energy expenditure may be substantial during the colder months in order to maintain an adequate level of warmth. A direct application of this definition in the Australian context – where there is a greater variability in climatic zones (ABCB n.d.) but also winters that are considerably milder than in the UK – is, therefore, not appropriate.

Some studies have called for this early definition of energy poverty to be adapted to define energy spent on maintaining an adequate household or an adequate level of comfort. Research like Waddams Price et al.'s (2012), however, considered the difficulties in calculating objective measures of fuel poverty as (1) personal comfort level is a rather subjective matter and (2) that it can also be influenced by a range of other external factors, including the housing stock in which these

households live and their ability to implement energy efficiency measures. In their research, while there were strong associations between households that experienced expenditure fuel poverty (EFP) and those that felt fuel poor (FFP), both were strongly influenced by the households' level of income and level of dependency on income support, the introduction of measures such as FFP gave rise to more qualitative assessments of the impacts of energy expenditure on households.

By the 2000s, an array of energy indicators were developed to measure the impacts of energy costs on the household budget and wellbeing. Pachauri and Spreng (2011), for example, highlighted a number of international approaches, including the total energy inconvenience threshold, the minimum end-use energy approach, and the energy access index, all of which take into account social, economic and environmental dimensions to varying extents. Likewise, in reviewing approaches taken within the UK, Liddell et al. (2012) highlighted a range of quantitative measures, including a continued justification for the 10% cut off point, extensions to other, higher percentage points to reflect severity levels, as well as a measure relating to the average energy spending within their local region.

All these highlight the lack of international consensus on how energy poverty could be effectively defined, and this can have significant impact on policy responses to addressing the issue.

This shortcoming is revealed in Moore's 2012 article. While the EU has a working definition of poverty more generally – "persons, families and groups of persons whose resources (material, cultural and social) are so limited as to exclude them from the minimum acceptable way of life in the Member State to which they belong" (EC 2007: n.p.) – it also concedes the difficulty of applying this broad, qualitative definition universally, recognising the relative and contextualised nature of such issues (EC 2010). Moore's (2012: 25-6) proposal of a 'low income/high cost' measure, similar to the '30/40 rule' used to measuring housing stress, where 30% or more of income of households in the bottom 40% of income distribution is spent on housing (ABS 2015a), highlights the greater quantitative and qualitative impacts energy costs may have on lower income households.

The more qualitative impacts of energy costs have been gaining research focus more recently. This includes the emergence of new terms such as energy vulnerability – "the propensity of an individual to become incapable of securing a materially and socially needed level of energy service in the home" (Bouzarovski et al. 2014: 10); energy deprivation, a more broad-brush term that encompasses energy poverty but also "economic,

infrastructural, social equity, education and health” matters that lead to inadequate access to energy (Bouzarovski & Petrova 2015: 31); and energy justice, which concerns the moral ethics, both intra- and intergenerational as well as intra- and international, in resourcing, producing, transmitting and consuming energy (Sovacool & Dworkin 2014).

In this report, we focus specifically on energy deprivation and the qualitative outcomes it has on lower income households in different Australian settings. The next section provides a more detailed exploration of this concept and how it may apply to our analysis as discussed in this final report.

Energy deprivation

The term ‘energy deprivation’ first emerged in the late 2000s and early 2010s, following growing focus on the qualitative outcomes of energy poverty and increasing concern on consumers’ ability to access reliable energy sources.

Much research to date has focused on poorer households, especially those in developing societies, and their access to reliable energy sources.

These include Buzar’s (2007a; 2007b; 2007c) research on the Eastern European countries of the Czech Republic and Macedonia; Nussbaumer et al.’s (2012) research on Africa; and Bouzarovski et al.’s (2014) research comparing the Global North and South. Other early works that touched on the depriving impacts of energy poverty include Pachauri et al.’s (2004) research on India, and Guruswamy’s (2010) research in the context of sustainable development.

Much of these previous works have focused on poorer households’ access to fuel sources and the opportunity costs incurred in finding alternative sources such as foraged biomass. Pachauri et al. (2004) and others who focused their work on India (e.g. Bhide & Monroy 2011), for example, frequently discussed the impacts of indoor air pollution from burning kerosene, gas and/or fuelwood, with women and children especially disadvantaged because they were more often tasked with domestic duties such as cooking as well as collecting fuelwood or dung for fuel. Sovacool and Dworkin (2014: 229) explained that the collecting of fuelwood often exposed children and women to injuries and assaults, with incidences of rape recorded of women being attacked while out collecting fuelwood.

Little research on energy deprivation to date has focused on developed/western societies as access to energy (affordability factors aside) is generally more

comprehensive than in developing societies. A notable exception is that by Brunner et al. (2012), which focused on the Austrian capital, Vienna. They highlighted inefficient housing stock, which were often presented as ‘cheaper’ housing options and therefore more commonly accessed by lower income households, imparting “heavy burdens” across a range of household forms and age groups (Brunner, Spitzer & Christanell 2012: 58).

One of the only Australian academic investigations is that by Chester and Morris (2012), which highlighted the significant qualitative impacts of energy costs on lower income households. Most other Australian research on the depriving impacts of energy costs is most commonly produced by charitable and other non-profit organisations such as the Australian Council of Social Services (e.g. ACOSS 2014), the Brotherhood of St Laurence (e.g. Sullivan 2007), and St Vincent de Paul Society (St Vincent de Paul and Alviss 2016). These have tended to focus more on deprivation as a result of unaffordability.

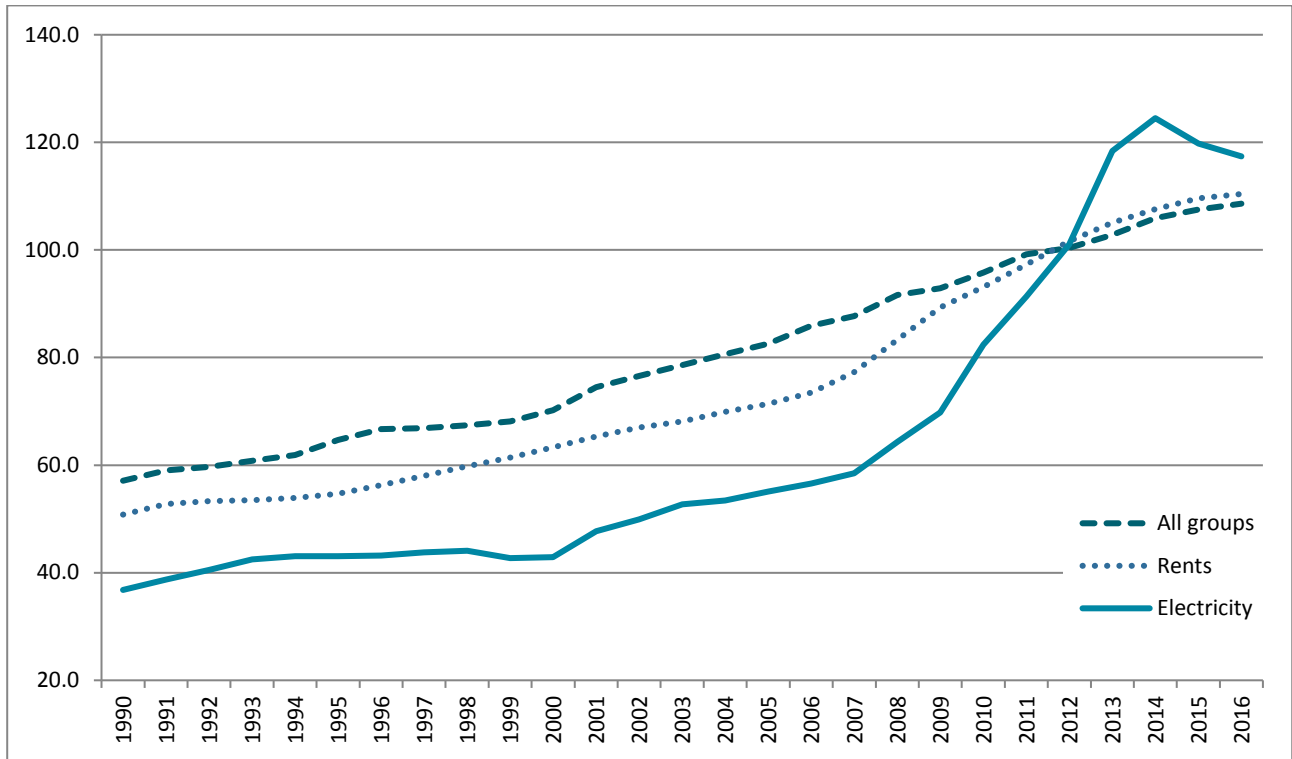
Comparing seven European countries that have either partially or fully privatised their energy sector, Poggi and Florio (2010) found a positive correlation between energy deprivation and vertical disintegration (the unbundling of network functions such as accounting, legal and ownership separation) of the energy industry.

Australia was one of the first countries in the world to privatise its utilities networks in the 1990s. Since privatisation, there have been reports of persistent increases in energy costs (AEMO 2015; Richardson 2013). The consumer price index (CPI) for electricity, for example, increased significantly since privatisation, and particularly since the mid-2000s, at a far greater rate than – and by 2012 overtaking – the all groups CPI and that for rent (see Figure 1). This is despite Australia being known for being one of the world’s most unaffordable housing markets (Rowley & Ong 2012)

The sharp increase in electricity prices is most starkly displayed using Chester’s (2015) calculations (see Figure 2). Using 2007 as a base (i.e. ‘1’), it can be seen that electricity prices in NSW and QLD more than doubled between 2007 and 2014, while in all other jurisdictions there had been a minimum of 76% increase. These increases were significantly higher than the increase in the all groups CPI, which increased by less than 20% over the same period.

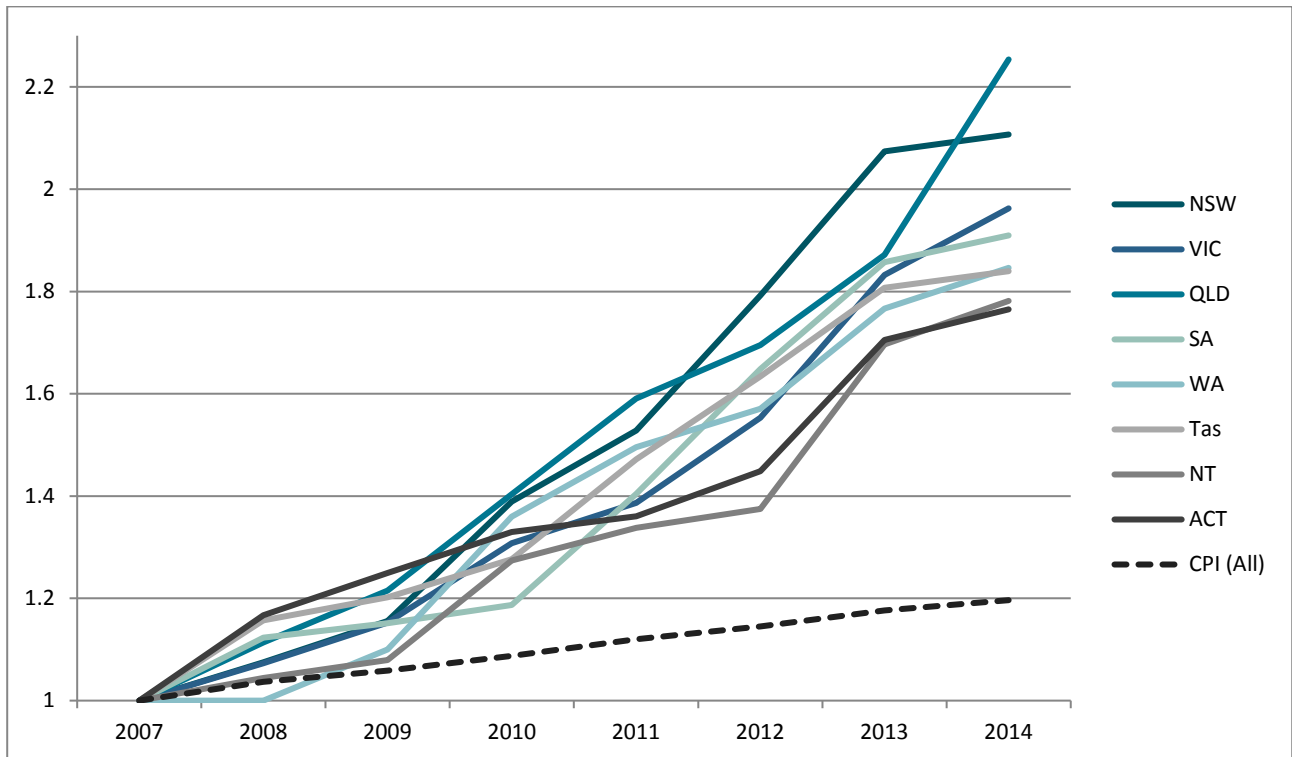
With more privatisation planned (despite the NSW plan being recently challenged and delayed by the Federal Government, though on the grounds of national security rather than affordability and social wellbeing; Macdonald-Smith & Winestock 2016), the level of energy deprivation amongst lower income Australians may be expected to increase.

Figure 1: Changes in consumer price indices since utility privatisation, Australia, June quarters 1990-2016.



Source: ABS (2016)

Figure 2: Increases in electricity prices compared to consumer price index (all groups), Australian States and Territories, 2007-2014.



Note: Energy increases not adjusted for inflation. CPI taken at June-quarter of each year.

Source: ABS (2016); Chester (2015)

Policy implications concerning information format and distribution

As noted in our first report (Liu & Judd 2016), accessible and reliable information was paramount to lower income households' transitioning to low carbon living. This included information regarding practices that would help them achieve low carbon living (e.g. no or low cost ways of reducing their energy consumption, such as weatherisation¹ measures) and information on accessing assistance programs for which they may be eligible. A range of practical solutions were suggested by focus group and stakeholder interview participants alike, and these were grouped into three topics (Appendix 1), each of which, including responses from the policy workshop discussions, is detailed below.

1. How information should be provided

While many of our focus group participants noted that information regarding low carbon living was generally available, it was often presented in a manner that was not accessible or user-friendly to them. One example was that the information was often jargon-laden and therefore the content could not be easily understood, as these older participants explained:

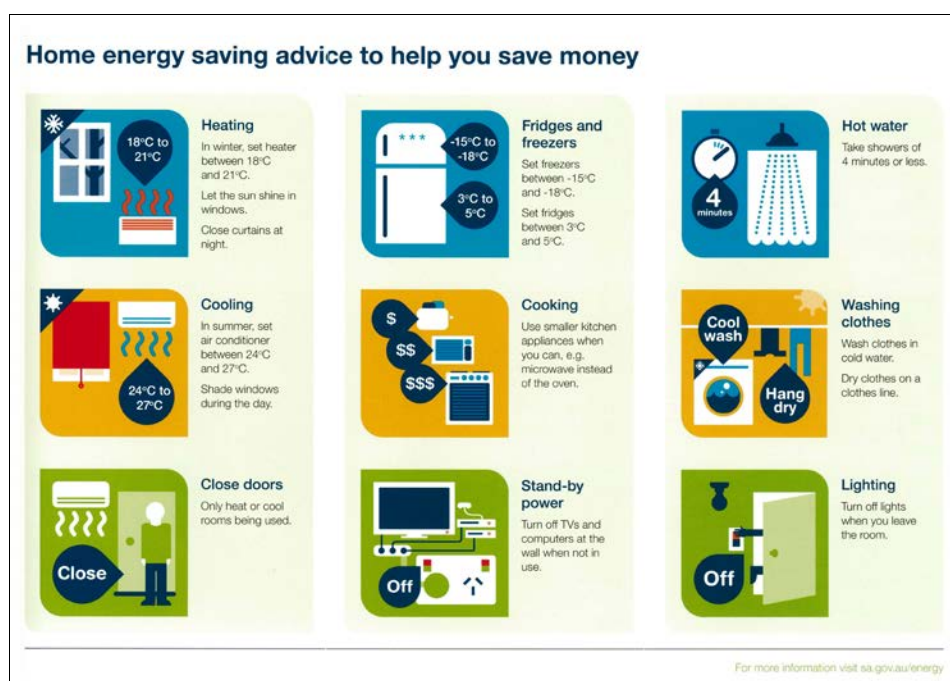
"I said it's too bloody complicated. Can you give us a simple English [version] ... what's going on?" [older single, NSW]; "most of this... don't know where to go or it's a bit over our head. It has to be simplified" [older single, TAS].

A number of suggestions were put forward and discussed at the policy workshops on how information could be made more accessible and user-friendly to lower income households. Most notably, a multi-modal approach was needed in order to allow the broadest cross-section of lower income households to take in such information. This included lower income households of different cultural backgrounds, English proficiency levels, age groups, employment status, and preferred means of receiving information. Modes preferred by lower income households included:

- Infographics / graphics-based posters
- Story-telling
- Information included on bills
- Standardised bill structure
- One-page leaflets included with bills
- Education programs, and
- Social media and television advertising

In response, a small number of our interviewees and workshop discussants noted that some of these are already part of their current information distribution. For example, the SA Government has produced a 'Saving energy at home: A visual guide' leaflet (see Figure 3), which provides simple, predominantly graphics and numbers-based tips on how to improve energy efficiency (such as not leaving appliances on standby mode). This leaflet is distributed as part of a package of programs, including some materials made available in non-English languages, via the free Energy Advisory Service, local councils, community facilities, and at expos.

Figure 3: Example of an energy-saving visual guide.



Source: SA Government 2015

Another way to allow households to more effectively understand their energy usage and devise means for reducing consumption is to have a more standardised bill structure. As many of our focus group participants emphasised, it was often difficult to understand how much energy they were using from reading their bill. A small number recalled needing to learn how to read their bills from a financial counsellor or an energy audit service. Many of our focus group participants continued to have little understanding of their energy usage – how much their fridges, stoves, lighting, appliances left on standby etc consumes – aside from the cost in dollar terms.

When we discussed the potential for standardising energy bills in the policy workshops, some discussants noted that there is currently standardisation of the types (rather than format) of information energy bills must include. In SA, for example, all energy bills must include 27 pieces of information, including the bill amount, the due date, their consumption pattern, contact details of their retailer, assistance programs amongst a host of others. There is, however, no standardisation on how such required information should be presented.

Concerning this, another workshop discussant said there had long been a push to standardise energy bills to aid easier understanding, but it has been fraught with great difficulty. For example, there is generally no consistency on how products and programs are named, so that in the case of a customer switching companies in order to access a better deal, it may be difficult for them to find the equivalent information because it has a completely different name. This may be done because of marketing reasons, so for example, some companies may offer a 'green' package by selling electricity produced by solar, wind or other renewable methods, other companies may choose to sell each type of electricity separately under the guise of offering more choice, and the equivalent product may be called a slightly different name. The same kind of confusion is also observed in hardship programs, with some calling it financial support, and others emphasising preventing households from getting disconnected.

According to our workshop discussants, while they agreed that bill standardisation would greatly aid better understanding of usage that can potentially lead to reduced consumption, the lack of progress on that front to date is the result of significant push-back from the energy supply sector. Most retailers would argue that the products that they offer are slightly different to most others on the market and therefore require a different name. There is also push-back from the sector on how the required information should be provided – for example, that information on hardship programs should all appear in the bottom right corner and at no smaller than a certain pre-agreed font size – on grounds of branding.

These kinds of branding arguments were commonly witnessed early on in the campaign for the plain packaging of tobacco products from the tobacco industry (Freeman et al. 2008). There needs to be a similar commitment from the Government to address the outcomes of energy deprivation the same way they did

for tobacco addiction (e.g. Wakefield et al. 2013) in order to better relay usage information to all households. A barrier to this, however, is that there is proven direct causality of detrimental health impacts from smoking tobacco, while the (generally) more qualitative and less direct impact of energy deprivation on health and wellbeing is much more difficult to prove scientifically.

2. How best to provide information

Much like suggestions on how information should be provided, our focus group participants and stakeholder interviewees also noted the means through which information should be provided as being important. Many recalled that while there is ample information out there currently, a significant amount is provided online only. Lower income households particularly highlighted this as an issue, as many (1) could not afford a computer and/or internet connection at home; (2) did not know what information to search for; and, for a sub-section of our participants, (3) had low computer literacy, which makes internet searches even more onerous.

To this, our participants suggested a range of means through which information should be provided:

- Included with their bill and/or rate notices: *"put on the bottom of that [bill]: are you aware that you can get concessions or rebates through this, this and this"* [older single, SA]
- At charitable organisations: *"if it's Salvation Army, where you come for lunch, just... where we pick up pamphlets and have a look and as with Centrelink"* [single-parent, SA]
- At libraries and other local community facilities
- At GP and other waiting rooms
- Via Centrelink: *"a lot of people on low income would get the Centrelink benefits subscription. They should send it out with all their guff that they send"* [older couple, TAS]
- Via school programs, and
- Online, social media and television advertising.

While expressing a desire to receive information with their bills, many also acknowledged receiving energy-related information this way and had the habit of tossing them straight into the bin without first paying any particular attention. Many recalled thinking that they were mainly advertising from the energy retailers. While an apparent contradiction, this suggestion nonetheless highlights the importance of providing information directly to lower income households as some lack the capacity (through family commitments, skill and/or knowledge limitation) to search for it. This resonates with Brunner et al.'s (2012: 58) findings in their Austrian case study: "lacking scope of action and partly also lacking knowledge about how energy-intensive certain actions are often leads the subjects to believe that they are already exhausting employing all possible means of saving energy."

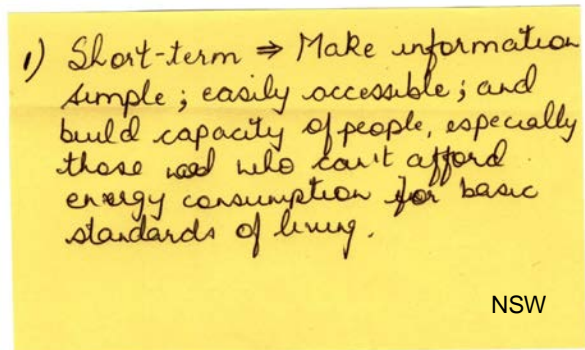
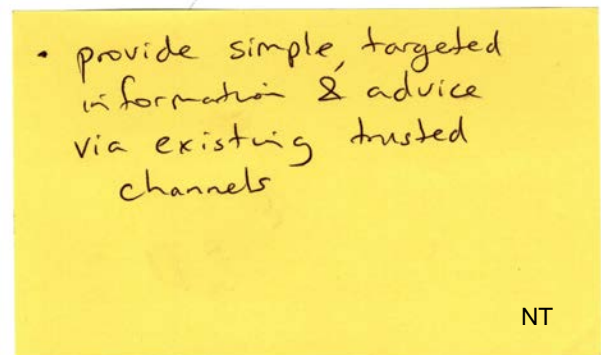
Figure 4: Examples on how to regularly remind households on ways to improve their energy efficiency.



Some organisations currently combine energy efficiency and saving information on commonly used items to act as regular reminders. The Council on the Ageing (COTA) Tasmania, under the Tasmanian Government's Inclusive Ageing Strategy, for example, provides a shopping list pad that includes tips on accessing concessions and ways to save energy and water; the SA Government provides similar energy saving tips as a fridge magnet (see Figure 4).

Better information and also educational programs were noted as an important priority of our policy workshop discussants, with almost three-fifths (58%) listing these as one of their top three priorities in combating the impacts of energy deprivation in Australia (Figure 5).

Figure 5: Examples of policy workshop discussant priorities on information and educational programs.



3. Stakeholders' perspectives

Difficulty in accessing reliable information is not only a barrier faced by lower income households themselves but also the service organisations that these households frequently access. These include housing providers, charitable organisations and a range of not-for-profit organisations. Many of these organisations were set up to provide very specific assistance to disadvantaged members of society and, therefore, may not have the specialist capacity to assist their clients on energy-related matters. This may include information about newly-introduced assistance programs, or more technical information about services and/or products they are wanting to introduce. One housing provider, for

example, noted their organisation's desire to introduce heat pump water heating to their housing stock – a technology currently not commonly used in their jurisdiction of operation – and found it an expensive endeavour exploring and researching their options before committing to the upgrades:

“We’ve had so many consultants that have been involved in all the different aspects of what we’re trying to do. Every consultant will effectively give you their version of it. Getting access to reliable, independent, and appropriate advice that meets your needs as a company, and as what you’re trying to do is expensive, is difficult to get” [housing provider].

In light of this, along with several other stakeholders, they suggested the need for an independent advisory panel, something akin to the independent consumer advocacy group, CHOICE, as a one-stop shop for professional information. Some workshop discussants disagreed, noting that this function was already currently being partly fulfilled by public agencies (e.g. NSW's Office of Environment and Heritage) and not-for-profit organisations (e.g. NT's Environment Centre NT) in the different jurisdictions.

Other stakeholders suggested the creation of a preferred list of companies and/or organisations for providing energy efficiency and sustainability products and services. From a policy perspective, this may work as an accreditation program, which is already working to varying extents in some jurisdictions. The Australian Building Sustainability Association, for example, set up by the NSW Government in the late 1990s, accredits energy assessors under the Nationwide House Energy Rating Scheme (NatHERS) Protocol and the Building Sustainability Index (BASIX) Thermal Comfort Protocol; and likewise Good Environmental Choice Australia runs certification and ecolabelling programs for environmentally friendly products. Such accreditations and certification programs can be extended beyond energy assessments to businesses, potentially working to a similar degree as the Chef Hats system for restaurant excellence (AGFG n.d.) that is regularly reassessed and updated.

Policy implications concerning financial assistance

In addition to being able to access reliable information, improving the impacts of financial assistance can greatly increase the potential uptake of adopting low carbon living amongst lower income households. A range of suggestions was put forward by our focus group and interview participants, from ideas to overcoming split incentives to innovative ways of financing domestic renewable energy production and consumption. The outcomes of our discussions of these suggestions at the policy workshops are detailed in this chapter.

4. Overcoming split incentives

With high proportions of our focus group participants (and lower income households more generally) being renters, split incentives – where the landlord pays for upgrades that are benefitted (mostly if not solely) by the tenants – present significant barriers to many lower income households to measures that would improve their energy efficiency or access to renewable energy. This is clearly demonstrated here by one of our focus group participants who rents in the private sector:

“the landlord wasn’t interested in insulation. We offered to put solar panels but he wouldn’t hear of it and not interested in insulating the ceilings which is a pity” [older couple, TAS].

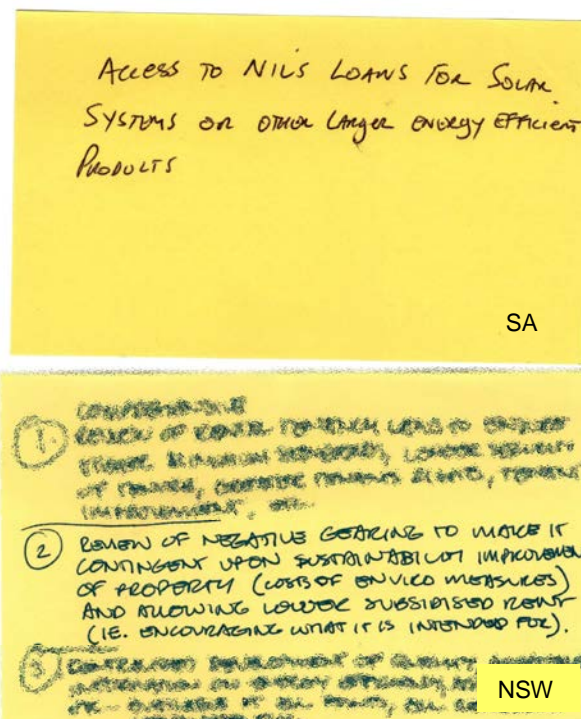
Our focus group participants and stakeholder interviewees both agreed that the only solutions to overcoming split incentives is to incentivise landlords to make environmental investments and by applying conditions to the subsidies that they are already taking advantage of. Discussants at our policy workshops agreed: as most (if not all) private landlords who invest in housing expect persistent financial returns, the only logical solution is to make any environmental upgrades that they do to be ‘profitable’ ones. To this end, several workshop discussants suggested that conditions need to be applied to subsidy mechanisms such as negative gearing. This would be in the same vein as limiting first home buyer subsidies to new builds as a means of stimulating the construction industry:

Discussant 1: You don’t get negative gearing, you don’t get capital gains allowances. You don’t get any of that stuff unless you can demonstrate certain things. I think that would change the nature of housing investment overnight. Because suddenly there’d be something worth doing in terms of an economic benefit as well as a social benefit.

Discussant 2: You can retain a negative gearing benefit if you are subsidising the rent in inverted commas. Which is what they keep saying is the whole purpose of negative gearing. Do it more intentionally and say that, as part of this process, re-evaluate negative gearing to make it actually achieve the outcome that it was intended to achieve and include environmental outcomes as part of that. [NSW workshop]

Setting conditions for negative gearing is categorised as part of a wider reform to concessions and subsidies needed in order to increase the uptake of energy efficiency measures and adoption of low carbon living. More than half (52%) of our policy workshop discussants nominated such reforms as one of their top priorities in facilitating change (Figure 6).

Figure 6: Examples of policy workshop discussant priorities on concession and subsidy reforms.



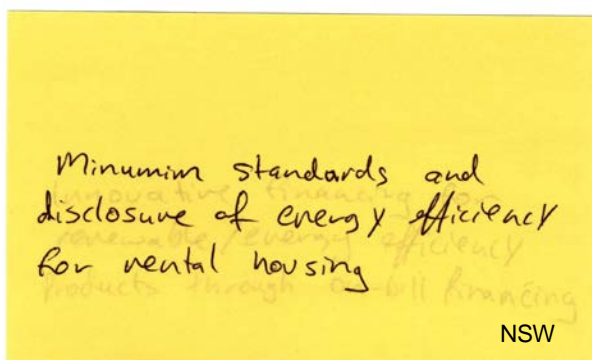
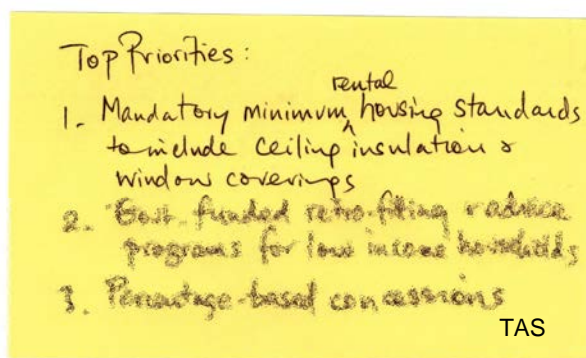
Another suggestion for improving tenants’ access to low carbon measures is by introducing minimum energy efficiency and/or thermal comfort standards to rental properties. As reported by Baker et al. (2016: 224-5) recently, more than one million Australians currently reside in dwellings that are rated poor or derelict, with incidences higher within the rental sectors.

At present, only Victoria, Western Australia and Tasmania have introduced tenancy laws that set minimum standards, but none cover any energy efficiency and/or thermal comfort conditions. For example, in Victoria landlords are responsible for providing locks to all external doors and windows, maintaining the premise in good repair, adhering to fire safety regulations, and ensuring equal opportunity when letting accommodation (DHS 2009). Western Australia also has a minimum standard for rental properties regarding security. Likewise, the Tasmanian legislation covers basic utility provision such as a flushable toilet, adequate cooking facilities, adequate mains electrical supply, a working heater and ventilation (Tas CFAT 2015), none of which relate to energy efficiency or environmental quality (e.g. there are no requirements

that the heater needs to be of a minimum efficiency standard). As a result, tenants may be disadvantaged by cheap, inefficient fixtures implemented by their landlords.

Introducing and implementing a minimum energy efficiency and/or thermal comfort standard for rental properties is clearly high on our workshop discussants' agenda, with 81% nominating it as one of their top priorities in facilitating change. This was the second-highest priority (Figure 7).

Figure 7: Examples of policy workshop discussant priorities on introducing minimum energy efficiency standards.



Amongst our policy workshop discussants, however, few held high hopes for this coming into practice in the foreseeable future. Discussants at our Tasmanian workshop, for example, explained that the recently introduced Tasmanian minimum standards (in 2015) were the result of 20 years of campaigning and advocacy. They envisage that any changes or upgrades to this minimum standard would be equally as hard and time-consuming.

Discussant 1: I would argue mandatory disclosure and actually regulation that there's minimum standards for rental properties, and there are minimal standards but they're...

Discussant 2: Very minimal.

Discussant 1: Very minimal. [...] So for the first time 2015 there's some minimum standards, but that's not one of them.

Facilitator: Insulation?

Discussant 1: No.

Discussant 2: It's difficult, but are we even looking about keeping window fittings in public housing – it's a dialogue that's been going on for 20 years.

Facilitator: Amongst those minimum standards, are there other energy related ones?

Discussant 1: Not that I know of. [TAS workshop]

The UK and New Zealand have both successfully implemented minimum energy performance standards for rental properties. In the UK, this was set up by its 2011 Energy Act and enacted through the 2015 Energy Efficiency Regulations (Pinsent Masons 2015). New Zealand has also recently introduced legislation on minimum standards for rental properties, including the requirement of ceiling and underfloor insulation, to be gradually phased in from 2016 onwards (CSPC n.d.). These follow mandatory energy performance disclosure (including for rental properties) by all European Union states under the energy performance of buildings directive, in place since 2010 (EU 2010).

5. Alternate loan arrangements

Most households, whether they are on lower incomes or not, may not be able to fully finance larger items such as solar panels that would make significant advances towards transitioning to low carbon living, without the need for a loan. In the scenarios that we presented to our focus group participants, and the homeowners in particular, many were reluctant to add the significant installation costs onto their home loans or take out an additional loan. When asked to clarify their trepidations, some noted the lengthy period before they reached break-even point, especially when interest was included in their calculations. Many, however, would gladly install solar panels and switch to solar hot water systems if they could access a no interest loan. Unfortunately, at present no interest loan schemes do not extend to solar panels and solar hot water systems.

Some authorities have introduced alternative loan arrangements to assist and encourage households to switch to low carbon living. An energy advocate we interviewed noted that the Victorian municipality of Darebin, for example, had introduced a mechanism where rate payers could repay the loans as part of their council rates:

“provide people who pay rates the ability to put solar panels on their roof and pay it off with the rates over an extended time period. You can give them a low interest loan over 10 years paid back at the time of the rates” [energy advocate].

Without the hassle of taking out an additional loan, and gaining access to no or low interest loan schemes, this would greatly improve lower income homeowners' willingness to install these products.

Others, especially renters, who cannot easily receive permission to install solar panels and heaters, a photovoltaic (PV) rental scheme may be a solution. More common in the UK and the US (e.g. CSE n.d.), PV rental schemes allow renters to pay an access fee to use the

solar energy produced by panels installed by their landlords, in effect renting the panels.

This situation was tested in our scenario 1, where renters pay a small weekly addition to their rent in order to access solar energy produced on their roofs. This, however, was often not an attractive option, with many noting the lack of ownership of the panels as a significant obstacle. In many cases, lower income households viewed their solar panel rent as 'dead money', especially if this was an option that they did not necessary have to take up. Discussants at our policy workshops agreed that PV rental schemes may not gain wide popularity in Australia, with significant legal implications over who has the responsibility for maintaining the panels. In the incidence of power failure, it may not be immediately clear if the fault was with the panels themselves, the transmitter, the convertor, or a combination of these.

"There's an issue with consumer protection on these sorts of schemes, because it's not covered by electricity regulation because it's a service, not a product. It's not actually energy. So I think that's something that the Australian Energy Regulator and various consumer advocates are looking at now about whether the Australian consumer law is up to dealing with – in a central service – what effectively is a central service. So while it's a good idea, say something goes wrong with your panels, you're no longer getting electricity from them; who's responsible, where do you go, who do you call, what rights do you have, and so on. Quite clear in the electricity bill, it might not be perfect, but it's clear. But with energy services it's a whole other issue. Not to put the kibosh on it, but to... it's certainly something one needs to think about. You have... if your electricity goes off, you ring the distributor quickly and it's usually sorted fairly quickly and they've got customer service standards and so on which PV renters wouldn't have to have it back on in a timely fashion" [TAS workshop].

6. Concession reforms

Most of our focus group participants and stakeholder interviewees noted that there currently was a wide range of concessions available to assist households regarding their energy use. Some of these concessions are specific to lower income households, such as the low income energy rebate or the energy vouchers that lower income households can periodically access. These can be made available via government agencies, not-for-profit organisations, and in some cases via private energy suppliers and retailers, such as additional pay-on-time discounts.

As highlighted in our first report (Liu & Judd 2016: 15), energy concessions and rebates are the most common type of assistance lower income households access in relation to their energy costs and use. There is, however, also a consensus that there is inequity in terms of eligibility and access to these concessions. In some cases, such programs are not assisting lower income households to any significant extent.

In speaking with a worker of a not-for-profit organisation, while they regularly assisted lower income households in negotiating payment plans and arranging e-vouchers in paying energy bills, they were prevented from providing such assistance until bills were already overdue:

"When most people would come into a place like us and we would liaise for them... But when we do e-voucher we have to ring. The bill has to be overdue before we can do that" [charitable organisation].

In cases like this, it was not uncommon that any financial assistance the not-for-profit organisation could offer would cover the fee that was accrued on the overdue bill and, therefore, account for only a very small amount of the actual bill. Some focus group participants also said that when a bill goes overdue, they also automatically forfeited any additional discount they may have negotiated with the retailer, meaning the total cost (even after receiving assistance in paying it) may be higher than their original bill. To this, an energy advocate said:

"a pay-on-time discount is useless, mostly because they're not going to have the money, you know, to pay up front, direct debit. No one's got the money to do that if you're in that spot" [energy advocate].

Many of our focus group, interview and workshop participants agreed that there needs to be significant reform to how assistance and concessions are to be provided so that they actually help the people such programs are originally designed to assist. While most states and territories require energy companies to implement hardship programs to help lower income households, they are (1) mostly economically oriented as a means to assist these households better manage their energy bills such as via a repayment plan; and/or (2) have conditions imposed on them (such as described above) that offer little real assistance. There may need to be tighter guidelines and more stringent monitoring put in place to ensure positive outcomes.

One suggestion put forward by our focus group participants related to the flat concession rate (at a fixed dollar amount per day) that most Australian jurisdictions implement, but instead have a variable rate related to their household size. This older person expressed her frustration:

"my argument in – what we're mostly I suppose – one [single] pensioner. We get not as much as two [couple] pensioners. They've got [double] pensions but they get the same concessions as we do. I think we should get more. It costs as much to warm me as it does two people, you know what I'm saying?" [older single, TAS].

This suggestion is similar to the percentage-based energy concession currently in place in Victoria (Mauseth Johnston 2013) and also in limited cases overseas (such as the US' Low Income Home Energy Assistance Program; DEA 2005).

Recently, the independent think tank Per Capita published a report that called for national standardisation of utility rebates (Smith & Hetherington 2016). While focused solely on pensioners, there is a need to standardise utility rebates to ensure equity, especially if a percentage-based concession is introduced.

Another suggestion relates to conditional concessions. Current concessions (flat rate or percentage-based) relate to the dollar amount of lower income households' energy bills; there are at present no concession or rebate programs that expressly encourage lower income households to purchase renewable energy. Our policy workshop discussants noted this as a lack of political leadership in encouraging the take-up of renewable energy across different household types. One suggestion was the introduction of additional concession or rebate for using renewable energy, which at present is generally retailed at a higher rate. An additional concession for accessing renewable energy would, thereby, alleviate any additional financial burden on lower income households' limited budget. At a broader scale, there should be a greater emphasis on subsidising renewable energy production, potentially from redirecting current subsidies for other means of producing energy such as coal, to make it a more financially attractive product (for a more detailed discussion of this suggestion, see Topic 9).

7. Crowd-sourced investments

Our focus group participants and stakeholder interviewees alike noted the need for financing renewable energy production differently than it currently is in order to increase its access and usage by a wider section of the community. This is especially important for renters and also apartment dwellers, both of whom face additional challenges, especially in regards to the installation of low carbon technologies such as photovoltaic panels and solar hot water systems. One older tenant, for example, suggested the possibility of social impact bonds, or ones that are tied specifically to positive environmental impacts, that they could invest in and receive a reduction in their energy costs in return:

"Low cost, affordable loans could be repaid innovatively from their surplus to feed energy back into the grid. So it does require financial planning, dedicated costs, and I suggest social bond, a special form of loan for the purpose" [older single, NSW].

Likewise, a housing provider elaborated on how such impact bond schemes could work in promoting renewable energy production and consumption:

"they equally could have come up with a scheme where anybody, owner or renter, could have paid money to invest in a bank of solar panels anywhere in the country. On school roofs, on hospital roofs, in... on vacant government land, and received a benefit from the generation of the solar power" [housing provider].

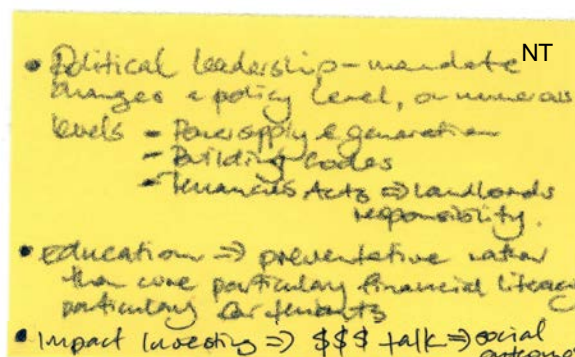
Some social impact bonds already exist in Australia. They were first introduced in Australia in 2013 by the NSW Treasury in partnership with UnitingCare Burnside and the Benevolent Society (NSW Treasury n.d.). They have been growing in numbers since, being promoted by investment groups (such as Social Ventures Australia) as innovative approaches to financing social services that may traditionally have been provided by public agencies and/or charitable organisations. The two NSW

schemes are overseen by the NSW Office of Social Impact Investment, a joint initiative between the NSW Treasury and the NSW Department of Premier and Cabinet.

Typically, impact investment is focused on social connectivity outcomes, such as the Benevolent Society's social benefit bond for reducing out-of-home care needs of children in Australia; other international examples include employment programs, such as those specifically for youths and/or recent migrants, or re-training programs (SVA n.d.). There is as yet no examples of impact investment being directed to renewable energy or environmental sustainability more generally. This could be an innovative method of financing projects that have specific environmental outcomes, similar to the "pro-poor public private partnership" or "social pricing and assistance program" approaches described in Sovacool and Dworkin (2014: 249-255).

Amongst our policy workshop discussants, ensuring and prioritising social impacts and outcomes is high on their agenda. More than half (52%) included this as one of their top priorities for facilitating change (see Figure 8).

Figure 8: Example of policy workshop discussant priorities on prioritising social impacts and outcomes.



8. Stakeholders' perspectives

Suggestions from our stakeholder interviewees regarding financial assistance concerned two main approaches. A small number of stakeholders described the general lack of opportunities for pilot funding and the competitive nature of applying for such funding. This is especially so when many advocacy and welfare organisations are reliant on grant funding in the absence of longer-term financial commitments:

"it becomes a sort of a programmatic issue for an advocacy organisation and an organisation that relies on grant funding to actually make things happen. ... We were very keen to do work in the space but without resourcing we're very limited in what we can do" [welfare advocate].

This housing provider, for example, spoke of the potential for pilot funding in testing a new product – an embedded electricity network, where tenants may choose to purchase electricity from a preferred supplier at a discounted rate – that has a clear social benefit, before taking it to scale through longer-term internal budgetting:

“it would be interesting to see some subsidy funding to establish pilots like that, where you could trial an embedded network approach, where it’s [the housing provider] a preferred energy provider, but it’s at a more cost-effective rate and it’s combined in with the housing offer. So it’s an affordable housing/energy option” [housing provider].

This would aid housing providers and other service providers alike to become more innovative in implementing more environmentally-friendly and energy efficient measures.

When discussed at the policy workshops, some discussants disagreed and said that there are already a number of pilot funding programs that exist (or have recently existed). The Low Income Energy Efficiency Program (LIEEP), for example, was funded by the Federal Department of Industry, Innovation and Science to test energy efficiency measures specifically for low income households (DIIS n.d.). It ran between July 2011 and June 2016, with 20 projects funded altogether.

Some of our policy workshop discussants said, however, that there is generally little follow-up on what was tested in the pilot projects. It was usually left up to the industry to discover what had worked and develop products and programs; as a result, many beneficial outcomes that were tested to be successful may have been lost in the process.

In ensuring that successful outcomes lead to broader benefits, one suggestion from the policy workshops was to set conditions on the pilot funding. Specifically, they suggested that there should be impetus for pilot projects to develop a business case of outcomes that have been tested to be positive so they could be taken to scale whether by the same organisations or by other stakeholders.

“It comes back to part of the reason we’re doing a pilot is it should be to create a sustainable business model and provide the recommendations for those sustainable business models. Because that’s... you can do a pilot so you meet the objectives of what it is you’re doing for a pilot, you know, [renewable] energy et cetera. But you don’t end up with the end result, which is a sustainable business model, if it works, or make recommendations for a sustainable business model to get the same outcome. I think that’s a procurement issue, as to how pilots are actually given” [SA workshop]

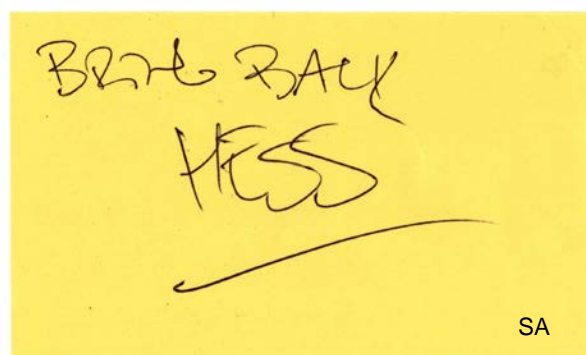
Similar to ensuring that successful outcomes are taken to scale, another suggestion from our stakeholder interviews concerned longevity of funding. Several stakeholders spoke of the short-term nature of pilot funding, which typically lasts between a few months to a couple of years. An energy advocate explained the

pressure of completing projects under short-term funding:

“it isn’t terribly useful to have a program run for 12 months. As I said before, you’re just getting going, you’re getting your staff on board, you’re getting up, you’re getting out there. Then very soon you’re writing your final report and your financial acquittal to say well it’s all done and dusted” [energy advocate].

Indeed, one of our policy workshop discussants suggested that successful programs that were previously funded – in this case, the Home Energy Saver Scheme (HESS) funded by the federal *Securing a Clean Energy Future* initiative between 2012 and 2014 – should be reintroduced rather than having a new list of pilot projects funded with each change in government (Figure 9).

Figure 9: Example of policy workshop discussant priorities on program funding.



One way of ensuring that beneficial outcomes are carried out at any meaningful scale is for them to have lasting financial backing. To do this, there needs to be significant political commitment through long term strategies (see Topic 9 in the next chapter for more details) that are protected from government changes. The abovementioned LIEEP, for example, was discontinued following a change in Federal Government in 2013, two years after its initial announcement. A small number of stakeholders also spoke of having proposals on energy efficiency and education projects approved only to have the decision reversed due to a change in state/federal government before the funding could be finalised.

To ensure longer term benefits are achieved, funding needs to be made available on a continuous basis and unaffected by political cycles. This is especially important given Australia’s relatively short political cycles (typically 3-4 years at the state/territory and federal levels) and newly introduced programs like LIEEP taking up to a year to be fully set up following announcement.

Policy implications regarding political will and leadership

Of the three categories of suggestions discussed at the policy workshops, this category – of political will and leadership – is the one that gained most agreement amongst our discussants, all of whom also conceded it as being the most difficult to achieve. In general, suggestions from our focus group participants and stakeholder interviewees could broadly be classified under two topics – directive policies and lead by example – both of which face varying degrees of political and practical obstacles to realisation. The outcomes of the policy workshop discussions are detailed in this chapter.

9. Directive policies

As noted in the previous chapter, much improvement in information formatting and distribution and especially in reforming current financial assistance requires significant political backing and input. On this, many of our focus group participants and stakeholder interviewees lamented that, in Australia, we currently lack any political leadership that prioritises longer term environmental impacts, with economic growth and financial prosperity more often at the forefront of policies.

Indeed, this lack of political leadership for the environmental cause was highlighted by an article in *The Wall Street Journal* in 2014 (Taylor & Hoyle 2014), which proclaimed that Australia was the first (and, to date, only) developed nation in the world to repeal its own carbon pricing mechanism. This lack of political commitment frustrated many of our participants, as this quote exemplifies:

“I think the government needs to be more assertive rather than... they're always going to upset somebody with whatever decision they make. ... they're not very assertive. They're supposed to be our leaders” [single-parent, SA].

The recent disagreement within the Climate Change Authority on the best policy approaches to meeting the Paris Agreement commitments is yet another sign of political indecisiveness on this matter (Climate Change Authority 2016; Slezak 2016).

Regarding this, many of our participants said that environmental policies need to be more clearly directed towards environmental improvements, noting the potentially significant costs of ‘doing nothing’ in terms of further environmental degradation and also its impacts on health and wellbeing. To them, sticking with the status quo cannot be an option:

“you're not going to alter anything if you don't change the rules” [single-parent, TAS].

As demonstrated throughout this report, there is a call – from our focus group participants, stakeholder interviewees, and policy workshop discussants alike –

that renewable energy needs to be made a priority in our political agenda, and the only way to achieving this is to mandate ‘green’ changes:

“change their policy. Decide they want to run clean energy sources, not necessarily solar on its own but clean energy in general” [older single, NSW].

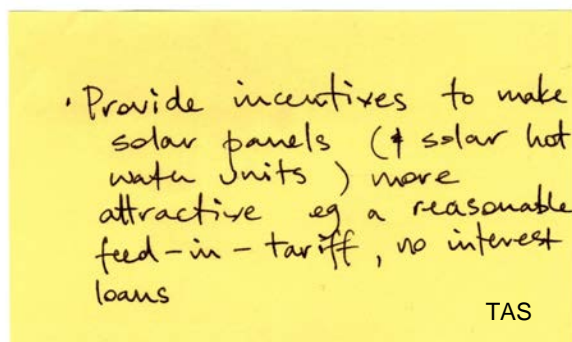
Many of our participants found government commitments to date confusing, at times contradictory, and often set up to push ahead the personal agendas of politicians rather than for the greater good. While the CEFC, for example, was set up to facilitate the financing of clean energy production and distribution by the Gillard Government in 2012, a change in Prime Ministership a few months later left it on the brink of abolition. Even though the succeeding Abbott Government put a stay on its execution in the end, its power was severely restricted. Most famously, it was banned from investing in wind power generation simply because the Prime Minister personally found them “visually awful” rather than on any environmental, scientific, or public health concerns (Gartell 2015).

The lack of political commitment towards renewable energy production and distribution is further highlighted by the disparity in subsidies between renewable energy production and non-renewable resources. The International Monetary Fund (IMF 2015), for example, reported that the Australian Government spent US\$10.45 billion on subsidising the coal industry in 2015, an increase of US\$1.4 billion since 2013. In contrast, the Climate Institute (2014) reported that the current renewal energy subsidy in Australia averages just US\$1.5 billion per annum. As a result, GreenPower (n.d.), an independent accreditation program for renewable energy, noted that the retail price of renewable energy costs was 15-24% higher than from other, non-renewable sources. For lower income households, this differential is a significant financial barrier to them choosing to purchase renewable energy when a myriad of non-financial barriers prevent them from producing and consuming renewable energy in situ.

One way of overcoming this is by redistributing the subsidies to make renewable energy a more (financially) attractive option, especially to households where finance presents as a significant barrier. Amongst our policy workshop discussants, this – prioritising renewable energy through incentives and subsidies – is high on their agenda, with 90% of discussants including this as one of their three top priorities (Figure 10).

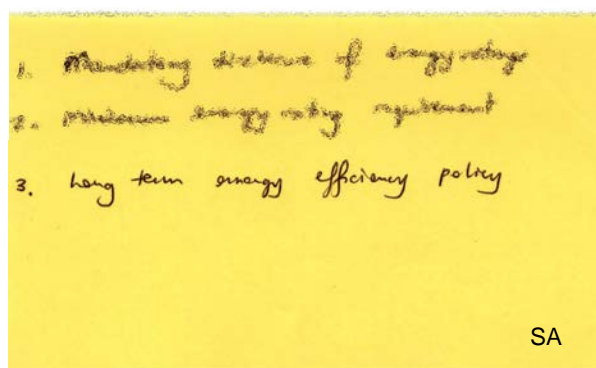
There is no overnight solution, of course. As recognised by one of our focus group participants – *“to do it over gradually, over a period of time in sections, so that there's a long term plan” [older single, TAS]* – and also as stated in Sovacool and Dworkin (2014), there needs to be a gradual transition so not to inadvertently disadvantage current stakeholder, such as workers in the coal industry. This could be done through adjustment packages (Sovacool & Dworkin 2014: 286-7), where parts of the saved subsidy is put aside for retraining.

Figure 10: Example of policy workshop discussant priorities on prioritising renewable energy.



To do this, long term strategies that are not affected by relatively short political cycles are required. One way to achieve this, as suggested in Sovacool and Dworkin (2014: 314-5), is by setting up a natural resource fund that protects the interest of future generations. This is important, as we reported previously (Liu & Judd 2016: 11) that our participants' support for low carbon living was generally predicated on the future generation. Setting up policies with future generations in mind will, therefore, be more likely to gain buy-in and attract less resistance from the general public. In the examples included in Sovacool and Dworkin (2014), all of which were from developing countries, revenues from drilling oil were required by law to fund essential services as well as contributing to 'future generation funds' that are protected to continue funding these services when revenues from the natural resources dry up. In Australia's case, this could apply to the mining of minerals and coal, where subsidies may be gradually transferred to fund renewable energy production, and parts of the revenues from either (or preferably both) can be set aside in a future generation fund to continually fund assistance to lower income households.

Figure 11: Example of policy workshop discussant priorities on longer term strategies.



This is important. While we did not further categorise any of our policy workshop discussants' listed priorities under

the topic of long term strategies, any redirection of current subsidies or the reforming of tenancy legislation relating specifically to energy efficiency would require long-term planning and implementation (Figure 11).

10. Lead by example

As a single-parent we quoted in the previous section said, governments are meant to be our leaders, and many of our focus group participants said this should also be the case on the environmental front, with governments leading by example. Many participants spoke of the urban renewal agendas currently being put in practice across many of our urban and regional areas, and that energy efficiency measures should be mandated as part of the requirements. For example, one older person explained:

"it starts with the government, because all around here they're going to get rid of the large buildings. So they're obviously going to have to build more building. Why can't they put solar panels then for the people they're housing, which are all low income? It's the government that needs to take the reins and start making buildings compatible for solar" [older single, NSW].

Some of our stakeholder interviewees and policy workshop discussants agreed, and indeed it is more practicable – financially as well as logistically – to implement energy efficiency and low carbon measures in new builds than to retrofit existing buildings. Such 'green' mandates already exist in several European countries such as Germany and Spain (see Figure 12 for an example); new buildings in Australia need to follow BASIX and NatHERS guidelines which set minimum standards for incorporating energy efficiency fixtures and products such as solar panels and water tanks.

While there are legislations on including energy efficiency measures in new builds, our policy workshop discussants said that there generally is no monitoring system in place to see if any of the measures are performing as they should. Some discussants reported anecdotal evidence where measures such as solar hot water systems may be installed but are not connected to the accompanying panels, so the household's hot water is heated by the electric or gas booster instead. This may be the result of improper installation, or in some cases deliberate tampering by the residents themselves because they find less consistent heating from the solar panels than through grid electricity or gas.

In other instances, focus group participants called for solar panels to be installed on all public housing dwellings, as this would benefit some of the most disadvantaged households in Australia as well as shift a significant number onto renewable energy:

"I think the government needs to do more solar and more wind. Their housing commission houses should have solar on them, because that's heaps better for the environment and it's heaps cheaper" [single-parent, TAS].

Figure 12: Solar panels as exterior cladding, Barcelona, Spain.



Source: Edgar Liu

When discussed at our policy workshops, there was little agreement from our discussants. One discussant said, even if it was financially possible for state housing authorities to fund such a large scale installation, in practice it would be very difficult to achieve. They said that in many cases it is not possible to install solar panels on public housing, as many properties do not have the right orientation. In turn, this brings up issues regarding equity when it is only possible for some to access solar power but not others.

This suggestion of our focus group participants, nonetheless, highlight the assistance many lower income households require in moving to low carbon living. It also highlights the more general misunderstandings of how solar power generation works, with some thinking that solar panels would be able to produce electricity for their needs endlessly, while others are concerned about being without power because of a few consecutive cloudy and raining days.

Some state housing authorities are, however, gradually replacing inefficient fixtures such as electric hot water systems with more efficient ones (e.g. heat pump). Like the transfer of subsidy from coal to renewable energy production suggested above, this shift will be gradual and, therefore, take some time. The challenge is implementing short term solutions that work collaboratively with longer term strategies.

Of the different priorities suggested by our policy workshop discussants, those classified under political will and leadership amounted to 39% of all responses. While low compared to most other priorities suggested, it is clear from the list that most other suggested priorities require some kind of political will, leadership and coordination to facilitate.

Carbon reduction estimation

This chapter discusses the potential carbon savings that can be achieved if more assistance is provided to lower income households. These savings are calculated based on the three scenarios as discussed with lower income households during the focus group discussions, and assume households are of average Australian household size (i.e. 2.6 people). To recap, the three scenarios were:

1. the installation of a photovoltaic (i.e. solar panels) domestic electricity generation system
2. the installation of a solar hot water system, and
3. the purchase of energy efficient whitegoods through a no interest loan scheme.

Indirect emission savings from switching from electricity generated by coal-fire to solar panels was calculated using the method outlined in Department of Environment (2015). Average rates of power generation and usage from photovoltaic panel systems were obtained from consulting the NSW Office of Environment and Heritage. The average electricity usage for hot water systems and refrigerators were also obtained by consulting the NSW Office of Environment and Heritage.

Acceptability of the scenarios

The three scenarios were discussed with lower income households towards the end of the focus group discussions. As such, all participants would have spent the preceding half to one hour thinking about low carbon living, the challenges they faced in converting to low carbon living, and what alternatives they would like to access. The three scenarios were presented to our participants as potential assistance programs that they could take up, first as a break-even situation (increase in rent or purchase and installation costs is equivalent to the savings – in monetary terms – that they would receive) then second where they save more than the costs (i.e. financially better-off).

For about half of our participants, the break-even option across the first two scenarios were not very popular. This lack of uptake was across renters and owner-occupiers alike, but especially renters. The discussions of these options often drew comments like:

“Participant 1: You’ve achieved nothing.

Participant 2: You are only breaking even.” [single-parents, SA]

“That’s not going to save anything. [larger household, TAS]”

For renters especially, there was often a sense of resignation and disempowerment, that if the landlord had decided to install solar panels or solar hot water system, they would just go ahead and install them without seeking approval and collaboration from the tenants:

“Got no way of stopping him because mine’s the government housing. You got no way of stopping them.

If they want to put it in, they’ll put it in.” [older single, TAS]

“You wouldn’t get a choice. He’s going to do it if he wants to anyway. It’s his property. If he wants to put it on he’s going to put it on.” [single-parent, NSW]

Regarding solar hot water systems particularly, many renters highlighted that it was the legal responsibility of the landlord to provide a functional hot water system, and many did not agree that they should be paying, and paying extra, for a landlord’s statutory responsibility:

“A landlord should be paying for it himself, not you paying for it for him” [young single, SA]

“He should be paying it, not us.” [larger household, TAS]

For renters, there were generally concerns about the rent increases. This includes a mix of how long the \$5 extra payment would last and whether it would increase as their rent increases:

“In government housing it may well work, because they could legislate that your rent would only go up that \$5 or whatever. But in the private world I’m not too sure that the owner would stick by the \$5 extra as the example you used.” [older couple, TAS]

“Depends on how long he was going to charge the \$5 for.” [older couple, NSW]

The remaining participants were generally accepting of the break-even options of the first two scenarios, though such acceptance was often conditional. For owner-occupiers particularly, they were generally reluctant to add that onto their mortgage (if they had a mortgage) or take out a loan. In most instances, they would take up this option if it was an interest free loan: *“If it’s an interest free loan I might go for it” [older single, NSW].*

One concern that owner-occupiers had was that the solar panels and/or solar hot water systems may not last as long as the loan repayment period. This was especially the case amongst owner-occupiers who had installed either or both of these low carbon technologies, and had bad experiences with break-downs and replacements:

“But I’d want to know how long it’s warrantied for; how long it’s going to keep for, because if two years and one week after you buy it you’ve got to buy another one, no way.” [older couple, NSW]

In the financially better-off options for scenarios 1 and 2, the take-up rate was significantly higher than the break-even option, with most taking up the offer. When prompted further, many explained that clear and immediate financial benefits to transferring over to low carbon technologies would make them the worthwhile options. A few noted that they would take up the offer if they were looking to replace a broken hot water system – *“If we had to replace I would hope that we would use solar. But that would only be if we had to replace that he would consider doing it.” [older couple, TAS]* – with a small number still questioning the value for money on the longer term if break-downs and replacements were a persistent issue.

Discussions of scenario 3 drew vastly different responses from our participants than the first two scenarios. It was also quite a different scenario where (1) owner-occupiers and renters were presented with identical options, and (2) the initial or longer term financial outlay was much lower than the other two scenarios. There was almost a universal acceptance of this scenario – whether at the break-even or better-off option – by most of our participants even though some had not heard of NILS prior to joining our focus group discussions. A small number had already upgraded and purchased a more energy efficient fridge, whether through NILS or other financing arrangement. Only a very small number would not take up the offer for an interest-free upgrade, and their reasons for deciding so were quite varied.

A small number questioned the longevity of modern appliances, having had recent bad experiences with whitegoods and other products that broke down within a few short years or soon after the warranty ran out. For these participants, their concerns lay with the need to replace these appliances on a regular basis, meaning that they would likely be continually in debt when they needed to take out another loan to purchase yet another replacement. As one SA participant explained, she much preferred to keep her 30 year-old fridge that has chlorofluorocarbon as its refrigerant because she knew it would continue to operate for some years to come despite being at a higher running cost than a modern fridge.

For most of the participants who said they would take up this offer, and for renters especially, the ability to keep the product and take it with them (instead of paying what essentially was an access fee to solar-generated electricity as in the first two scenarios) and the control that they can have over it were big factors on their decision:

“Participant 1: We can draw on it, we can stick stickers on it and we can take it with us when we leave.

Participant 2: Yeah that’s right, whatever we own we can... that’s how I’ve always thought.

Participant 3: Yeah, same here.” [larger households, TAS]

With most participants accepting scenario 3 at both the break-even and better-off options, we set out to test how much these households valued environmental friendliness and lowering their carbon emission. We presented an alternative option, a financially worse-off option (though only slightly worse off), for them to consider: with a weekly repayment of \$8, they only save \$5 instead of \$8 (break-even option) or \$10 (better-off option) in electricity.

Unsurprisingly, quite a number of participants said that they would not take up this offer as they would be unnecessarily spending money (despite it only being a marginal amount) that they could spend on essentials such as food or the occasional treat for their children. This view was especially prevalent amongst the larger households, whose family budget was typically tighter than the other three household types involved in this study. More than half of the participants, however, would

still take up this offer despite being in a financially worse off position for a short period, noting that their ability to keep the fridge and they would continue to save after the loan is paid off as strong motivating factors.

The value of potential carbon savings

This last, financially worse-off, option highlights the great diversity of situations that lower income households are in. While many see the longer term benefits of taking up low carbon technologies despite it potentially costing them more in the short term, these were generally households who had a little more flexibility in their budget. For those who were already struggling to get by, their ability to put food on the table and to send their children to school fed, cleaned and clothed were far higher priorities than longer-term environmental sustainability or even potential financial savings down the track.

Regarding this, we asked our participants to nominate an absolute financial limit that they could tolerate if they were to take up any or all of the offers we put forward in the scenarios. Overall, the amount that larger households and single-parents were able to tolerate were far lower than young singles and older households. For single-parents and larger households, budgeting an extra \$5 or \$10 a week could mean a significant juggle and re-prioritising of their daily needs:

“Participant 1: \$5 is a lot of money, you know?

Facilitator: Still a lot of money?

Participant 1: Yes, well you could fit it in but it’s still a lot of money for...

Participant 2: Putting \$10 in there would almost just stuff everything up being such a large number.

Facilitator: \$10 would be a bridge too far would it?

Participant 2: Yes, because that would be \$20 a fortnight. That’s your bread and your milk and your butter for the entire fortnight just there on that on its own. It would depend on how much it would be because you’d have to take out certain things to be able to accumulate” [single-parents, SA]

This kind of budgetary struggle was also experienced by some other participants, as this older person questioned our scenarios:

“How many questions you got there? We’re going up \$10 already in rent” [older single, NT].

For most other participants, they could typically tolerate between \$10 and \$20 additional weekly spending on these low carbon scenarios, with one saying that she could tolerate as much as \$25. These increases, however, were dependent on the low carbon technologies delivering the same (or at the very least very similar) amount in savings as the extra expenditure in order for them to be worthwhile, despite most participants also noting that longer-term environmental benefits were also motivating factors for them to taking up these scenarios.

Potential carbon saving

Using responses to the three scenarios as described above, we calculated potential carbon savings if some or all of the offers are taken up by lower income households across Australia. As noted in the introduction, assistance programs that deliver some of such offers already exist in some jurisdictions. The most well known and well publicised programs are the Victorian Energy Efficiency Target (VEET) in Victoria, HPSP in NSW, and REES in SA.

An evaluation of the HPSP, which included small-scale retrofits such as low energy light bulbs, water saving shower heads and power boards, as well as behaviour changes, demonstrates that the energy savings and emission savings resulted from it were actually quite small. Participants produced an average energy saving of 0.87kWh/day or 317kWh/year. Using the average

emission factor for Australia it gives an average annual emission saving per household per year of 0.263 tonnes of CO₂-equivalent (Rickwood et al. 2012).

In comparison, a 2kWh solar photovoltaic installation (i.e. scenario 1) can save 1.835 tonnes of CO₂-equivalent per household per year; the replacement of a 150-litre electric hot water system with a solar-powered equivalent (i.e. scenario 2) can save 2,211kWh electricity, or 2.0 tonnes of CO₂-equivalent; and the replacement of a 15-year-old fridge with a more energy efficient one (i.e. scenario 3) can save 0.567 tonnes of CO₂-equivalent per household per year. These show that significant carbon savings can be made if the right assistance programs are in place to facilitate lower income and other households alike.

Table 1: Carbon reduction scenarios and potential annual savings at three different levels.

Scenarios	Carbon reduction per household per annum ¹	25% uptake ²	50% uptake ³	100% uptake ⁴
Switching from coal-fired electricity to domestic solar electricity generation ⁵	1.835	1,123,186	2,246,365	4,492,725
Switching from electric hot water system to solar hot water system ⁶	2.0	1,233,891	2,467,777	4,935,547
Switching from a low-star to 4-star refrigerator ⁷	0.567	347,501	695,000	1,389,999
All three scenarios adopted	4.402	2,704,578	5,409,142	10,818,271

Note 1: Unit = tonnes CO₂-equivalent (t CO₂-e)

Note 2: 25% is equal to 738,364 lower income households Australia-wide.

Note 3: 50% is equal to 1,476,727 lower income households Australia-wide.

Note 4: 100% is equal to 2,953,454 lower income households Australia-wide.

Note 5: Calculations based on average household electricity consumption, 80% PV system design performance, 0.7% PV panel annual degradation rate for solar pv 2kW system, with annual generation capacity of 2,211kWh

Note 6: based on 3 person household daily average hotwater usage 154L, electric (instantaneous) hot water system, using 3,450kWh/annum replaced by Solar - Electric Boosted hot water system using 1,346kWh/annum

Note 7: based on 6-15 year low star rating 400L capacity old fridge using 1,000kWh/annum and 400L capacity new 4-star rating fridge using 316kWh/annum electricity. Electric consumption data is based on modelling conducted by NSW OEH obtained on 19 August and 19 September 2016 (pers. comm).

Moving forward

As the Paris Agreement and its predecessors the Kyoto and Montréal Protocols demonstrate, combating climate change and minimising our impacts through transitioning to low carbon living requires collaborative efforts. While great advances are made in introducing products with greater energy efficiency, these are mostly coming in at a premium and, as we discussed previously (Liu & Judd 2016), has generally been out of reach of most lower income households. In struggling to afford increasing energy costs, many compensate by making sacrifices that impact negatively on their physical and mental health as well as social engagement. As Ebert (2016) recently wrote, “there’s a lot to lose for those who can’t keep up”, and through financial, structural and policy constraints, many lower income households are losing out.

As our focus group, interview and policy workshop participants all recognised, however, such behavioural changes need to be facilitated by leadership at the top level, by setting the right regulations, policies and guidelines to instigate change. That would be no easy task, and some of the suggested priorities – such as putting environmental conditions on negative gearing – may not be popular solutions politically. They nonetheless highlight the significant hurdles we face as a society as a whole as we continue to shift towards low carbon living.

Adopting some of the priorities suggested by our project participants does not necessarily require a revolution; it does, however, require a greater commitment from our political leadership in facilitating change.

This lack of leadership is highlighted throughout our review of current and recent policies and programs aimed at transitioning the general public to low carbon living. As the review shows, these policies and assistance programs have covered topics great and wide but they also often lack longevity. As a result, many stakeholders reported only being able to provide assistance in a stop-start manner, and likewise some lower income households spoke of only learning of programs as they were being wound up and therefore were not able to participate.

Of the assistance programs that lower income households can more generally take advantage of, these have mainly focused on financial assistance (such as the

energy rebate and concessions) with little attention on lowering these households’ carbon consumption. While providing financial relief to cash-strapped households would alleviate some of the negative impacts of energy deprivation these households are already suffering, there were also frustrations felt by stakeholders and lower income households alike on efforts to help them move towards low carbon.

The general support of low carbon living that these lower income households has expressed shows that they are not any less environmentally conscious than other income groups despite having less financial flexibility to do so; they just need a helping hand to get them started.

With a high proportion of lower income households being renters, the biggest barrier that any future policies and programs should focus on is overcoming the dilemma of split incentives. This requires careful coordination of policies that both mandate as well as encourage landlords to implement higher efficiency measures and low carbon technologies, but also ensuring that the associated costs (or at the very least the bulk of these) are not passed onto lower income households and further burdening them with additional expenditure that they cannot afford with or without significantly compromising their quality of life.

The signs of energy deprivation, while not the main focus of this study, were already quite prevalent amongst our lower income participants. Going without food, medication and comfort were reported as common compensating practices, as were missing out on socialising opportunities and family activities, all important social and physical costs borne by lower income households, as Chester and Morris (2012) report, for far too long.

As recognised in Chester and Morris (2012) and Moloney, Horne and Fien (2010), encouraging behavioural changes would yield the longest lasting impacts as we continue to shift, though oh so gradually, towards a greener, renewable future. Such behavioural changes not only need to come from lower income households themselves in changing their daily practices but also from their wider circles – their landlords, service providers, and policymakers – in setting examples, benchmarks and guidelines to ensure that the housing that these households live in, the products that they can

afford, and the assistance that they can access all work together in making a real difference to the lives of these households and their contribution to a renewable future.

Next steps

A great deal of work lies ahead to improving the quality of life of lower income households while concurrently assisting them to transition to low carbon living. Here we list a summary of the first steps to making it happen:

1. *Strong political will and commitment to low carbon living:* We all have a part in this, by electing strong leaders who will commit to prioritising a cleaner and greener future ahead of spending cuts and primary exports.
2. *Overcoming split incentives:* With the number (and proportion) of Australians living in rental accommodation expected to continually increase (Wood et al. 2013), mechanisms must be put in place to encourage – and in some instances, mandate – landlords to introduce energy efficiency measures to increase renters' access to low carbon technologies. Imposing conditions on negative gearing was one such mechanism suggested by our participants. Changing tenancy legislations and relaxing rules regarding tenants' rights to modify their rented homes would also encourage greater up-takes of assistance programs that are already available.
3. *Ensuring sustained funding to deliver longer term outcomes:* Many assistance programs that aimed specifically to help lower income households on energy efficiency and low carbon living have come and gone. To ensure longer term outcomes, assistance must not be given in a stop-start manner so that early efforts can be properly bedded in.
4. *Educate via the right channels:* Most of our participants know there is information out there that would help them be more energy efficient, but much of this is not made available through the 'right' media where they can access easily. Having it online may have a wider reach across the general public, but for lower income households who may not have regular access to the internet this is not a practical platform. As discussed in this report, information needs to be kept simple, eye-catching, and be available in a multitude of formats and access points to ensure that they reach their intended audience.

Endnotes

1. At the UN Climate Change Summit in Paris in December 2015, nearly 200 countries have agreed to take collective action to cut greenhouse gas pollution to stabilise global warming well below two degrees to above pre-industrial levels, and less if possible. The agreement signed is usually identified as Paris agreement (UN 2015).
2. Holders of an eligible Centrelink Pensioner Concession Card, Centrelink Health, Department of Veterans' Affairs Gold Card For All Conditions, Department of Veterans' Affairs Gold Card (TPI), Department of Veterans' Affairs Gold Card (EDA), Department of Veterans' Affairs Gold Card (War Widow), Department of Veterans' Affairs Gold Card (POW).
3. Weatherisation generally refers to small-scale retrofit measures of buildings in order to improve their levels of energy efficiency. These measures may include sealing drafty windows, switching to low-energy light bulbs, and re-sealing fridge doors. Weatherisation measures have a number of proven health benefits, including the prevention of mould; of reducing the effects of energy deprivation; as well as assisting in the adoption of low carbon living (Heffner & Campbell 2011).

Appendices

Appendix 1: Outcomes improvement options discussed at the policy workshops.

Categories	Topics	Suggestions
Information format and distribution	1. How information should be provided	<ul style="list-style-type: none"> • Multi-modal approach • Simpler / more accessible language (e.g. through storytelling) • Infographics • Eye-catching posters (infographics-based) • Information included on bill • Standardised bill structure • One-page leaflets with bill • Educational programs • TV advertising
	2. Where best to provide information	<ul style="list-style-type: none"> • Multi-modal approach • Include with bill/rates notice • Via charitable organisations • At libraries • At community centres • At GPs and other waiting rooms • At and via Centrelink • Online • TV advertising • Via social media
	3. Stakeholders' perspectives	<ul style="list-style-type: none"> • Independent advisory committee • List of preferred companies / organisations
Financial assistance	4. Overcoming split incentives	<ul style="list-style-type: none"> • Conditional negative gearing • Minimum thermal comfort / energy efficiency standards
	5. Alternate loan arrangements	<ul style="list-style-type: none"> • No / low interest schemes paid back via council rates • Photovoltaic rental schemes
	6. Concession reforms	<ul style="list-style-type: none"> • Flat rate vs. percentage-based concessions • Additional concessions for purchasing 'green' energy
	7. Crowd-sourced investments	<ul style="list-style-type: none"> • Social impact bond schemes
	8. Stakeholders' perspectives	<ul style="list-style-type: none"> • Subsidies for pilots • Longevity to funding • Social / non-financial returns for 'green' investments
Political will and leadership	9. Directive policies	<ul style="list-style-type: none"> • Reform of current industry subsidies • Policies that mandate 'green' changes • Longer term strategies (rather than short pilots with no follow-ups) • Minimum thermal comfort / energy efficiency standards
	10. Lead by example	<ul style="list-style-type: none"> • Provision of solar panel generators and/or energy efficient water systems in public housing • Devise partnership approach in mandating 'green' changes

Renter scenarios	Owner-occupier scenarios
<p><u>SCENARIO 1:</u></p> <p>Your landlord wants to install some solar panels on your roof, and as a result you will be able to use solar power instead of paying [local electric company] for electricity. Using solar power means that your electricity bill will be cheaper (by about \$250 a year), but to help pay for the solar panels your rent will go up by \$5 a week (i.e. same as savings on electricity bill over the year). Would you agree and let your landlord install the panels?</p> <ul style="list-style-type: none"> • What if you save twice as much (i.e. \$500 per year) on electricity than your rent increase? 	<p><u>SCENARIO 1:</u></p> <p>You are considering installing some solar panels on your roof, and as a result you will be able to use solar power instead of paying [local electric company] for electricity. Using solar power means that your electricity bill will be cheaper (by about \$250 a year), but to pay for the solar panels you will need to extend your flexible mortgage by \$4,000 which will increase your mortgage repayments by \$20 per week (i.e. \$240 per year). This is equivalent to a \$10 saving over the year. Would you go ahead on this basis?</p> <ul style="list-style-type: none"> • What if you received a rebate of \$2,000, which means that you only add \$10 per month to your mortgage repayments (i.e. \$120 more per year), saving you \$130 per year. Would you go ahead on this basis?
<p><u>SCENARIO 2:</u></p> <p>Your hot water system is broken and needs replacing. Your landlord wants to install a solar hot water system instead of an electric one, which is cheaper to run (approx. \$250 per year saving) but takes 1-2 days longer to organise installation. To help pay for the system, you will be asked to pay an extra \$5 rent per week (i.e. same as savings on electricity bill over the year). Would you agree to let your landlord install the new system or ask them to install an electric system (i.e. installed earlier and no rent increase but also no bill savings)?</p> <ul style="list-style-type: none"> • What if you save twice as much (i.e. \$500 per year) on electricity than your rent increase? 	<p><u>SCENARIO 2:</u></p> <p>Your electric hot water system is broken and needs replacing. You are considering installing a solar hot water system, which will cost you \$1,000 (the same as a gas heater) which will take you four years to pay off at \$20 per month but save you the same amount per year (\$250) in electricity bills (i.e. you are \$10 better off during these four years). Would you install the solar hot water system?</p> <ul style="list-style-type: none"> • What if you were to receive a \$500 rebate which reduced your payments to \$10 per month over four years (\$120 per annum), meaning that you are \$130 better off during these four years. Would you install the solar hot water system then?
<p><u>SCENARIO 3:</u></p> <p>You have an old fridge, which uses up a lot of electricity. The local Salvation Army office offers an interest free loan for purchasing a brand new, more energy efficient white goods. A new fridge will cost \$650 and your repayment to the Salvation Army will be \$8 a week over 18 months. With the new fridge, you will save \$8 in electricity cost per week. Would you be interested in replacing your old fridge with a new one?</p> <ul style="list-style-type: none"> • What if you save \$10 on electricity per week? 	<p><u>SCENARIO 3:</u></p> <p>You have an old fridge, which uses up a lot of electricity. The local Salvation Army office offers an interest free loan for purchasing a brand new, more energy efficient white goods. A new fridge will cost \$650 and your repayment to the Salvation Army will be \$8 a week over 18 months. With the new fridge, you will save \$8 in electricity cost per week. Would you be interested in replacing your old fridge with a new one?</p> <ul style="list-style-type: none"> • What if you save \$10 on electricity per week?

Appendix 3: Priority areas to facilitating lower income households to low carbon living.

Priority areas	NSW	SA	TAS	NT	Total
Prioritise renewable energy through incentives and subsidies	90%	82%	100%	100%	90%
Introduce minimum standards for rental properties	100%	55%	100%	75%	81%
Education and more effective/efficient information distribution	70%	45%	33%	100%	58%
Prioritise social impacts and outcomes	60%	45%	33%	75%	52%
Reform concessions and subsidies	60%	55%	33%	50%	52%
Tenancy legislation reforms	60%	45%	33%	50%	48%
Political will and leadership	30%	45%	33%	50%	39%
Alternative renewable energy production and distribution	0%	45%	0%	25%	19%
Other	0%	36%	33%	0%	19%

Note: % based on total workshop discussants of each respective jurisdiction

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