



DEPARTMENT OF PLANNING, INDUSTRY & ENVIRONMENT

# Energy efficiency in social housing

Interview findings and policy recommendations



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# 1. Introduction

This report presents the findings of the *Energy Efficiency Decision-Making in the NSW Social Housing Sector* project, jointly conducted by researchers from UNSW Sydney and the University of Wollongong as part of the Energy Efficiency Decision-Making Node funded by the NSW Government. The project aimed to identify and understand the institutional, structural, material and cultural opportunities and barriers that shape decision-making of social housing providers (SHPs) in New South Wales on the implementation of energy efficiency upgrades. Specifically, this project focused on:

- the motivation for undertaking energy efficiency upgrades
- current (or planned) energy efficiency strategies
- barriers to the implementation of upgrades, and
- reported improvements in outcomes (actual and expected) by SHPs and their tenants.

These are important questions. As a residualised sector<sup>1</sup>, social housing in Australia now typically houses those who are on very low incomes. Therefore, these households are particularly sensitive to energy price increases and have limited capacity to improve the energy efficiency of their homes. This is especially true in light of persistently rising energy costs across Australia (Chester 2015).

Australian and international evidence highlights the detrimental impacts energy unaffordability has on households' health and social wellbeing. Evans et al. (2000), for example, note that low quality housing stock directly and indirectly contributes approximately £2 billion to the United Kingdom's (UK) annual National Health Service spending. Likewise, Liu and Judd (2018) highlight how energy unaffordability has impacted on renters' ability to afford other essentials such as food and medication as well as significantly impacting their mental health and social wellbeing.

Governments can play a very important role in addressing these detrimental impacts of energy unaffordability. Indeed, as the Australian Council of Social Service notes, 'there is ample scope [...] for Governments to facilitate longer term and significant interventions [...], including via targeted retrofits of the worst performing social housing where health, climate and hardship risks are greatest' (ACOSS 2013).

Community housing providers (CHPs)<sup>2</sup> in New South Wales currently have access to two main government-initiated funding mechanisms to improve energy efficiency:

- low-cost loans arranged through the government-owned green bank, the Clean Energy Finance Corporation's (CEFC) Community Housing Program, to construct highly efficient new housing, and
- the NSW Department of Planning, Industry and Environment's (DPIE) Home Energy Action Program (HEAP), which provides co-funding for CHPs to install approved energy efficiency upgrades to existing community housing.

Recent evidence suggests that uptake of both HEAP and the CEFC's Community Housing Program is low. Currently, 10 SHPs have accessed HEAP funding and only one CHP has constructed new social housing stock using finance arranged through the CEFC. This is despite a recent international study surveying Australian CHP executive officers, which found that 80% of them considered improvements in environmental efficiency of their housing as a priority (Milligan et al. 2015).

It is therefore pertinent to examine the barriers to SHPs implementing energy efficiency upgrades in New South Wales.

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<sup>1</sup> 'Residualisation' is when social housing becomes marginalised from 'mainstream' society and those with the means exit the tenure, leaving neighbourhoods of those with least resources and opportunities (Jacobs et al. 2011).

<sup>2</sup> Community housing providers (CHPs) are not-for-profit housing providers. Social housing providers (SHPs) include CHPs and state government-managed public housing and Aboriginal housing.

## 2. Methodology

This research employed a mixed method approach, comprising four complementary methods: a literature review, semi-structured interview, spot measurement and indoor temperature monitoring exercise. The project has ethics approval from the UNSW Sydney Human Research Ethics Committee (HC17853), which was ratified by the University of Wollongong's Human Research Ethics Committee (HREC 2017/578).

### **A review of international literature, policies and programs on energy efficiency in social housing**

This literature, policy and program review focused on the key factors that shape energy efficiency investments and improvements in outcomes in the social housing sector. Academic and grey literature (such as working papers and reports by non-government agencies) were sourced primarily from an extensive Google and Google Scholar search. In all, over 80 resources published in English were included in the review, which focused on barriers that social housing sectors faced in implementing energy efficiency upgrades, as reported in Australian and international literature. The approaches of policies and programs in different international contexts – different Australian states and territories, the UK, South Africa, and various European and North American countries – were also reviewed.

Preliminary findings of this review suggest similarities in barriers faced by SHPs across these different geographical contexts in implementing the upgrades, namely:

- split incentives
- limited financial support
- lack of expert knowledge on technology and housing stock, and
- lack of policy intervention.

The findings of this review are reported separately in Halldorsson et al. (forthcoming).

### **Semi-structured interviews with social housing providers in New South Wales**

Twenty-one semi-structured interviews with senior managers of NSW-based SHPs were conducted. These interviews focused on:

- the importance of energy efficiency in social housing stock management
- whether and how energy efficiency upgrades are incorporated in SHPs' strategic plans
- what assistance programs SHPs were aware of and/or have accessed
- the nature and extent of barriers that prevent SHPs from implementing these plans, and
- qualitative reflections of the outcomes of efficiency upgrades implemented.

The full interview guide is included in Appendix A.

Participants were recruited via email to the Chief Executive or the contact email included in the list of Community Housing Providers by Local Government Area published by the former NSW Department of Family and Community Services (FACS)<sup>3</sup>. Chief Executives were asked to nominate relevant staff in senior management (e.g. Asset Manager, Sustainability Manager) if they were unable to contribute themselves. Only the state housing providers and NSW-based CHPs registered with the National Regulatory System for Community Housing Providers (NRSCH) or the NSW Provider Assessment and Registration System (PARS) were invited to participate.

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<sup>3</sup> The functions of FACS were transferred to the new Department of Communities and Justice in July 2019.

A stratified approach was used to identify SHPs of varying sizes, organisational capacity and change readiness, geography of operation, ownership/management ratio, and specialisation to contribute to this research. In all, 53 SHPs were sent invitations and follow-ups between November 2017 and June 2018. Six organisations declined the invitation, citing lack of internal capacity to consider energy efficiency strategically, lack of relevant staff due to recent turnovers, or having recently concluded their housing function, among other reasons. Twenty-six organisations did not respond to the invitation and follow-ups.

The 21 organisations interviewed represent a cross-section of the NSW social housing sector. More than half (12) are currently registered with the NRSCH as Tier 1<sup>4</sup> providers. The other nine organisations were registered in the lower tiers, with PARS, or a public housing provider. The number of properties managed by these providers ranged from fewer than 50 to well over 2000. The majority owned just a small proportion of the properties managed. Most of the properties were managed on behalf of FACS or head-leased from the private rental market. Seven of the SHPs managed properties within metropolitan Sydney only, and 11 managed properties outside of metropolitan Sydney only. Six SHPs that contributed to this study currently partake in HEAP and/or the CEFC Community Housing Program. Further details of participating SHPs are provided in Table 1.

**Table 1 Breakdown of participant types**

Tier of registration	Participants
NRSCH Tier 1	12
NRSCH Tier 2	3
NRSCH Tier 3	4
PARS	1
n/a	1
<b>Total</b>	<b>21</b>

Number of dwellings managed	Participants
<50	4
51–100	2
101–500	2
501–1,000	4
1,001–2,000	3
>2,000	6
<b>Total</b>	<b>21</b>

Area of operation	Participants
Sydney metropolitan area only	7
Regional only	11
Both metropolitan and regional	3
<b>Total</b>	<b>21</b>

<sup>4</sup> The NRSCH adopts a tiered registration system across three levels. Tier 1 are large CHPs that typically have the capacity to develop new stock, Tier 2 are typically medium-sized providers that manage several hundred tenancies, while Tier 3 are smaller providers (or a housing function within a larger non-profit organisation) with fewer than 100 tenancies. Public housing providers are excluded from this registration, while in New South Wales Aboriginal community housing providers are registered separately under PARS. For detailed differentiation of the three tiers of NRSCH registration, please refer to the [NRSCH Tier Guidelines](#).

The interviews were conducted in person (where possible) or by telephone. Each lasted from 20 minutes to over one hour. All interviews were digitally recorded and professionally transcribed. All transcripts were coded and thematically analysed. The interview topic guide served as the basis of the analysis.

## **Semi-structured interviews with sector stakeholders**

Four semi-structured interviews were conducted with sector stakeholders. These stakeholders included a peak body, two consultant groups and one community project. These interviews, conducted in July and August 2018, aimed to gain a broader view of the processes SHPs go through to access potential funding for energy efficiency upgrades. Themes of the interview included the channels through which they receive information about the assistance programs, and consultants employed to assist with the application process.

As per the SHP interviews, all interviews (lasting up to half an hour each) were digitally recorded and professionally transcribed, and included in the thematic analysis.

## **Spot measurement and indoor temperature monitoring exercise**

With the lack of knowledge on housing quality cited as a known barrier in the social housing sector to implementing energy efficiency upgrades, a spot measurement and indoor temperature monitoring exercise was conducted as part of this project. These techniques allowed an evaluation and simulation of the energy efficiency levels of current social housing dwellings in New South Wales. In all, 100 social housing dwellings were included in this exercise, involving two main components:

- a housing quality questionnaire, where trained staff surveyed the quality of the social housing building envelope (e.g. type of windows, signs of leak/rot/draughts), indoor environmental quality (e.g. presence of mould) and other features of the building type and dwellers' energy profile (e.g. number of residents, time spent at home). A stratified sampling method was used to recruit a cross-section of social housing dwellings, with the aim of describing the level of energy poverty among social housing tenants in New South Wales and the need for interventions on social housing stock
- a spot measurement exercise, where sensors were placed in participants' homes to provide data on the indoor thermal conditions in both the summer and winter seasons for insights into the incidence of excessively high/low indoor air temperatures. The measured data was used to calibrate building energy simulation models that were used to assess the indoor environmental conditions and energy needs for a longer period.

This exercise commenced during the winter of 2018 (June – August) and continued through to the conclusion of the 2018–19 summer period (December 2018 – February 2019). The findings of this exercise are reported separately.

This final report reflects predominantly on the findings of the semi-structured interviews conducted with SHPs and sector stakeholders. Interview quotations are included to demonstrate and emphasise the points being discussed. Key findings of the literature, policy and program review are summarised in the next chapter.

## **3. Summary of the literature review**

This chapter provides a summary of the findings of our literature, policy and program reviews. It highlights barriers that are commonly faced by social housing sectors across different contexts in performing energy efficiency upgrades, and international approaches to aiding such upgrades. The full review can be found in Halldorsson et al. (forthcoming).



## Common barriers to energy efficiency upgrades in social housing

International literature on social housing and energy efficiency identifies several common barriers that the sector faces when attempting to implement measures (as new builds and also through retrofitting). These include UK-based studies such as that by Fusion21 (2011) and McCabe et al. (2018), and an Australian study by Urmee et al. (2012). These studies emphasise barriers observed in the social housing sector within their respective contexts, typically grouped into broad themes such as financial, structural and organisational, as well as subthemes such as lack of resident engagement, and fast-changing technologies. The latter – fast-changing technologies – can also lead to an ‘intention–behaviour gap’ (Kowalska-Pyzalska 2017), where residents may not have the knowledge and/or ability to operate the new upgrades to their optimum capacity.

At the organisational level, the split incentive is a major and well-known barrier to housing providers implementing energy efficiency upgrades (Liu & Judd 2018). While not limited to the social housing sector, the disconnect between those who finance the upgrades (the property owners) and those who primarily reap the benefits (the tenants) may impact on the financial viability of SHPs, especially with strict rent-setting regulations (Chegut et al. 2016). This issue of split incentive is particularly notable in Australia (as opposed to the social housing sectors in other jurisdictions such as in western Europe) where most CHPs typically manage properties and tenancies on behalf of other owners (such as the state housing authority, or private owners such as through the National Rental Affordability Scheme). An additional split incentive is introduced not only between the tenant and the owner, but the owner and the manager.

In addition to split incentives, several other barriers are highlighted by Fusion21 (2011), McCabe et al. (2018) and Urmee et al. (2012), which can be broadly categorised into:

- lack of information on housing stock
- perceptions that retrofits are high risk, and therefore a low priority
- significant time and financial investments required
- lack of knowledge about fast-changing technologies
- limited (direct and co-funding) financial support, which can lead to difficulties for SHPs to establish business cases for the upgrades
- lack of policy and government interventions.

These factors were also all reported by our interviewees to varying extents, noting as major barriers the lack of value for money of assistance programs, competing organisation priorities, and lack of knowledge about the housing they manage. These findings are discussed in detail in a later chapter.

## International approaches of assistance programs

A wide variety of assistance programs and policies aimed at assisting SHPs to implement energy efficiency upgrades were reviewed. These included policies and programs from across Australia (at both the national and state/territory levels), from the UK, other parts of Europe, North America, and South Africa. The most common types of assistance are summarised in this section.

### Financial assistance

Direct financial assistance is the most common form of assistance provided by governments. This includes programs available to NSW-based SHPs such as HEAP and CEFC’s Community Housing Program. These aim to (fully or partially) cover the costs of upgrades. Conditions often apply, such as SHPs being only able to choose from a pre-approved list of products.

In the United States, the Department of Energy has been offering the Weatherization Assistance Program since the mid-1970s. While not targeting social housing tenants specifically, it provides funding and advice to households potentially most vulnerable to energy poverty, including social housing tenants, for home-based upgrades to improve energy efficiency and to reduce energy expenditure. Over seven million households have benefitted so far.

### **Pilot programs**

Another common approach is the funding of pilot programs, such as Australia's Low Income Energy Efficiency Program, and France's collaborative housing model (Czischke 2018). These typically aim to test innovative approaches to improving energy efficiency standards across different community sectors. An international example is the European Commission's Intelligent Energy Europe Program (Power House n.d.). A recent Australian study (Liu et al. 2017), however, highlights that the many positive findings of pilot programs are often not scaled-up to wider implementation. A lack of subsequent funding commitment is an oft-cited reason.

### **Philanthropy**

Some private companies offer philanthropic opportunities to community organisations to assist their transition to low carbon and better energy efficiency. In the UK, one example is the Solarcity Community Energy Scheme (BBC 2017), where photovoltaic panels were provided to public housing free of charge. Interviewees of this current project noted that these philanthropic opportunities also exist in Australia; yet, they are less frequently taken up because many CHPs do not own most of their housing. See the later chapter on barriers to implementation for a more detailed discussion.

### **Minimum standards and benchmarking**

Outside of funding, governments may encourage SHPs to implement energy efficiency upgrades through several strategies. One is by introducing minimum standards and benchmarking via policy setting. While there are currently no energy-related minimum standards policies in Australia (except in the forms of the Nationwide House Energy Rating Scheme (NatHERS) and the Building Sustainability Index (BASIX) for new builds), this is a common strategy in many other jurisdictions, especially in Europe and in New Zealand (Cabinet Social Policy Committee n.d.).

In the UK, the Decent Homes program (DETR 2000) ran for over a decade as a policy program that encouraged, incentivised and mandated social and private landlords to upgrade their stock. Its successor, Green Deals (DECC 2014), has introduced mechanisms to help overcome the issue of split incentives by allowing sitting tenants to take up funding opportunities. In the Netherlands, a benchmark for quality assurance and improving social housing stock is established to provide a baseline to which energy efficiency upgrades and improvements can be measured against (Aedes 2019).

### **Information and guidance**

Another important role that governments can perform is to provide accurate and timely information and guidance to SHPs. Information can be about funding opportunities available, or simple guidance on low- and no-cost upgrades that SHPs and tenants can perform themselves without any (or any significant) external input. Such information is typically available online via dedicated websites or webpages linked to state agencies. In the United States, the Environmental Protection Agency's State and Local Climate and Energy Program, for example, provides guidance on the development and retrofitting of energy efficiency measures for social housing (US EPA 2011). This includes their online tool ENERGY STAR Home Energy Yardstick. In the Canadian Province of Ontario, a similar website, Save on Energy (n.d.), offers useful advice to individuals and organisations on ways to take advantage of assistance programs.

## 4. Sectoral views on energy efficiency

This chapter reflects on our interviewees' views on the energy efficiency levels of the housing they manage. Specifically, we asked if energy efficiency is considered a priority within their organisations' respective strategic plans, and who within the organisation is driving this agenda.

Across most SHPs interviewed there is a strong desire to maintain and/or upgrade their housing to 'liveable' standards. This is particularly driven by their philanthropic values, especially given the vulnerability of their tenants, and their sensitivity to constantly rising energy costs. For most, however, improving energy efficiency is often understood as the next level up on the 'liveability' scale and is typically beyond achievable without external funding support.

We have to focus on the liveability aspects before we can then sort of elevate that to the energy efficiency (Tier 2, regional only)

It's not that we're not interested, we haven't got that sort of money. (Tier 3, regional only)

As such, energy efficiency is typically a low or, at best, opportunistic priority across most of the SHPs interviewed. For smaller SHPs, they do not have the internal capacity to identify and apply for funding to help with the upgrades. In these cases, their strategic prioritisation is often dictated by funding opportunities such as through their tenants' National Disability Insurance Scheme plans.

There is just in the development now a marketing group who have just started; they've just been established to go out and look for money for various things. Of course, most of it is based currently around disabilities, you can imagine, that's the Holy Grail at the moment, that's where the money is. (Tier 2, regional only)

Our priority is probably the care of the clients. And because I have a lot of special needs and so forth... It's interesting that the budgets for those particular houses and all our houses, in fact, are set. And people work around those budgets. It's not a big budget for maintenance and so forth. (Tier 3, regional only)

For larger SHPs, priority is on expansion. Expansion may come through management transfers, with several interviewees having recently taken on, or being about to take on, a large number of new tenancies transferred from NSW FACS. This has reduced their internal capacity to search and implement other opportunities.

Not right now, considering I guess everything we have on our plate. As you know we won a contract to manage a further 2200 dwellings in [region] so, you know just bedding that down is going to take a lot of our time. (Tier 1, metro only)

Beyond taking on new transfers, many of the larger SHPs are also actively building new stock. This is where most SHPs can implement energy efficiency features by adhering to minimum standards set by regulations such as NatHERS and BASIX. Some of the larger SHPs were able to leverage HEAP and/or CEFC funding to deliver new housing that exceeds minimum standards. It is well publicised, for example, that SGCH Ltd, with funding arranged through CEFC's Community Housing Program, is delivering over 500 new social dwellings with a 7-star NatHERS rating (CEFC n.d.).

This focus on new housing is based on the understanding that it is far easier to achieve higher energy efficiency levels from the outset, whereas retrofitting may be constrained by several issues regarding the building structure and ownership (these are discussed in greater detail in the next chapter).

When we were talking about this, I don't think we were very far along our journey. We have some policy around it. I think it'll float to more the new build as well. ... We don't have the strategy to retrofit any of our current stock. (Tier 1, metro only)

If it's going to cost too much to upgrade those buildings to a comfortable, liveable standard, then we're better off recycling that asset, pick up the capital gains of the last eight years, and then deliver more housing somewhere else, and implement those measures upfront, because to go back and retro-fit anything in, it is more expensive. (Tier 1, state-wide)

There is, however, a consensus among SHPs of different tiers of registration and sizes that improvements in energy efficiency will become more of a priority in future, especially considering the impacts of energy poverty.

I think energy efficiency will become probably more of a priority, especially with the rising cost of power. (Tier 2, regional only)

This increasing priority of energy efficiency is also reflected in its growing prominence in industry networking and information events such as Federation Exchange.

We attend Federation Exchange and it's always one topic there. I think more to assist our tenants to sustain their tenancy financially. The rising energy costs are starting to really affect a lot of them. I think that's probably the main motivator. (Tier 1, regional only)

It's a talking point at the Fed Ex... So it's now on the agenda. Asset people are talking about it, community development people are talking about it, strategy people are talking about it, GM is talking about. Whereas it used to be just kind of an Asset thing, which was on the side. (Tier 1, metro only)

To assist this, a small number of the larger SHPs with internal capacity can turn stop-start funding into business-as-usual practice, so there is a continuous stream of funding that allows them to perform small upgrades to sections of their portfolio at a time. This approach, however, is not necessarily practical to a lot of the smaller SHPs that lack internal capacity to do so.

## 5. Implementing energy efficiency upgrades

This chapter highlights the means through which SHPs implement, or plan to implement, energy efficiency upgrades. It also reports on SHPs' reflections on the outcomes that these upgrades delivered.

### Being strategic about it

Across the 21 interviewees, only nine mentioned their organisation had or was proposing strategic plans for improving the energy efficiency of housing stock (including internally discussing potential strategies rather than incorporating these into corporate plans). Of these nine, seven were Tier 1 CHPs, with the remaining being a Tier 3 CHP and a public housing provider.

We do have an environmental sustainability strategy and the latest version is currently with our executive for approval. (public housing provider, state-wide)

There certainly is in our strategic plan to provide opportunities where we can to improve the energy efficiency of our dwellings. I guess that manifest mainly through our new construction program. (Tier 1, metro only)

As the above quote demonstrates, these approved and proposed strategic plans typically focus on developing new energy efficient stock, with the upgrading/retrofitting of existing stock less of a strategic priority.

Across these nine SHPs, the impetus for such strategies is often tenant outcome-focused. One CHP also mentioned that it is a strategy for remaining competitive in the sector, especially with expansion opportunities such as further management transfers on the cards.

We are concerned about energy efficiency in terms of the outcomes for our tenants. We are very customer focussed. (Tier 1, metro only)

I think we're getting there now and that's largely driven by I think seeing what our peers are doing. We don't like to be falling behind, but more and more of our peers are taking the initiative and paying the cost. I was just at the National Housing Conference, attended the breakfast there and saw what CHL were doing and what SGCH are doing, and others. Haven: Home Safe doing things as well. I think we've got to pick up our game on it. (Tier 1, regional only)

To implement these strategies, external funding is almost certainly required. Only in rare cases could upgrades and exceeding minimum standards be covered internally, most typically out of the maintenance budget.

We have a sustainability strategy document which says that, with best endeavours, we will deliver new buildings at seven stars or over. The requirement there is that there are additional funds available to do that. So our base case would be six stars, which is still above even the new BASIX that's just recently been updated. But it's subject to additional funds, which is sort of just making sure that if we are going to go to that, it's going to be cost effective. (Tier 1, metro only)

This focus on using external funding reflects SHPs' concerns that redirecting internal funds for upgrades may create unfair or unequal outcomes. This is especially the case when only a small number of tenants and properties may be able to benefit from upgrades.

We're highly conscious that spending a lot of money, say on solar panels that would benefit one tenant, would go straight off the money that we would otherwise do more basic maintenance or upgrading like kitchens, bathrooms, painting, that sort of thing. It's a direct trade-off for energy efficient or comfort initiatives against the typical backlog of maintenance. (Tier 1, regional only)

Further, as identified by one of the consultant groups interviewed, the primary driver for most SHPs is providing more social housing, so:

If they have a choice between more social housing and improving the running costs of their existing social housing for the tenants, they're going to choose to build more social housing. (consultant)

## Funding models

As noted, SHPs did not typically maintain a specific budget for energy efficiency upgrades to existing properties; therefore, the availability of external funding was often identified as a driver for considering energy efficiency upgrades.

Several providers identified some upgrades that had been fully funded externally. These were, however, generally limited to simple non-fixed upgrades supplied directly to the tenants. This was most likely implemented under DPIE's discontinued Home Power Savers Program.

We got a large amount of readymade boxes full of draught excluders the snake for the door, the energy efficient light bulbs, a thermometer that they could monitor the temperature in the home and keep it at 23 degrees rather than trying to keep heating it above and so we gave those all out to the tenants at the time. (Tier 2, regional only)

None identified major upgrade works that had been fully funded by external sources.

Co-funding was central to implementing energy upgrades, despite the strong preference for external funding. Most providers who had undertaken a co-funded energy efficiency upgrade were involved in HEAP. One provider involved in HEAP had also participated in a previous program co-funding ceiling insulation.

The equivalent of OEH at the time, were giving rebates for ceiling insulation and we did confirm that we were eligible for those rebates... They didn't cover the whole cost of course, but they were enough to justify us looking more seriously at retrofitting ceiling insulation into dwellings. (public housing provider, state-wide)



The availability of external funding was noted as a trigger for many of the participants to consider undertaking an energy efficiency upgrade project.

We just saw the funding available and I put it to the board, that it was a good thing to do.  
(PARS, regional)

Further, co-funding was noted as an important driver for securing internal funds for energy efficiency upgrades. SHPs often found it was easier to justify spending of internal funds to the finance teams for co-funding of an upgrade project on the assumption that it is better value.

We actually put funds aside. So last year we put \$100,000 odd specifically aside for energy efficiency. So we used that on solar program, and it was matched by Environmental Heritage [OEH]. So we were able to do twice as much. (Tier 1, state-wide)

When it's co-funded, it's okay. If it's sheer internal, finance will go 'well, why are we doing that?'  
(Tier 1, metro & regional)

We now currently have \$5 million dollars of a program budget for the environmental program to improve energy efficiency. But that has been because we have received confirmation of future funding. (public housing provider, state-wide)

Despite being easier to access internal funding for co-funded projects, many organisations had difficulty in securing the internal funding to match the DPIE requirements due to other funding obligations.

Depending on the energy efficiency initiative – it's only for a small portion of the capital cost of installing those energy-efficient initiatives. So you know fundamentally we would have to fund those type of projects out of our own, you know, surplus funds. So we need to balance those requirements just with our general maintenance obligations. (Tier 1, metro)

We're still having to find, for a small organisation I think it's about \$26,000 that we've got to find. That's quite a large sum of money for a small organisation. (Tier 3, regional only)

Further, participation in HEAP incurred a project management cost that had to be partially borne by the SHP.

OEH provided us a very small contribution to project management costs, and it was probably under by about \$40,000. (Tier 1, metro)

The administrative burden was identified by several participants as an additional cost of accessing HEAP funding. This is discussed in more detail in the following chapter.

Not all SHPs, however, found value for money in such co-funding arrangements, despite the contribution from the external funding source.

We would have to find 50% of the cost, but that is a loss. It's a sunk cost. We get no return for that. (Tier 1, regional only)

Whether co-funding was deemed to provide value for money depended partly on the project and partly on the types of upgrades. SHPs typically only found value for money if the co-funding was for more costly upgrades, such as solar panels. In contrast, the labour behind obtaining and administering grants for cheaper upgrades (such as lighting) was often considered too cumbersome. This in part reflects the administrative burden discussed below. The balance, then, was in making the organisational investment worthwhile but still being able to meet the co-funding internally.

Some of the SHPs who reported undertaking energy efficiency upgrades using internal funds were unaware of the co-funding opportunities, particularly amongst the smaller providers. When asked if they have accessed opportunities like HEAP, this interviewee noted that they were unaware of such.

No, we have been funding them internally. I will be very keen to actually get a hold of those.  
(Tier 3, regional)

Generally, the SHPs that had spent internal funds on energy efficiency upgrades had absorbed the cost within regular maintenance and repair works. While most SHPs replace fixtures and appliances with like-for-like when it comes to maintenance and repairs, several took the initiative to upgrade to more efficient models on an as-needed basis, which may assist building operations. In these cases, they may not need or qualify for external funding assistance. This typically applied to lower-cost upgrades such as switching lighting over to LED. One provider, however, reported upgrading fixed heating appliances to a system perceived as being more energy efficient as part of responsive maintenance, and another reported installing ceiling fans.

We do it as just sort of a maintenance issue, when lights need to be replaced. We don't deliberately go out and replace them unnecessarily, but when they need to be replaced, we do the LED lighting. (Tier 3, regional only)

The driver for that was that we were constantly having call-out to replace bulbs [in common areas], so in consultation with the electrician, what's the way? What's the problem? How can we solve this? The agreement was to put in all the internal communal stairs, and all those outside lights, we put energy efficient that were supposed to last a long time, and therefore reduce the ongoing cost. (Tier 3, regional only)

We did purchase and supply all of our properties that we knew needed replacements. We spent... 'Nobo', supposed to be an energy efficient French brand of heating, and we did that, and that was quite an expense. I think they were about \$800 a heater, and each and every time we have an issue that's what we have replaced them with. (Tier 3, regional only)

One provider identified a current solar pilot project funded internally, that was a partnership with an energy retailer to share the benefits of the upgrade between the provider and the tenants. Whilst the project did not have a particularly attractive business case for the provider, it was acceptable because it aligned with the provider's environmental sustainability goals. The provider had attempted to access co-funding to support the project, however the upgrade did not meet the funding rules of HEAP.

[The] scheme gives us a payback period of about seven years on us paying to install solar panels on tenants' roofs, and the tenant pays a discounted rate for the energy generated by the solar panels, and we get a rebate from that. It is a process where we are able to get hold of some of the value that's generated from the solar panels. (Tier 1, regional only)

## Outcomes

Those SHPs that had implemented upgrades were asked about the outcomes. While it was still early days for most (the majority of upgrades had been implemented in the months leading up to our interviews), most of these SHPs reported positive benefits for tenants in the forms of reduced energy expenditure and more reliable utility services.

From the hot water system side of things, there's a twofold benefit there. One is directly for the residents, reduction in energy costs. Another one is that we've found efficiency there to undertake works in a new way, with benefits to [tenants]. (Tier 1, metro only)

Yeah, it was good. it was hard for us to afford it, but we thought it was a really worthwhile thing to do for the tenants. ... We've looked at some of the houses. Not all tenants are prepared to give us their electricity bills, but we can't force them to. But yeah, we can see a substantial reduction. (PARS, regional only)

In some instances, SHPs were also able to save on their operating costs with longer expected lifespan of upgrades products as well as less frequent maintenance and repairs call-outs.

Where we normally replace hot water systems and try and keep the cost as low as possible, this programme has allowed us to keep those costs low, provide a product that's outside of what we'd normally do. Not only in the quality but a longer lifespan, is what we're expecting but also in the output for the residents. (Tier 1, metro only)

Fully- and co-funded upgrades have at times led to a change in management and maintenance strategies, including replacing inefficient assets at an earlier timeframe.

They've [asset and maintenance teams] brought forward about 18 months' worth of reactive replacements. That could replace all the old ancient assets. They've been able to do them proactively, rather than reactively. (Tier 1, metro only)

The experience of having successfully applied for these funding opportunities and, though still in early stages, the positive outcomes are giving these SHPs the confidence and impetus to search and access future programs. These can even form a pipeline of funding for a small number of SHPs, turning them into business-as-usual practices.

Now that we've done it, it's also going to be a lot easier to do the next thing. (Tier 1, metro only)

What we're trying to do is embed Home Energy Action into the way we do business as usual, as opposed to these programs that run parallel and then stop, and then we go back to what we were doing before. (Tier 1, metro only)

A shortfall for many SHPs, however, is that these fully- and co-funded programs target only household upgrades and exclude the energy use of the SHPs' offices and residential common areas such as apartment block hallways. This limitation was viewed as presenting lesser value for money to many SHPs as split incentives continue to exist. One SHP, however, was able to use the savings made from the co-funding program and installed solar panels on the roofs of their office, contributing to savings in their operating costs.

Looking at the electricity bills for the building, it's reduced our power consumption by a third. That's putting still quite a substantial amount back into the grid. ... After hours in summer where it's still, it ends up producing more than we're using, or certainly on weekends we'd be producing a lot more than the building is using. (PARS, regional only)

## 6. Barriers to implementing upgrades

This chapter discusses the different barriers faced by SHPs in implementing energy efficiency upgrades. These are discussed under four emergent themes: (i) split incentives as a disincentive to implementing upgrades, noting the additional layer of disincentive associated with SHPs' context of managing properties on behalf of other owners; (ii) knowledge gaps and lack of information around current stock; (iii) organisational capacity; and (iv) other barriers.

### Split incentives

Split incentives are an important barrier to energy efficiency renovations in the social housing sector. In the context of the economic exchange surrounding energy within social housing, split incentives arise because the economic goals related to energy efficiency may differ between the building owners, managers and occupants. While SHPs are concerned about their tenants' health and wellbeing, split incentives operate as a barrier because, for housing managed by SHPs, there are no financial returns from capital expenditure on energy efficiency upgrades. Instead, benefits accrue to tenants in terms of reduced energy bills or to property owners in terms of an investment in housing quality. SHPs, working with limited funding and framing decisions through the viewpoint of return-on-investment, have limited incentive to invest in energy efficiency.

When there is direct savings to us from installing, even, different hot water systems, anything like that, it's tricky to justify. (Tier 1, regional only)

As I said, we're still in that same scenario [for 50% co-funding as for funding upgrades from internal budgets], we're still going to be \$4,000+ out of pocket, too, per property, aren't we?... We haven't got the funds to cover that at this stage. (Tier 3, regional only)

Because again, the main hurdle for us has always been, we do not own those properties. Any CapEx [capital expenditure] investment into these assets is technically not financially astute ... With the limited funding that we have, we still just have to make it financially viable for us. (Tier 1, metro only)

The split incentive issue plays out in different ways. Different barriers emerge depending on the actors involved: (i) an SHP–private landlord–tenant problem; (ii) a CHP–Land and Housing Corporation (LAHC)–tenant problem; or (iii) an SHP–tenant problem. Private landlords who own investment dwellings that CHPs head-lease on behalf of their tenants were reported specifically as being disinterested in energy efficiency investments.

With the private sector, they're just not interested. Unless we're paying for everything. Trying to get them involved with the programs is pretty hard. (Tier 1, state-wide)

## A double-split

The CHP–LAHC–tenant configuration produced a specific version of the split incentive. The financial disincentive for CHPs to invest in energy efficiency upgrades was often exacerbated by maintenance arrangements, alongside uncertainty generated by the tendering process and lease duration. For example, for some kinds of upgrades in properties owned by LAHC but managed by CHPs, ongoing maintenance expenses become a liability for the CHP as part of the leasing arrangements.

With all the maintenance and replacement obligations sitting (with) the CHP (that) was an issue for properties we didn't own, where Land and Housing were happy to sign a very high-level agreement saying, 'yep, all your problem', with a three-year lease! So just the whole contractual framework and ownership did not align. (Tier 1, metro only)

The transferal of the maintenance liabilities of energy efficiency upgrades operated as a financial barrier to their installation – from relatively inexpensive upgrades such as LED lights, to more costly ones like solar panels and double glazing. In short, most upgrades were perceived to have additional associated maintenance costs that CHPs were unwilling or unable to absorb within their operational budgets.

The short and long term maintenance liabilities associated with [energy upgrades], so things like LED down lights are not easy for a tenant to change over. So, we typically stay with a standard bayonet fitting. (Tier 1, regional only)

[Solar panels] (were) actually going to become basically a cost liability for us with maintenance for... Not that inverters and panels fail regularly, but they do fail, and over time ... Whatever we install on these properties, as far as the Residential Tenancy Act goes, we have to maintain on that property. Once it's installed, it's basically there for life, so it becomes an ongoing liability, a maintenance liability as well. Down the track, obviously, they will all need replacing, so, that was a consideration. Because there's no payoff back to us, the cost savings are 100% to the tenant, it was tricky to justify the expense. (Tier 1, regional only)

We've got about 150 properties in [town], and we did look at installing reverse cycles in them. It just comes down again to installing 150 air conditioners is a substantial expense, even if we just picked on one town, and, of course, we increase our maintenance liability as well. (Tier 1, regional only)

Furthermore, the CHP–LAHC–tenant split incentive problem was heightened when energy upgrades are understood not only as a fixture that must be maintained, but also one to be potentially removed at the termination of a lease.

So that's certainly something that would be great to be able to work through with government on how we can make that happen. So this is what they said to us at one point was that they said so yes, we'll let you put the panels on, but basically if we decide that we're gonna [sic] take these properties away, redevelopment or whatever, we will need you to take the panels off and take them away and obviously the cost of that. Now that, for us as a charity organisation, is not feasible. (Tier 1, regional only)

Uncertainty generated by the tendering process of LAHC properties on shorter leases also worked against capital expenditure on energy upgrades.

The leases were the big one, the length of the lease. Obviously that changes with the new transfer of properties, because they have, what, a 20-year lease? When it's unknown whether you're going to retain the properties ... Our impression would be that, now we've been successful in the tender of this latest round, I doubt we're in any risk of losing the existing ones that we've got, but there was some considerations put there that, if we weren't successful in the tender, that whoever was successful may end up with the properties we've currently got. There was concern there that we didn't want to go out of our way in spending a lot of money only to not end up retaining. (Tier 1, regional only)

The length of leases was imperative to understanding the amount of capital expenditure a SHP may be willing to invest. Shorter lease arrangements generated a climate of uncertainty around capital expenditure on energy upgrades, particularly for older properties that may be demolished.

The majority of the properties we've just mentioned are on a three-year lease, which puts us in a precarious situation in terms of investing the funds for a product that we may not have in the near future. (Tier 1, metro only)

But, also you didn't know at any point whether that property could be picked up and taken back by government. (Tier 1, metro only)

Even with energy efficiency public policy and support for reducing greenhouse gas emissions, a SHP may be unwilling to invest in capital-intensive projects, like solar panels, without certainty over longer-term financial returns.

Probably just the way that the social housing leases are currently structured, but obviously the management transfers are going to 20 year leases, which obviously for us, the life of solar panels is an easy one to tick off and think it's a good thing to do, but for the 10-year leases ourselves, many other of the CHPs are on at the moment, it's very difficult to be able to fund and justify some of these bigger projects. (Tier 1, regional only)

So, we have three-year leases on those properties and for us to spend say \$3,000 to put solar panels on someone else's property, for the benefit of the tenant, with no return to us, doesn't make any financial sense and is difficult to justify it, because that money would otherwise go into needed maintenance of those properties. Those properties are getting older and we don't get any extra income over time except for natural increases in market rent, to pay for the increasing maintenance liability associated with those older dwellings. So, why should [CHP] pay extra dough for nothing to spend on government buildings? (Tier 1, regional only)

## A landlord–tenant split

Likewise, the SHP–tenant split incentive problem often worked against capital expenditure on energy upgrades on existing building stock, which may be further exacerbated through the exclusion of co-funding for common property.

So, for us as the moment, obviously, we've got budgets to adhere to on it, so for us to go in on an initiative of installing solar panels ... (we) wouldn't directly see the benefit of that, unless it's installed in our (complexes) and used to source common area lighting and all that sort of stuff. So, the return on those sort of investments are not that... we're not there yet. We haven't thought about how we'll fund it, who'll get the return on it. (Tier 1, metro only)

As discussed previously, one SHP outlined how they were attempting to resolve the SHP–tenant split incentive problem through a pilot solar panel project where the financial benefits were shared between the CHP and the tenant, via a specific energy retailer. Alongside lower energy bills for their tenant, the capital expenditure on solar power offered returns to the SHP as the property owner.

We do have an approved business case for our solar panel installation pilot project that's one where we, involving [energy retailer], and that's been approved on the basis that it is a scheme that gives us a payback period of about seven years on us paying to install solar panels on



tenants' roofs, and the tenant pays a discounted rate for the energy generated by the solar panels, and [CHP] gets a rebate from that. It is a process where we are able to get hold of some of the value that's generated from the solar panels. We haven't got it going yet but we're very close, and we're approved to run a pilot to put in 30 systems over 30 dwellings, to see how that goes, and then potentially run it out to a few hundred if it works. (Tier 1, regional only)

More commonly, the SHP–tenant split incentive problem was resolved by promoting the direction of policy funding towards new builds rather than renovating older properties.

No incentive .... maintenance liabilities, too old and a lot of those properties we'd be better off doing exactly that - removing them and building brand new, super energy efficient properties, you know, rather than throw money at basically a lot -properties that have got maybe a 10-year life. I know what I'm talking about; there are older properties out there that are quite good. They are structurally sound, but these are just old fibros, you know, really - yeah. They are transitional mental health. They get knocked about. Yeah, they are just old and they really need to be gone..... and granting should be targeted towards getting rid of these and building much more energy efficient properties, going into the future. (Tier 2, regional only)

## Lack of knowledge/information on current stock

Two knowledge barriers operate across SHPs as a deterrent to expenditure on energy upgrades. Economic modelling to help justify energy upgrades in terms of the returns on investment is one such knowledge barrier.

Our finance sees it as ... what advantage is there for us as the [CHP]? ... So, it's just – you know what finance are like, they like to see an outcome all the time. (Tier 1, state-wide)

Information about the energy efficiency rating of housing pre-dating the introduction in 2005 of BASIX for residential apartment dwellings is the second knowledge barrier.

We know, by definition of the age of the buildings, that anything built basically 2000 or prior has negligible or zero NABERS rating. That's just Australian building stock, and we also inherit that wonderful legacy. Things built when BASIX came in – so pre-Nation Building, but early capital programs that LAHC constructed and then handed over to us – would have been built at the sort of 4, 4.5-star NABERS. (Tier 1, metro only)

Additionally, CHPs outlined how empirical data on the building characteristics of older buildings, including water and energy efficiency features, is either missing, inaccurate or not transferred with leases when stock is transferred to them for management.

No transition of background property data. A large number of our assets are owned by Land and Housing Corp and in the process of us taking a leap to manage the assets on their behalf, there was actually no transition of background property data. It was just fresh, 'This is your stock. This is yours to manage now.' Any information we have, is what we've accumulated through inspections and work we've undertaken, over the past 25 years and we're constantly acquiring new stock. Some stock, we have good information because we acquired it. Other stock, we don't have because we've not carried out inspections yet. You make do with what you've got. (Tier 1, metro only)

Generally due to legacy agreements where we just didn't get handed all the information at the point of handover. Therefore, we only had what we had. What it said often wasn't what was in there. Or, it didn't say anything. (Tier 1, metro only)

Furthermore, some of the SHPs admitted that, while agreeing on the importance of scoring buildings on their energy rating, data gathering to calculate this measure is either missing or envisaged as a future activity.

Energy efficiency, there is nothing in place ... In terms of cladding materials, solar – and I can keep going – there is nothing in place. (Tier 1, metro only)

I don't have a good understanding on where we sit say with the power usage for our buildings, and whether it's a high usage or a low usage as yet. But that's something that we'd definitely be looking at into the future. (Tier 1, metro only)

At this point in time, the priority in property maintenance inspections may often be given to compliance with health and safety standards rather than energy audits.

I've never noted that [energy efficiency] on their inspection reports to us. They usually only give us information on any critical repairs, so if they see a light switch that has fallen off or something that needs to be done. They generally don't give us a breakdown of detail. They just give us a score whether it's compliant or up to their standards on their score card and then they just note a specific repair if they feel it's an urgent repair that needs attention. But, they don't give us – I've never seen any information on energy efficiency. (Tier 2, metro only)

Yet, knowledge about the poor energy rating of a building alone may not necessarily mobilise action.

Well, we know that older places are generally not that good. Although, we do know that there have been several retrofit programmes go through over the years, through while they were public housing, before transferred to us. ... A lot of those maybe are getting old and lost some of their effectiveness, but so we know that the older stock have had things done to them, but probably still not performing particularly well. The modern stock would have been built according to the rating standards that were applicable at the time ... probably quite a lot of our apartments get quite hot in summer if they're facing the wrong way. (Tier 1, regional only)

### Difficulty in accessing information about assistance programs

In addition to having limited information on their housing, many SHPs discussed barriers to accessing information about support opportunities. In many cases, staff would search for relevant support via multiple sources in a time-consuming exercise. Not all SHPs have the capacity to perform this task. Thus, chance and reliance upon other organisations become key mechanisms for accessing information about assistance programs.

There's two different ways. There's maybe we'll just stumble across it. Or the Federation. Actually, there's a third one. We've actually got arrangement with [energy consultant] to call us as well. So, they will bring – we will approach them and say look, we want to do this in this area, are there any support programs going in that state or in that area? They will investigate that and bring it back to see what we can do. (Tier 1, state-wide)

Communiqués from industry peak bodies, such as the NSW Federation of Housing Associations, were often cited as a valuable resource where information about different support is made available.

Probably just Google it actually or maybe contact the Federation, who might have some more information. The Federation, it's quite amazing. They have a wealth of resources they can put us in contact with and, yeah, I guess I would contact the Office of Environment and Heritage as well because I know that they've done grants in the past that I've been aware of. (Tier 2, metro only)

Outside of industry-specific communication, however, staff typically relied on previous experiences when searching for support opportunities. Most typically, this involved looking up grants they had accessed previously (often while working for a different SHP).

I only had because of my previous experience. (Tier 1, metro only)

Misinformation often arises from this search channel. This may be because the terms and conditions of the programs have changed, or, in some instances, programs have been discontinued. SHPs also noted that several consulting firms were employed by DPIE to promote HEAP. This allowed access to information about the program. While the consultants had expert knowledge on the upgrade options and technologies, they typically had limited knowledge of the social housing sector, particularly on how best to engage social tenants. Such comments also extend to the trades services that SHPs can engage in installing the upgrades.

I think it was a big learning process for both sides of the equation. DPIE had engaged consultants and they were learning as well. A lot of the times, where I got involved, I can see from the correspondence between our team and them was, there was a lot of toing and froing about trying to understand what they could provide, how would they help. (Tier 1, metro only)

The biggest problem we probably had was the installer and [energy consultant], not the biggest issue. It's just not understanding the social aspects of communication with our tenants. (Tier 1, state-wide)

## Organisational capacity

As the previous chapters established, implementing energy efficiency upgrades in the SHP sector is a growing priority. Despite this, in the current context, upgrades are generally occurring in the absence of wider strategic plans in the SHP for energy efficiency improvements. Thus, upgrading must compete with a myriad of other strategic priorities within the organisation. In addition, it is challenging for most SHPs to fund upgrade activities internally.

Reliance on external funding or co-funding arrangements mean that the SHP must work with the various administrative and other requirements associated with the co-funding arrangements. Some SHPs have the capacity to put aside a funding stream to engage in a co-funding arrangement to achieve strong energy efficiency outcomes:

So last year we put \$100,000 odd specifically aside for energy efficiency. So we used that on (the) solar program, and it was matched by [DPIE]. So we were able to do twice as much. (Tier 1, metro only)

In addition, the complexity of arrangements associated with stock transfer creates a lack of clarity and transparency around which organisation (stock owner or manager) has responsibility for various aspects of upgrading and maintenance work. Together these constitute considerable barriers to the implementation of upgrades.

## Competing priorities

The organisational capacity of SHPs to engage with energy efficiency upgrades hinges on the multiple other priorities that call on their resources. In the absence of a strategic plan for energy efficiency upgrades or environmental sustainability more broadly, SHPs are challenged by competing priorities, including upgrades for people living with disability, ongoing maintenance requirements, the removal of hazardous materials, and a focus on new builds.

We have so many other priorities, to do our own research and keep abreast of that sort of thing is quite a challenge. (Tier 1, regional only)

In the context of the National Disability Insurance Scheme, for some SHPs the priority for budgets lay with people living with disability.

Quite often when we move into these places, unlike say social housing, per se, they need ramps, rails, special toilets, and all that sort of thing. So, we tend to do that sort of upgrade work as opposed to energy efficiency type things ... Bathrooms need to be altered, and doorways opened, and so forth. So, we spend a lot of money there so we can actually use the premises. (Tier 3, regional only)

For others, the budget priority was in health and safety framed by hazardous materials.

It's about being able to prioritise maintenance accordingly based on limited funding. And (the) things that we need to look at is health and safety issues. A lot of our properties, as I mentioned, average portfolio age is 40 years now. Properties that were built before '87 has asbestos so we have to manage programs taking into account the asbestos and asbestos risks. (public housing provider, state-wide)

Some SHPs must work within regionally-determined budgets, wherein the priority is on clearing the backlog of everyday maintenance issues lodged by tenants. In the context of stringent budget limits, the resource demands of routine maintenance can often outweigh energy efficiency upgrades.

The first is budget as I mentioned even though we are getting funding. If is not 100% funding, we do have to supplement funding through other sources and because we don't have our own dedicated budgets here, we do rely on regional budgets, so it really depends on what other priorities the regions have for property maintenance and upgrades. So, I guess one is a lack of funding and when you do look at, it has been stated publicly, a back log of maintenance that we have, because we can only rely on rental income and tenants basically pay... like 25% of their income, our rental income will never fully cover the maintenance costs of dwellings. (public housing provider, state-wide)

Energy efficiency upgrades thus can struggle to become a leading priority, in the context of an often-overwhelming workload and a strategic and budgetary context that prioritises ongoing building repairs, addressing pressing health and safety requirements and upgrades for people with disabilities.

The stringent budget context also raised ethical dilemmas for SHPs around budget prioritisation and balancing the benefits of upgrades compared with the benefits of extending their reach by expanding their housing capacity.

It's a real tricky one. As much as we're all here to be doing everything we can for the tenants, that's the whole reason we all exist, we've still got to make it financially viable as well and we've got to justify where we put those funds. If we're going to look at spending, say, I don't know, \$300,000 or \$400,000 into making properties more energy efficient, well, there's the argument for, 'Do we build another property and house another person and help another person?' How do you help one person and not another? As much as wanted to help, we decided to focus our money on instead was to focus it on our new builds and make sure that everything that we did build new was really high-spec in energy efficiency. (Tier 1, regional only)

### **Onerous administration required by funders**

As the previous chapters established, most SHPs struggle to fund energy efficiency upgrades internally and must rely on external funding to fully or co-fund upgrades. This requires them to negotiate the various administrative requirements and restrictions associated with different schemes, in a context also congested with competing priorities. One SHP referred to the 'very steep learning curve, to get across everything and everything over the line' (Tier 1, metro only). For other SHPs this was enough burden for them not to engage with co-funding arrangements or to withdraw once the complexities of engagement became clear. This view was also reported by several stakeholders we interviewed.

I ended up pulling out and I gather a few CHPs did because the process was very onerous. We tried to upgrade some lighting, but it just got so difficult we just couldn't devote any more time to it. To get a small contribution from them meant taking up so much time and we just decided – and most of our tenants in fairness already had energy efficient globes anyway. So that is definitely the one that we tried to deal with last time. (Tier 2, metro only)

SHPs were clear that engaging with co-funding schemes was challenging in several senses. First, SHPs and co-funders did not necessarily share a common understanding of terms and aspirations around energy efficiency, nor a complementary budget structure to enable co-funding.

The administration of the fund once we got it was, I think was, posed a few more difficulties. Working with the Office of Environment and Heritage (now DPIE) was difficult, because we had to get on the same page in terms of specification in relation to the individual energy efficiency. (Tier 1, metro only)

Nor did SHP budget structures necessarily align with the requirements of various co-funding schemes, constraining their ability to find the cash-flow to contribute to co-funding arrangements.

Our funding model has been quite different and unique. Obviously we've got a pipeline... that ties up a lot of our existing cash or future cash from the contribution scheme that we get. Whether there's any scope in there to redirect any of it to - we can do it as part of a new build, but to retrofit I don't know, or else it will have to come out of the maintenance budget... So that would become a constraining factor potentially. (Tier 1, metro only)

Second, SHPs were not equipped to deal with the bureaucratic process and contractual requirements associated with co-funding arrangements. For some, the bureaucratic burden was felt to outweigh the funding gain, sometimes resulting in their pulling out of co-funding processes. Again, this was also emphasised by stakeholders interviewed.

I'm constantly on to Heritage [OEH now DPIE], and I've got a response, I think even just today, and it's now putting additional things into the contract, and I'm going 'Hang on a minute. This is getting to be bigger than Ben Hur.' (Tier 3, regional only)

They kept coming back and asking for a bit more of this and a bit more of that. Basically, from when we thought it was going to happen, it was several months later that we could actually tick it off. ... Very complicated contract for a very small sum of money. (PARS, regional only)

It was less CEFC's process than it was government's SAHF [Social and Affordable Housing Fund] program process, which was diabolically complicated and excessively expensive. The reasons that we pulled out had little to do with CEFC or their processes; it had more to do with the complexity around and the risks that were identified in the government program. (Tier 1, metro only)

Third, the guidelines associated with co-funding schemes were often found to be overly prescriptive and inflexible. This was articulated both to limit what could be achieved and to create additional administrative demands that the SHPs found to be both burdensome and disadvantageous.

The funding guidelines were very prescriptive. So, there's some learnings there from the funding bodies around how prescriptive you should be or could be. Because you end up just getting so prescriptive that the pool of properties being eligible is so low that it's just not feasible. There's that weakest link theory, where you've got the four sides of – you've got roof, floor, walls of a dwelling. Yet often the funding pool is just for one level. Whereas you've got weakest links on walls, you've got weakest links on floors, you've got weakest links on windows. Without addressing all of the envelope, you're not really going to have a massive impact. That's been the learning from the funders, but also from us. (Tier 1, metro only)

Well, we have discussed with DPIE the potential of taking advantage of their 50% capital funding, but applying it to our pilot scheme rather than just their simple scheme of we pay half, they pay half, and we put the panels on, and we're done... We said, 'Well no, why don't you pay us half for the cost of installation under our pilot? We can then halve the payback period and increase the rate at which we generate a surplus from our solar energy', and we said, 'We will commit to using all of that surplus into providing additional solar panels or sustainability initiatives.' We said, 'That's a better deal for you and a better deal for us', but their program guidelines wouldn't cover it so they said no. We said no, too. (Tier 1, regional only)

As LAHC properties coming through to [CHP], we're unable to – we were unable get that insulation grant which meant all the properties missed out. Where, in reality, something like that could have easily dealt with nearly a thousand properties very efficiently, I suppose. It would have targeted the people that needed it probably the most. (Tier 1, regional only)

Some SHPs found the administrative detail required to be unfeasible, logistically and in terms of the resources required. Moreover, contract conditions requiring them to use particular contractors or products were thought to introduce unnecessary limitations and inefficiencies.

They would only do the units and then they wanted me to go around every single unit and take a picture of every single light bulb and then report back to them about exactly what type of light was in every room in every unit so that they could work out which was the best way to upgrade those lights... and I had to use a certain contractor instead of just my handyman who would just go in and change the globes ... it wasn't cost-effective for tens of hours of my work to try and get access into all the units, which can be very difficult to get access to some of our units with our particular clientele and then collate all of that, send it off, use a specific contractor, which would probably cost a lot more than our normal contractor, and only get 10 or 20 per cent reimbursed. I just canned in the end and stopped it. (Tier 2, metro only)

When you're looking potentially in an emerging market where technology keeps rapidly changing, but these huge maintenance liabilities for a product you didn't get to choose, because they were just giving it to you. (Tier 1, metro only)



The scenario was also complicated by the split incentive produced by CHPs largely managing stock on behalf of FACS or head-leased from the private rental market. This was interpreted either as constituting risk or as unproductively limiting which upgrading activities were considered permissible.

Management transfer is so restrictive in terms of what we can do with the money and the stock, but the risk of doing other things is too great, or we're – or the funding's ring-fenced by government for specific outcomes. (Tier 1, metro only)

## Other barriers

A range of additional barriers confront SHPs as they seek to implement energy upgrades, with or without co-funding arrangements. Several of these related specifically to the agreements surrounding stock transfers from LAHC to a CHP.

One CHP pointed out that these agreements were not framed in the context of energy efficiency.

There's no pressure from Land and Housing Corp to, how would you say, upgrade the properties and such. Their requirement is purely that we maintain the properties in their current standard, in the standard that they've been transferred ... There's no funding coming across with them. (Tier 1, regional only)

Where property is owned by LAHC but managed by a CHP, the transfer agreement means that responsibility for structural repairs to properties (that may include the opportunity to incorporate an upgrade) remains with LAHC. Arranging and funding such repairs has proved challenging, pushing the potential upgrade outside the capacity and resource limits of the CHP.

Under the agreement they are responsible for structural repairs. But, unfortunately, myself and all the other asset managers of CHPs have been unable to get clarity on what they class as a structural repair. So we applied for contributions when we believe there's a structural issue and then it's an absolute grey area as to whether they will accept that it's a structural repair... So they do make contributions sometimes, but they don't make it easy to get a contribution. You've got to get three quotes, you've got to provide engineer's reports, which often cost \$1,500-\$2,000 just to get a report and by the time you've gone through that process you've already expended thousands to even get an application to them to contribute to the structural repair, which they may well say, no, we don't do that structural. So that's the difficulty we have doing. (Tier 2, metro only)

However, CHPs find it particularly challenging that stock transfer occurs without including an energy efficiency assessment. Thus, while a CHP can approach LAHC for funding for major repairs, energy efficiency is not covered under 'repairs', thus the transfer agreement includes no funding for such upgrades. As the previous discussions have established, CHPs have neither the funding streams nor the internal budget capacity to address this gap.

I go out and I look at the property and I do an overall assessment of what the repair needs are. But energy efficiency hasn't been included in that because they don't - it has never been offered to us. They only hand over the stock and if there's a major repair, but they don't offer energy efficiency upgrades when they hand over the stock... It's very difficult to get money out of them for that. We've never been offered money for energy efficiency via the funding agreement to my knowledge. (Tier 2, metro only)

Well, we're a little not-for-profit organisation, I don't think we could subsidise the government's houses for upgrades. (PARS, regional only)

Additionally, LAHC properties do not qualify for some wider funding schemes, access to which might have enabled CHPs to make significant advances in achieving upgrade outcomes across the sector, as was the case with the Housing Insulation Program:

As LAHC properties, coming through the CHP... we were unable get that (Housing Insulation Program) grant which meant all the properties missed out where in reality something like that

could have easily dealt with nearly a thousand properties very efficiently. Being able access that...instead of one or two houses at a time, we could do 1,000 houses, or probably, you know, even if 200 of them had insulation... we could totally make a massive difference to people's energy costs. It is restricted so the fact that the majority of their properties are LAHC properties...we can't get access to those types of programs, that means we effectively miss out. (Tier 1, regional only)

Wider structural barriers also limit what SHPs can do around energy efficiency upgrades insofar as they do not have the responsibility necessary to manage all the parameters associated with particular types of upgrades, for instance those that entail energy generation or tariffs for electricity consumption.

With hot water systems, we had issues with time-of-use metering, off-peak metering. There is a lot of issues depending on what upgrade you are looking at that you need to consider. We need to make sure that what we are doing, because we don't pay the tenant bills, technically we are not responsible for the meter, like we will replace the meter if it involves doing an upgrade that requires a meter replacement, but, we can't specify to a tenant 'you have to go on this type of tariff'. So we have got to look at making sure that what we do, won't leave the tenant worse off in that regard, which can be challenging. (public housing provider, state-wide)

There are barriers around... ownership, but also regulatory barriers, around the rules, around how you can share benefits of particularly renewable energy when you're operating in a grid environment. As in the electricity grid. So there are barriers for us to set up micro grids, to set up embedded networks, to share power between properties. None of those things are regulated. You can't do those things. (Tier 1, state-wide)

Two other barriers were identified, each of which related to the challenges of undertaking upgrades on the scale of implementation envisaged by supported schemes such as HEAP.

One CHP expressed some concern about the business case for implementing upgrades of particular technologies across a large percentage of their portfolios, prompted by funding schemes such as HEAP. This was thought to involve risks associated with incurring large-scale replacement costs at the end of the product lifecycle, rather than staggering these costs across time via incremental upgrades across the portfolio.

They will be all under warranty but whether there's a handling cost that we might end up incurring because we've replaced 130 units or 120 units with a whole new technology ... With the 10-year lifecycle, doing more than 10% at a time, means that you end up with this blip, were you've got the same product at exactly the same time with potentially the same fault, it will all fail on exactly the same way, at almost exactly the same time. We are proceeding cautiously on that and hopefully if we do get the 15 years out of it, that's far superior than what we've got in the market at the moment. Time's going to tell on that one. (Tier 1, metro only)

Finally, some upgrades, particularly those associated with bulk purchasing schemes, require a certain scale of implementation to leverage cost-savings. Depending on the upgrade, organising implementation at this scale can require opt-in arrangements for tenants, which can place heavy, perhaps unserviceable, demands on the SHP.

The bottom line is that to ask tenants to opt in to a scheme, to make it of a big enough scale, takes a lot of leg work. We've just done a retrofit scheme for a solar scheme in a complex in [suburb]. There's 37 tenants and we needed to get 80 per cent to sign up. That's one housing complex with 30-odd tenants, and it's taken the best part of three months, with a team of people. Typically, those bulk purchasing schemes, you'd need 500 to 1,000 tenants. (Tier 1, state-wide)

The level of... the amount of time you would need to opt in, you need to weigh up the cost-benefit of those sorts of things. (Tier 1 metro only)

## 7. Conclusions

This report presents the main themes emerging from the analysis of 21 interviews with representatives from SHPs and four sector stakeholders. The interviews focused on motivations, barriers, previous works and future plans for energy efficiency upgrades in their properties. A summary has also been provided of a literature review, published as a separate report (Halldorsson et al. forthcoming) which explored national and international barriers and approaches to supporting energy efficiency upgrade work in the social housing sector.

Energy can be understood as an input required to support the everyday social practices of making a home (washing, cooking, staying warm/cool, etc.) and supporting the health and wellbeing of residents. While the social housing sector has significant care for the wellbeing of tenants, across most SHPs the dominant understanding of energy derives from positioning the house as an asset to be managed and maintained in a cost-efficient way. Energy efficiency is, therefore, understood in the sector primarily as a financial investment aimed at minimising unit costs and kilowatts consumed. Thus, energy upgrades involving windows, floors, walls, roofs, pipes, hot water heaters or solar panels are framed primarily in terms of capital expenditure and strategic asset management plans, and various financial considerations were discussed as the key disincentives to implementing energy efficiency upgrades.

This financialised framing dissociates energy from health, wellbeing and home-making outcomes. Framed in this way, improving energy efficiency for existing buildings was generally perceived as beneficial, but not core business, for housing providers. This is in the context of numerous competing priorities, such as managing maintenance budgets, ensuring properties are safe, and expanding their property portfolios (to support more vulnerable individuals and households). There was, however, a recognition that energy efficiency was an increasingly important consideration in the sector, largely due to rising power costs, which translates to an ever-growing affordability burden for many low-income households.

The majority of the larger housing providers interviewed (seven of the 12 CHPs, and the public housing provider) had strategic plans for improving the energy efficiency of their portfolio. In many cases, this was manifest through improved energy efficiency in new stock, largely due to rising minimum standards in building regulations (e.g. BASIX). This approach overlooks the social and health implications for those tenants living with fuel poverty in older energy inefficient social housing. For one CHP manager, even minimum regulatory requirements like BASIX are understood as an additional cost that deprives a potential tenant of a house.

Implementation of these strategic plans in existing buildings was largely confined to projects with some degree of external funding. There were some examples of CHPs implementing self-funded upgrades, although these were limited in scope and likely impact. Most providers that had implemented energy efficiency upgrades to their properties had accessed external funding, generally co-funding, including via HEAP.

In most cases it was too early to assess the outcomes for the tenants of upgrades that had been implemented under HEAP, however providers reported several benefits internally, such as longer expected lifespans for hot water systems, improved maintenance efficiencies (due to economies of scale), and capacity building within the organisations to manage future upgrade projects. In the absence of formal monitoring, anecdotal tenant feedback was generally positive.

There were, however, numerous substantial barriers to engagement in energy efficiency upgrades, regardless of the currently available external (co)funding sources. The well-known issue of split incentives is a key barrier to energy efficiency upgrades when social housing is primarily viewed through the economic prism. Simply put, the financial costs and risks

associated with energy upgrades must be absorbed by the SHP. Economic benefits accrue to both the property owner (often LAHC or a private landlord rather than the SHP), who ultimately owns the asset, or to tenants in the form of reduced energy bills. The CHP–LAHC–tenant split incentive problem is exacerbated by short leases, the tendering process, lease arrangements that transfer maintenance liabilities, and ageing or poorly maintained properties.

Several key organisational barriers were identified, namely competing priorities, the onerous administrative burdens of energy upgrades, and lack of internal capacity regarding energy efficiency. Energy upgrades understood in terms of environmental sustainability were spoken about as less urgent than ongoing maintenance, disability upgrades and health and safety standards. The workloads associated with the administration and installation of energy upgrades were positioned as unrealistic within current organisational structures. Internal capacity regarding modelling of the economic returns of energy upgrades and understanding the energy efficiency of older buildings were two knowledge barriers to the justification of energy upgrades.

## 8. Moving forward

The results of the current project suggest that the HEAP is an important driver for energy efficiency upgrades in the social housing sector in New South Wales. Considering the breadth of motivations and barriers that SHPs have in implementing energy efficiency upgrades, to improve the energy efficiency and thermal comfort levels of the properties they own and/or manage, there are several additional approaches that should be considered to further aid housing providers of different sizes, locations and modes of operation. In this chapter, different potential approaches to improved support to SHPs are offered under four broad categories.

### Communication and advice

Many, particularly the smaller, regionally-based CHPs noted they had difficulty accessing information about the types of assistance available for performing energy efficiency upgrades. For many other organisations, the internal capacity to understand and explore the technical complexities of some upgrade options is lacking. This section highlights some potential actions to overcome such communication and information shortfalls.

#### **Improve communication of funding opportunities, guidelines, workshops, and knowledge exchange opportunities**

Many organisations highlighted the importance of peak bodies for accessing information about funding opportunities. This is clearly an important partnership to maintain and strengthen to communicate ongoing programs in the social housing sector. It is recommended that simple, concise communications be distributed via the Community Housing Industry Association NSW outlining:

- the range of support available, including funding opportunities and workshops
- which organisations are best positioned to benefit from which opportunities
- what are the obligations of the organisation to access the funding, and
- what costs and benefits are anticipated for the organisation and the tenant, including case studies of similar previous projects.

## **Develop an online tool for calculating potential upgrade costings for common housing types**

Organisational capacity was identified as an important barrier to implementing upgrades. Given this, there is an opportunity to develop resources to help decision-making; specifically, a calculator that offers insights to the expected costs and savings from the variety of eligible upgrades. This could utilise DPIE's existing cost–benefit analysis tool along with cost and evaluation data from upgrades implemented during the early phases of the HEAP. Similar advice targeted at SHPs is already being offered in the United States via its Environmental Protection Agency (US EPA 2011).

## **Simple is better**

Mention was often made of the onerous application, approval and reporting processes attached to funding agreements. This, in turn, has impacted on SHPs' views on the overall value for money of these programs. Simplification of administration is required to make these opportunities more attractive to potential applicants.

## **Simplify the application and approval processes, and reporting responsibilities**

(Co)funding opportunities impose a substantial administrative burden on SHPs, including the processes of application, reporting and contract management. Wherever possible, DPIE should simplify and streamline the required process and provide support to SHPs to meet obligations imposed. This is in part a recognition that many SHPs will already have comprehensive asset management systems and processes, which could readily incorporate energy efficiency upgrades. Streamlining the application, approvals and reporting processes must be conscious of the need to:

- acknowledge and, where possible, work with existing relationships between CHPs and networks of maintenance and installation providers
- minimise prescriptive conditions on approvals
- minimise the imposition of management costs associated with project documentation and reporting obligations, and
- develop streamlined contracting processes.

## **Funding flexibility**

Similar to the perception of onerous applications and reporting, current funding arrangements are understood and experienced as rigid and covering limited options. This section presents options to provide better financial propositions to SHPs considering energy efficiency upgrades.



## Expand funding to include upgrades to common property

Current (co)funding opportunities by and large relate to upgrades to tenanted properties. As the vast majority of social housing in New South Wales is currently not owned by its managing CHP, the issue of split incentives persists and leads many to report a lack of value for money. This is especially true when energy efficiency in social housing is understood largely in an economic and operational efficiency mindset. There is, therefore, a need to incentivise SHPs to overcome this perception of lack of value for money. This may be done by funding upgrades to common property such as hallway and basement lighting or insulation for community facilities so that SHPs (in terms of lower costs) and tenants (in terms of comfort and safety) both benefit. It may also entice more SHPs to consider taking up (co)funding opportunities, potentially benefitting a larger number of tenants.

Another opportunity may be to have a commitment to re-invest in energy efficiency upgrades. This may be done by including common property upgrades in subsequent grants (where the initial grant focuses solely on tenants' homes) or by allowing different proportions of the grant to be spent on common property upgrades.

## Have more flexible funding arrangements

The prescriptiveness of current funding arrangements was found to constrain SHPs' willingness to engage with co-funding schemes. A one-size-fits-all approach to funding rules is restrictive given the diversity across the sector in terms of structure, scale, resources, and ownership/ management across portfolios. More flexible co-funding arrangements could help account for this diversity. For instance, funding arrangements could allow for some proportion to be held over for ongoing maintenance of the upgrades (e.g. 10% of project value held by DPIE) to mitigate perceived risk over a given number of years.

It would also be worth considering a funding mechanism that can better fit with existing planned and responsive maintenance processes. This could be similar to the existing Energy Savings Scheme, but providing a greater level of support specifically to SHPs. This would allow, for instance, a provider to replace a failed hot water system with a highly efficient, heat pump hot water system at the end-of-life (thereby ensuring the residual value in the replaced systems is minimised), and recoup part of the additional cost of the system from DPIE by providing evidence of the completed works. This approach could apply to planned general works where the efficiency of the building is improved beyond minimum requirements.

Funding could include an opportunity for SHPs to pilot an alternative upgrade or delivery model with financial support, with a commitment to funding a roll-out if certain performance metrics are achieved. This could also include providing funding and working collaboratively with DPIE to develop a business case for the trialled models and promulgate the outcomes.

## Advocating for change

Some of the barriers recounted by SHPs lie with the structural arrangements of the sector (in both New South Wales and in Australia more generally), such as the layers of split incentives induced by governments' preference for management over title transfers. Other agencies, however, can also play a strong role in advocating for change that would benefit the sector and, more importantly, tenants.

## **Give CHPs more control over managed properties**

The transfer of public housing properties from state housing authorities to CHPs has been common across Australian states in recent years. While managing the conditions associated with title transfer is outside the jurisdiction of DPIE, there may be an opportunity to work with FACS to establish a memorandum of understanding or other arrangements aimed to address the split incentive issues. For example, the split incentive that occurs when the expenditure on energy efficiency upgrades may be transferred to another CHP if the lease is rearranged. Options to consider include investigation of:

- the possibility and feasibility of Green Deal (DECC 2014) style lending or co-funding arrangements whereby loans or co-funding finance is attached to the dwelling, and therefore any outstanding debt or scheme obligations would transfer to any new provider
- structuring transfer contracts so the costs of implementing desired energy efficiency upgrades, the benefits of which accrue to FACS, are fully funded or co-funded from FACS budgets, and
- the potential to mandate longer lease terms (such as the 20-year terms currently offered via the Communities Plus program) associated with stock transfers. Current lease terms vary remarkably and many militate against CHP investment in energy efficiency upgrades with pay-back periods that exceed existing lease terms.

## **Develop energy efficiency rating tools and minimum standards for all rented homes**

One of the key knowledge gaps identified was that of the energy efficiency (or otherwise) of a provider's existing housing. This is not just a sectoral issue, but is a broader issue across the Australian housing sectors. Outside of new builds, there is currently no broadly accepted method to establish the energy efficiency of buildings. Once a provider can benchmark their properties against sector and NSW-wide baselines, there will be a clearer imperative to improve efficiency for the poorest performing dwellings. Further, it will be vastly simpler to estimate and evaluate the effectiveness of different upgrades.

The development of an accepted rating scheme for existing housing also provides the necessary mechanism to implement mandatory minimum energy efficiency standards for rental properties, as has been done in other jurisdictions (notably in the UK, European Union and New Zealand).

## **Champion the environmental and social imperative to retrofit (rather than rely on new builds)**

Currently, the barriers to implementing energy efficiency upgrades on existing housing are such that SHPs are incentivised to focus on new builds as the conduit through which to advance energy efficiency gains. However, this induces an equity gap by confining these gains to tenants housed in new stock. The rate at which new stock can replace existing stock means that this approach can only very slowly achieve energy efficiency gains. The recommendations outlined above – particularly in relation to knowledge gaps, organisational

capacity and other barriers to implementation – need to be considered in light of how they can best enable retrofitting. Retrofitting will be necessary both to ensure a wider range of tenants can benefit from energy efficiency gains, and that these gains can be advanced more rapidly.

This shift in approach is likely to also require a shift in organisational culture to further enhance recognition of energy's role in providing health and wellbeing outcomes for tenants, enabling them to live comfortably, healthily and with dignity, convenience and affordability. This requires accounting for the benefits of energy efficiency evidenced in ways that are more than purely financial, but that capture the associated wellbeing and health benefits. Metrics other than those associated with asset management (e.g. health outcomes, broader indicators of tenant wellbeing) offer one possibility. Narratives derived from interviews that capture the life transformations from energy upgrades another. Whatever the method, it is imperative to document the health and wellbeing dimensions of retrofitting to help prioritise energy upgrades within the multiple demands on SHPs' limited budgets.

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## Appendix A: Interview guide

1. Can you give us a brief description of your organisation's portfolio?
  - No. of dwellings managed, % owned
  - ownership structure of properties managed but not owned (e.g. government transfers vs NRAS vs other)
  - geographical spread
  - property types
  - development pipeline (if any)
2. What does your organisation know about the energy efficiency and thermal comfort levels of your stock?
  - Does your organisation have an energy-efficiency policy? If yes, can you provide us a copy?
  - Has your organisation done any energy efficiency and thermal comfort levels assessments of your stock?
    - If yes: How was the assessment carried out? When was this done? What sort of information does the assessment provide (e.g. structure/fixtures, insulation, hot water systems, availability of gas, HVAC (individual vs building), lighting)? How is this information being used? What motivated your organisation to do this? Has this information been useful (for what purpose)?
    - If no: Are there any plans for such assessments? Why / why not?
  - Have you/your staff received any feedback from tenants about the comfort levels of their homes?
  - Have they relayed any feedback regarding difficulty in paying energy bills? Or desire to be more energy efficient?
  - Is there any pressure/demand/support from your tenants to improve energy efficiency?
3. What priority is placed on the energy efficiency and thermal comfort levels of your stock within your management plans (e.g. compared to tenant capacity building, increasing stock/expanding portfolio)? How do you account for this priority?
4. Does your organisation have a specific budget for implementing energy efficiency improvement (beyond regular/planned maintenance requirements/upgrades)?
5. Does your organisation have any strategic plan in place to improve the energy efficiency and thermal comfort levels of your stock?
  - For organisations that have implemented: What have you managed to implement? How did your organisation approach these upgrades (e.g. as part of longer-term maintenance/upgrade plans, externally funded such as via HEAP and CEFC, tenant-driven, educating/building capacity of tenants)?
    - If externally funded: How did you find out about these external funding/support opportunities? What were some of the challenges you faced (e.g. ease in application, finding out the right information)? Were there different options that you could compare?
    - If internally funded: How were these funded? As part of the 'regular' maintenance/upgrades and capital works budgets? What internal business case was required to support the works?
    - All: How have these upgrades benefitted your organisation and tenants? If so, in what ways?
    - All: Did these upgrades/benefits meet your expectations? Have these upgrades achieved the benefits expected in the business case?



- For organisations that have not implemented: How is your organisation planning to implement these plans (e.g. look for funding/support opportunities like HEAP and CEFC)?
  - What kind of benefits do you expect these upgrades to deliver (to your organisation and tenants)?
  - Did you consider external funding options but decided against them? Which ones? Why not accessed?
  - What factors prevented your organisation from implementing this plan? [prompt organisation capacity, competing priorities, ownerships issues, financial etc]
- 6. What barriers does your organisation face in implementing these/future upgrades?
  - Financial: (actual and perceived) costs of upgrades, accessing funding (e.g. loans/subsidies)
  - Structural: rolling lease arrangement, lack of ownership, support/subsidy programs unwieldy/difficult to access
  - Institutional: lack of internal capacity (e.g. need project manager with environmental background), lack of Board/member support
- 7. How do you think these barriers can be addressed?
- 8. What tools or information would support your organisation in implementing energy efficiency or thermal comfort upgrades in your stock? Do you see a specific opportunity to increase environmental performance of the social housing stock?

## Appendix B: Shortened forms used in this report

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ACOSS	Australian Council of Social Service
BASIX	Building Sustainability Index (NSW)
CEFC	Clean Energy Finance Corporation
CHP	community housing provider
FACS	Department of Family and Community Services (NSW), former
HEAP	Home Energy Action Program
NatHERS	Nationwide House Energy Rating Scheme
NRSCH	National Regulatory System for Community Housing Providers
NSW	New South Wales
DPIE	Department of Planning Industry and Environment, formerly OEH
PARS	Provider Assessment and Registration System
SHP	social housing provider
UK	United Kingdom

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