



Document Ref: 2260-LEDA-MP-XX-RP-MEP-0001

Project Ref: Canopy Energy Project Report-JR-JW

Canopy Housing

Canopy Energy Project Report

Table of Contents

1	Executive Summary	3	8.4	Batteries	18
1.1	Preferred Solutions	3	8.5	Air Source Heat Pump (ASHP)	19
1.2	Consultation Output	3	8.6	Disconnecting Gas	21
1.3	Investment packages	3	8.7	Community Energy Options	22
1.4	Next Steps	4	8.8	Other technologies reviewed	24
1.5	Case study statement	5	9	Decarbonisation	25
2	Project Summary	6	9.1	Potential Decarbonisation Trajectories	25
3	General Introduction	7	10	Preferred Solution	26
4	Glossary	8	10.2	Tenant Experience	26
5	Statement of Need and Location	9	10.3	Next Steps	26
6	Baseline Assessment	10	10.4	Conclusions and Next steps	27
6.1	Property Types	10	10.5	Capital Costs of the demonstrator projects	27
6.2	Insulation Standards	10	11	Appendix A – Canopy Tenant Research Report Final	28
6.3	Baseline Energy Consumption	10	11.1	The aim of this research	28
6.4	Baseline Warmth and Moisture	12	11.2	Wider context - the Climate Emergency, Net Zero targets, and homes	28
6.5	Baseline Carbon	12	11.3	Information about Canopy’s housing stock, and information about tenants	28
6.6	Real Life Carbon Emissions	12	11.4	Secondary research - fuel poverty and behaviours re heating and paying bills	29
7	Consultation and engagement	13	11.5	Secondary research - issues with the transition away from gas boilers & other fossil-fuel powered systems, particularly for people in fuel poverty	29
7.1	Key findings	13	11.6	Secondary research - best practice guidance to inform Canopy’s approach	30
8	Options Appraisal	14	11.7	Opportunities & recommendations	31
8.1	Matrix of Solutions vs Criteria	14	11.8	References	31
8.2	Technologies and Economic Options Considered	16	12	Appendix B – Community Energy Models Research	32
8.3	Photo Voltaics	16	12.1	Executive Summary	32
			12.2	Introduction	33

12.3 Research how Canopy tenants can purchase energy at the cheapest possible rate using innovative tariffs, technology, potential inclusive bills rental models & collective energy purchasing. 33

12.4 Technology 37

12.5 Research innovative business models for energy generation which could bring additional benefits to Canopy tenants. 39

12.6 Research opportunities for Canopy to develop or invest in community renewables projects, and opportunities to benefit from the development of local low carbon energy infrastructure. . 40

12.7 Opportunities to benefit from local renewable energy projects 41

12.8 References 42

12.9 Projects..... 42

12.10 Think pieces and research reports 43

12.11 Government initiatives and consultations 43

12.12 Other..... 43

13 Appendix C – PV Rapid Assessment 44

14 Appendix D – ASHP Wet System High Level Quotation 45

15 Appendix D – Rainbow of Recommended Interventions..... 47

16 Appendix E – Assumptions 48

16.1 Benchmarking..... 48

16.2 Technologies..... 48

16.3 Costs 48

16.4 Decarbonisation..... 48

16.5 Tariffs 48

17 Appendix F – Canopy’s Follow Up Client Engagement 49

17.1 Tenant Surveys 49

17.2 Tenants with low bills 49

17.3 Tenants with high bills.....49

18 Appendix F – Next Steps50

18.1 The landlord’s perspective and next steps50

Revision Record

O	30/10/2025	Draft Issue for Comment	JR/JW
A	24/10/25	Comments Incorporated	JR/JW

Main Authors; Jim Wild, Jenny Randall LEDA

1 EXECUTIVE SUMMARY

Canopy Housing, a charitable community benefit society in Leeds, is pioneering a “Warmth First” approach to decarbonising its housing stock while addressing fuel poverty among vulnerable tenants. The feasibility study, led by LEDA, identifies a suite of technical and economic interventions tailored to the needs of Canopy’s tenants, over half of whom rely on pre-payment meters and 78% report difficulty affording energy bills.

1.1 Preferred Solutions

The study recommends a **basket of interventions** rather than a one-size-fits-all solution, recognising the diversity of Canopy’s housing stock and tenant needs:

- **Air Source Heat Pumps (ASHPs):** Essential for decarbonisation, with conventional wet systems recommended for larger homes and DX systems piloted for smaller homes. These systems offer up to 60% carbon reduction and potential cost savings when paired with suitable tariffs.
- **Gas Disconnection:** Removing gas supply is key to eliminating standing charges, which disproportionately affect low-consumption households. This measure is expected to benefit the most fuel-poor tenants.
- **Solar PV and Batteries:** PV installations are prioritised for homes with the highest yield potential. Batteries enhance onsite consumption and offer financial savings, especially when paired with innovative tariffs.
- **Tariff Optimisation:** Octopus Energy’s *Tenant Power* and *Stay Cozy* tariffs are recommended for tenants with standard credit meters, enabling shared financial benefits and reduced bills.

- **Community Energy Options:** Collective switching and community-owned PV installations are explored as longer-term strategies to support equitable energy access, however these were found unsuitable for recommendation.

1.2 Consultation Output

Extensive tenant engagement and research underpin the feasibility study:

- **Tenant Surveys** revealed widespread fuel poverty, energy rationing, and interest in renewable energy, but also concerns about affordability and control over heating systems.
- **Community Engagement** highlighted the importance of co-design and clear communication to avoid tenants feeling “done to.” Demonstrator projects are proposed to build trust and refine implementation.
- **Behavioural Insights** show that typical heating practices may conflict with low-carbon technologies, reinforcing the need for tailored support and simple controls.
- **Equity Considerations** stress the need to share benefits fairly across all tenants, regardless of whether their homes receive direct installations.

1.3 Investment packages

1.3.1 New position at canopy to manage tariffs and transitions

It will be important to manage the process of implementing the proposed interventions and engage with the tenants sensitively and in a timely manner. We recommend that a person be employed to carry out this work.

The cost to employ someone on the living wage is approximately £31,000 per year.

1.3.2 PV + batteries across all suitable homes.

We recommend rolling out PV and batteries across all suitable homes

kW each installation	Peak	Number of homes	kW Peak total	PV Cost	PV plus 20% contingency	Batteries Cost	Simple Payback (years)
Over 3kW	10	38	£48,780	£58,536	£20,220	7.2	
2 to 3kW	11	30	£47,650	£57,180	£22,242	8.9	
1 to 2kW	24	44	£92,880	£111,456	£48,528	11.7	
Under 1kW	20	19	£65,600	£78,720	£40,440	19.8	
Batteries only	22				£44,484	0.0	
Total		131			£305,892	4	

PV and batteries offer benefits to tenants on all meter types, although greater benefits can be gained from achieving the best tariffs.

1.3.3 Demonstrator projects for decarbonisation/ affordable warmth

We recommend that the next steps include demonstrator projects, to gain a better understanding of the practicalities and tenant experience ahead of a wider roll out of these measures.

Demo	Install ASHP /DX heating and hot water	Benefit from BUS	Switch Cooker	Disconnect gas	Install PV	Install battery	Total including 20% contingency
4 bed home	£12,700	-£7,500	£400	£ 924	£4,910	£2,022	£16,147
1 bed home	£7,023	-£7,023	£400	£ 924	£4,910	£2,022	£9,907

In addition to these measures, we recommend that processes are put in place to support tenants to consider switching to Tenant Power/Stay Cozy tariffs where appropriate.

1.3.4 Roll out of decarbonisation scheme / affordable warmth.

For decarbonisation we recommend piloting switching 1 bed homes to DX systems as well as piloting ASHP on homes without front yards before a full roll out.

The expense of removing the gas will result in the reduction in the tenants bills through removing the standing charges.

Type	Number of homes	Total ASHP system cost	£7500 Boiler Replacement (available at present)	Cooking decarbonisation and gas disconnection	Total plus 20% contingency
1 Bed	20	£140,460	-£140,460	£ 34,480	£ 41,376
2 Bed	40	£516,000	-£300,000	£ 68,960	£ 341,952
3 Bed	12	£174,000	-£90,000	£ 20,688	£ 125,626
4 Bed	16	£232,000	-£120,000	£ 27,584	£ 167,501
Totals					£ 676,454

In addition to these measures, we recommend that processes are put in place to support tenants to consider switching to Tenant Power/Stay Cozy tariffs where appropriate.

1.4 Next Steps

The report recommends:

- Implementing demonstrator projects to test interventions.
- Supporting tenants through transitions in technology and tariffs.
- Packaging fundable phases aligned with potential funders' priorities.
- Continuing deep engagement to ensure a fair, affordable transition.

Canopy's approach offers a replicable model for other social landlords seeking to decarbonise while protecting vulnerable tenants.

1.5 Case study statement

Canopy Housing: pioneering a "warmth first" just transition for vulnerable tenants

Canopy Housing, a charity in Leeds, is developing an ambitious energy project to make their homes greener and help tenants struggling with fuel poverty. Canopy manage approximately 100 homes, and a majority of their tenants use pre-payment meters, with 78% finding it hard to pay their bills. This is why a "Warmth First" approach, focusing on helping tenants to feel happier and warmer in their homes, is so important.

Studies showed that switching to Air Source Heat Pumps (ASHPs) could cut carbon emissions by 60%. Switching away from gas could result in a saving of around £125 a year thanks to not needing to pay a second standing charge.

It is also proposed that Canopy install solar panels and batteries in homes that have appropriate roof space, so households can benefit from the electricity generated and reduce their bills. New tariffs, like Octopus Tenant Power, offer potential to share the benefits fairly - including with tenants whose homes don't have these measures installed. For this to work in line with the principles of a just transition, the research emphasises that clear, ongoing communication is essential so tenants feel involved. Canopy plan to run some trial projects to test these ideas and to share learning with other social landlords.



"It's important that vulnerable people living in mixed tenure communities are not left behind in the journey towards Net Zero" –

David

Chief Executive, Canopy Housing

Nugent

2 PROJECT SUMMARY

This report has been prepared for Canopy, a charitable community benefit society which began in 1998 as a small, grassroots, community volunteering project to combat the twin issues of empty homes and homelessness in Leeds.

The community we are seeking to benefit from this study are the tenants who live in Canopy's homes.

Canopy Housing is a registered society under the Co-operative and Community Benefit Societies Act 2014. Registered with the FCA, number 28665R, exempt charity status number XR21692.

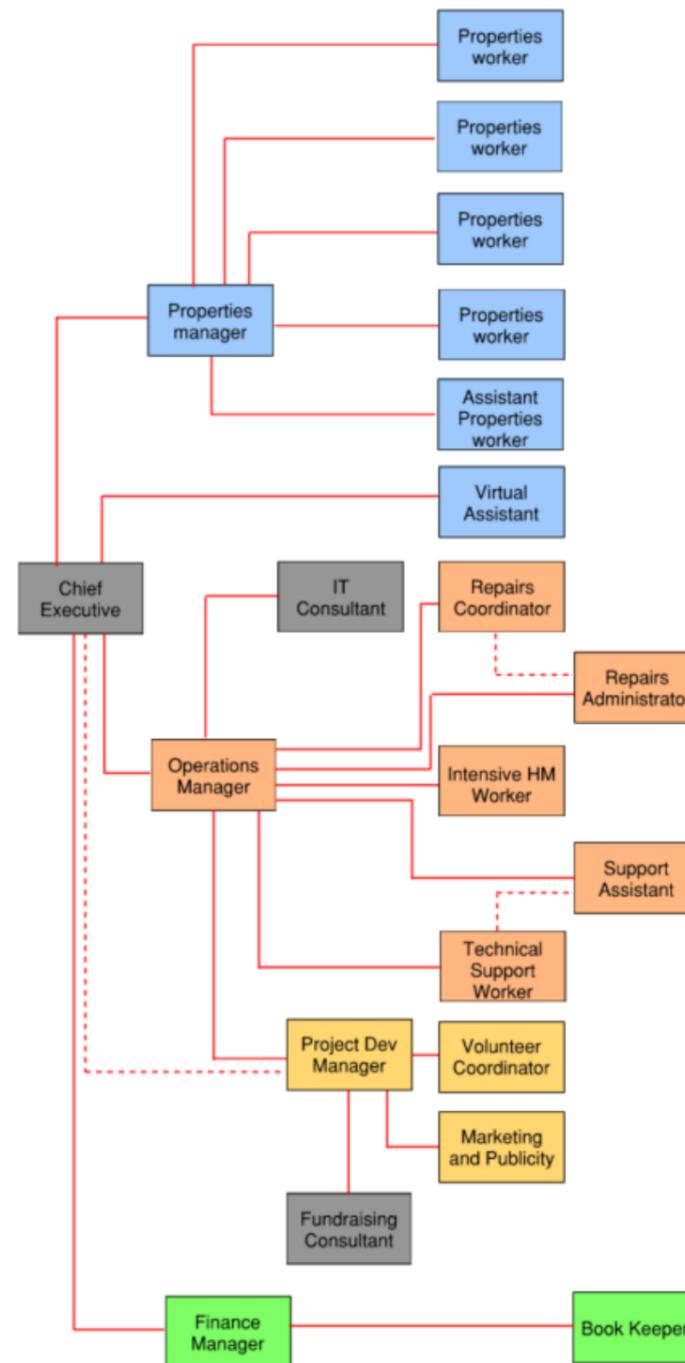


Figure 1: Canopy Organogram

This research has been led by LEDA, an engineering company with expertise in low energy and sustainable buildings, with input from Rob Greenland, a social enterprise consultant with a wealth of knowledge and experience in advising and running social enterprises.

The project objectives set by Canopy are:

- Reduce fuel poverty amongst Canopy tenants
- Reduce carbon emissions created by Canopy properties
- Increase resilience for Canopy properties and tenants
- Provide a blueprint to help other community organisations and social landlords adhere to the same goal

The technologies and options considered for these homes:

- PV
- Batteries
- ASHP
- Community Energy Options
- Tariff and Energy Purchasing Options
- (Insulation programme already in progress)

For this project we have been sensitive to the fact that these tenants are especially vulnerable, and we have worked hard to develop a technical appraisal which takes this into account.

3 GENERAL INTRODUCTION

This document is record of project information for the Canopy Zero Carbon Energy project. It is funded by North East and Yorkshire Net Zero Hub (NEYNZH), who are one of six hubs charged with distributing and managing CEF grants. Operationally the Contract administrator is through Tees Valley Combined Authority, where the hub sits. This report adheres to the CEF reporting requirements.

Within this report we review the client's brief, consider the opportunities and constraints of the project in relation to achieving this brief and then provide details of possible options for the active and passive strategies and systems to best meet the clients' brief.

4 GLOSSARY

Some technical terms that are used in this document.

Air Tightness	The degree to which a building prevents air leakage, affecting heating energy use and comfort.	Decarbonisation	The process of reducing carbon emissions, often by switching to cleaner energy and improving efficiency.	Prepayment Meter	A pay-as-you-go energy meter where you top up in advance. Helps budget but may have higher rates.
ASHP (Air Source Heat Pump)	A heating system that extracts heat from the outside air to warm your home and hot water. Efficient and low-carbon.	Direct Debit or Credit Meter	A billing method where energy costs are automatically deducted from your bank account monthly. Often cheaper than prepayment.	PV (Photovoltaic)	Technology that converts sunlight directly into electricity, commonly used in solar panels.
Battery Storage	A system that stores excess electricity (e.g., from solar panels) for use when needed.	DX (Direct Expansion)	A type of heat pump system where refrigerant is used directly to transfer heat between indoor and outdoor units.	Renewable Energy	Energy from sources that don't run out—like solar, wind, and hydro. Often cheaper and cleaner long-term.
Boiler Upgrade Scheme (BUS)	A government grant that helps pay for replacing old boilers with low-carbon heating systems.	Energy Audit	A review of how much energy a home uses and where savings can be made.	Renewable Energy Tariff	An energy plan where electricity comes from renewable sources like wind or solar.
Capital Cost	The upfront cost of purchasing and installing a system or equipment.	Energy Price Cap	A limit set by the regulator on the maximum price suppliers can charge for energy.	Retrofit	Upgrading an existing building to improve energy efficiency and reduce carbon emissions.
Carbon Footprint	The total amount of greenhouse gases emitted by your household activities. Lowering it helps the planet.	Energy Tariff	The pricing plan you're on with your energy supplier. Switching to a cheaper or greener tariff can save money.	Smart Meter	A digital energy meter that shows real-time usage and sends readings automatically to your supplier.
Carbon Neutral	When the amount of carbon emitted is balanced by actions that remove or offset carbon.	Fabric-First Approach	Improving insulation and airtightness before adding new heating technologies.	Standing Charge	A fixed daily amount added to energy bills, regardless of how much energy you use.
CO₂e (Carbon Dioxide Equivalent)	A metric that expresses the impact of different greenhouse gases in terms of the amount of CO ₂ that would create the same warming effect.	GSHP (Ground Source Heat Pump)	A system that uses underground pipes to extract heat from the ground.	Time-of-Use Tariff	A tariff where energy costs vary depending on the time of day—cheaper at night, more expensive at peak times.
COP (Coefficient of Performance)	A measure of a heat pump's efficiency. A COP of 3 means it produces 3 units of heat for every unit of electricity used.	Heat Loss	Energy escaping from a home through walls, windows, roofs, or floors, making heating less efficient.		
Decarbonisation	The process of reducing carbon emissions, often by switching to cleaner energy and improving efficiency.	Inclusive Bills	A rental model where energy costs are included in the rent, giving tenants predictable monthly costs.		
		kgCO₂e/yr	Kilograms of carbon dioxide equivalent emitted per year.		
		kWh (Kilowatt-hour)	A unit of energy representing the consumption of 1,000 watts over one hour.		

5 STATEMENT OF NEED AND LOCATION

Canopy housing tenants currently consume:

217,764 kWh/year Electricity

686,820 kWh/year Gas

It would be ideal if this need could be met or at least partly met through onsite renewables, and in an affordable and decarbonised way.

The technologies considered within this study have been assessed against the CEF considerations:

Ownership

The technology considered would be located within and on Canopy's properties, without the need for changing legal status.

Planning Permission

The technology sections contain details of permitted development in line with Leeds City Council planning.

Impact on the national grid

- The PV would have a low impact on the national grid and would be covered by a simple G98 or G99 application and would make use of the existing grid connection. Energy not consumed within the dwellings would be exported to the grid.
- ASHP considered in this study each property would need to be checked by an engineer on a case-by case basis, but we anticipate that none of the homes would require an electrical supply upgrade.

Site Suitability

- Many of the homes have front yards which make installing ASHP inherently simpler and more secure.
- This study highlights the practical considerations of potential crime and vandalism where no front yards are present. The potential options would be to wall mount units at an accessible height and cage them, or cite them at high level, with a plan for access. For these homes, demonstrator projects are recommended, before a full roll out is delivered.

Community Support and Access

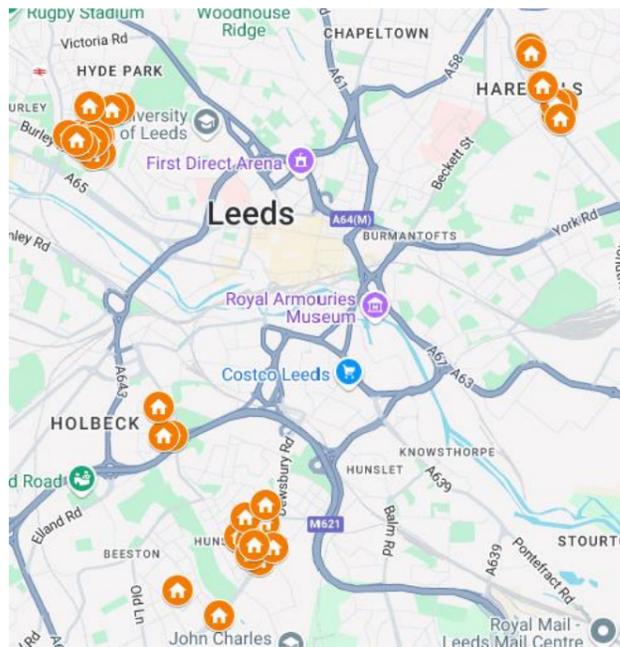
Canopy work to have a good relationship with their tenants and can gain access to the properties to carry out maintenance and access is unlikely to pose a problem for the chosen technologies.

The tenant research carried out shows that there is a risk of tenants feeling 'done to' and communication would need to be carefully managed throughout the process. Good communication along with a 'warmth first' approach and lower energy bills for the tenants will be needed to mitigate this risk.

6 BASELINE ASSESSMENT

Canopy Housing own and lease properties in Leeds. We have placed the addresses on a map to give some context as to how spread out the properties are. Within the properties there are no blocks of flats or terraces

Canopy plan to acquire and retrofit a further 9 homes by 2027.

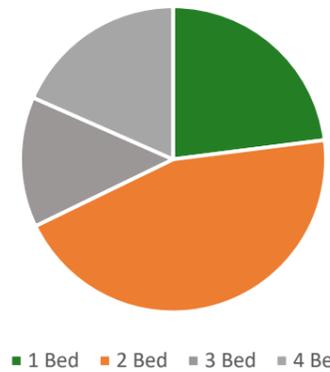


The purposes of this report the baseline assessment considers the following features of the properties.

- Type, including location, aspect, and number of bedrooms
- Insulation levels
- Energy consumption

6.1 Property Types

Number of Bedrooms

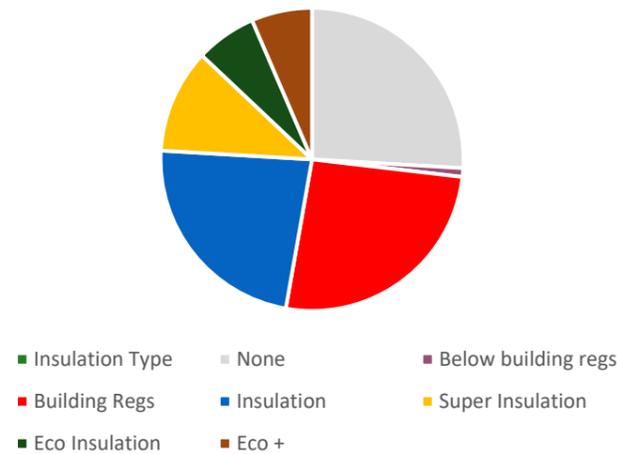


Two thirds of the houses owned and leased by Canopy Housing are 1 and 2 bed properties, which are more vulnerable to lower incomes and fuel poverty.

6.2 Insulation Standards

Insulation levels can have a dramatic effect on energy use and tenant health. Canopy have instigated a Fabric first approach to reducing energy demand and fuel poverty.

Insulation Types



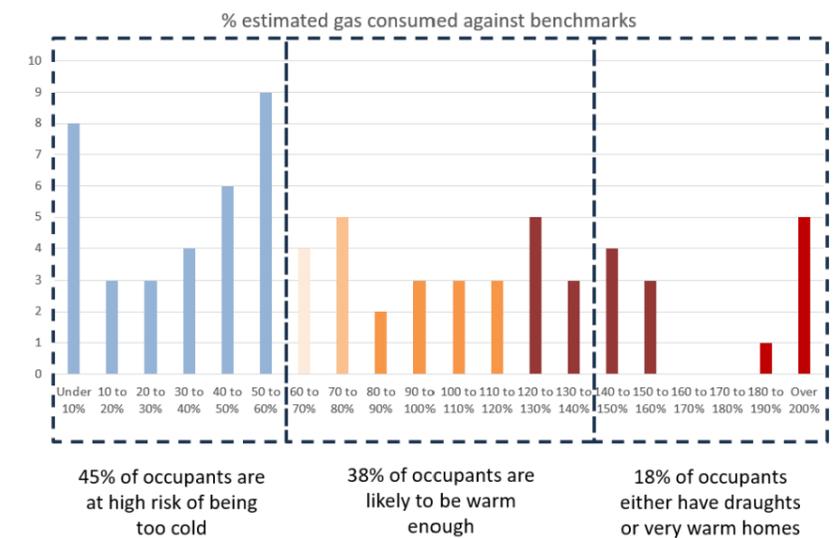
Almost 3/4 of the homes are already insulated to some level, and Canopy is in the process of carrying out a programme to retrofit all their properties. They are currently insulating using woodfibre insulation on internal walls with lime plaster to provide a low-carbon, breathable solution.

The majority of homes have gas heating, and only 2 have ASHP.

All but 4 of the properties have cellars.

6.3 Baseline Energy Consumption

We have gathered the energy consumption data for the last 12 months, which is useful for understanding the baseline. However, we are aware that occupants exist in fuel poverty and that in 2021 only 54% of respondents would describe their house as warm.



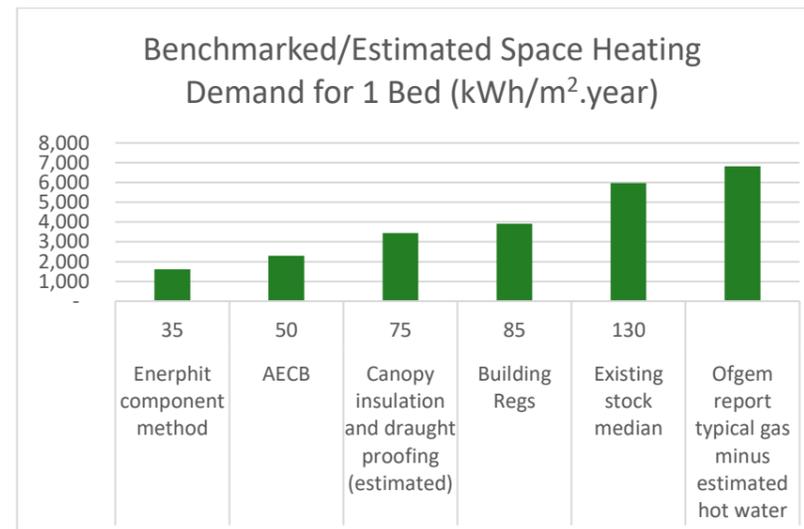
This figure tallies with our research and calculations use the last year's kWh gas and electricity consumption for each property and benchmark these against what we crudely estimate would be needed to keep the homes warm and enjoy normal levels of hot water and electricity use.

This indicates that 45% of homes are at high risk of being too cold, with 18% of homes likely to benefit from an energy audit and energy saving measures. Canopy have begun to follow up with these tenants.

Instead of relying on this measured data to set our baseline of energy consumption, we are estimating the energy consumption which would be required to make warm homes, this will give us an indication of the amount of energy we are targeting to make affordable. We are largely ignoring electricity use in this report as this is primarily for cooking, lighting, appliance and device use. Whilst it is an important aspect of the overall energy picture, our work is focusing on warmth and decarbonisation. To understand the energy demands we have split the demand for energy into Space heating demands and Hot water heating energy demands.

6.3.1 Baseline Space Heating Energy Consumption

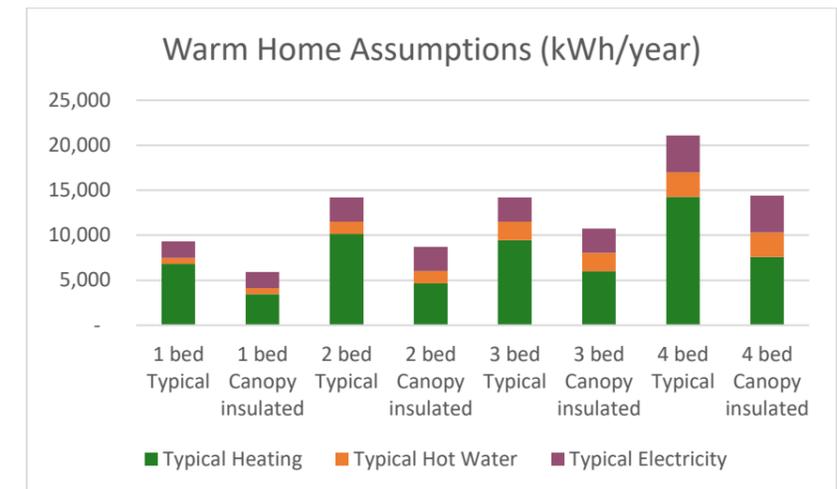
As the gas supply to the homes is used for cooking, heating and hot water it is not possible to extract out each energy use. We therefore have to take data from published reports to enable us to split out each energy use. For space heating the chart below shows a range of benchmarks for various standards of home together with measured data from existing homes.



AECB and EnePHIT the Passivhaus retrofit standards are both exemplar standards for retrofit and include MVHR (mechanical ventilation heat recovery) to minimise heat losses and control indoor air quality.

We have benchmarked the Canopy retrofit with good insulation and draught proofing at 75 kWh/m².year as better than current new built homes to building regulations standard, but not as good as the exemplar standards, as extract ventilation is used and this results in greater heat loss.

We have used the Ofgem report typical gas figures minus estimated hot water usage for the heat demand for uninsulated homes. Shown as 'typical' below?



Our warm home energy consumption targets are shown above. This is the level of energy use we are aiming to make affordable for the tenants.

The baseline data obtained for the existing Canopy homes will be used to understand the patterns of usage and does impact on the suitability of some technologies and economic models.

6.3.2 Baseline Hot Water Energy Consumption

As explained above hot water energy use is not currently separately measured, except in the two properties with ASHPs. The ASHP controllers will provide an estimated split between energy input for hot water generation and energy for space heating. We have not been able to obtain this data at this time, but being for two properties only the data would not necessarily be representative of the whole.

Hot water consumption is an area where further tenant consultation would provide insight. The homes with gas boilers have combi boilers that provide instant hot water, but many homes have been equipped with electric showers. We understand that this is because tenants will often self disconnect from pre-payment gas meters, but not so often the electricity meters. So having electric shower is more

accessible to many. Even though the energy cost could be 2 or 3 times as much for electric showers. How these systems are really used and what demand there is for more affordable access to hot water is worth deeper understanding. We expect it is likely that tenants are taking short showers and rarely filling a bath, in which case hot water systems would be rarely used.

If very little hot water is actually needed, the direct point of use electric water heaters without storage will prevent wasted heat. If hot water is regularly used, as would be expected then it would make sense to use gas or heat pump to produce hot water as cheaply as possible.

Another thing to consider is what happens if tenants elect to switch off their power to save money. Where hot water is stored, there is the possibility this could lead to missed pasteurisation cycles, tepid tank temperatures and legionella risk.

6.4 Baseline Warmth and Moisture

Canopy undertook a tenant survey in 2021 - which had a response rate of 16%. Whilst this doesn't give a full picture, it points to some broad trends which are in line with what is outlined above:

85% of respondents were either on a key and card pre-payment meter, or a smart pre-payment meter. All other respondents were billed monthly. This data illustrates that tenants are mostly paying a "poverty-premium" - as pre-payment and monthly-billed customers are usually on higher tariffs than customers who pay by direct debit. Wider research confirms that many pre-payment meter customers use "energy rationing" (effectively cutting themselves off by not feeding the meter) as a way to manage their bills. Standing charges continue to be accrued, even when the energy supply is effectively disconnected.

78% of respondents said that they struggle to afford to pay their gas and electricity bills some or all of the time.

31% of respondents described their home as "cold" - (compared to 54% who described it as warm).

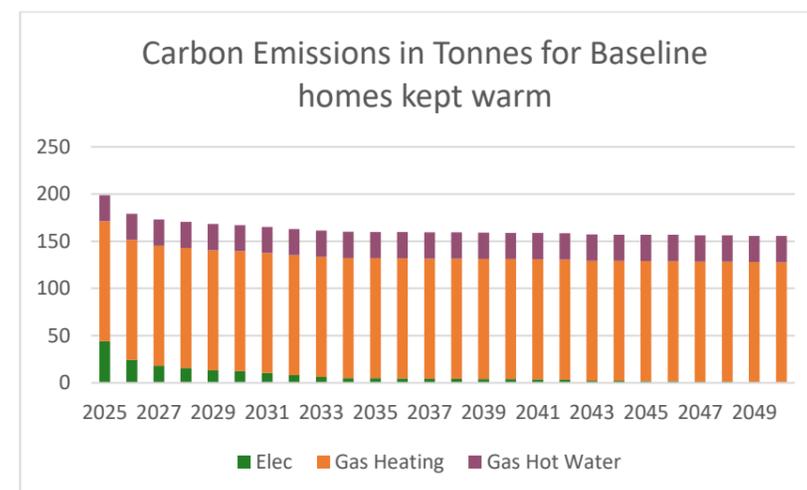
Close to half of respondents (46%) were interested in renewable energy options, such as solar panels (most of the other respondents didn't know).

Only 23% of respondents would like Canopy to provide them with a tumble dryer to dry their clothes - even though many homes lack outdoor space in which to dry clothes. This is likely to be because of concerns about the costs of using a tumble dryer - pointing to anxiety around the affordability of energy bills.

6 properties have had damp and mould reported at them.

6.5 Baseline Carbon

For the purposes of this report, the baseline carbon emissions are represented as the emissions for warm homes.



Due to the prevalence of gas boilers, the decarbonisation trajectory leaves 78% of the carbon emissions to 2050.

The majority of the emissions are from space heating. The insulation program so far has reduced the space heating emissions by an estimated 30%, which is admirable, and hard earned.

In order to decarbonise these homes whilst making them warm, it will be necessary to remove gas use entirely and electrify the cooking, heating and hot water. As direct electric storage or panel heaters and immersion hot water heaters would likely result in much more expensive bills, heat pump technology is likely to be needed to be incorporated as part of the decarbonisation journey.

6.6 Real Life Carbon Emissions

The actual carbon emissions from Canopy's Housing stock is 11% lower than it would be for warm households, since many homes seem to be under-consuming and some homes seem to be over-consuming.

7 CONSULTATION AND ENGAGEMENT

The Community as defined in this project is Canopy. This consists of its Trustees, its employees and volunteers and the tenants who would be affected by any interventions.

In Appendix A we have detailed our Tenant Research work.

Our engagement work focused on finding out about the existing tenants and their experiences from Canopy staff and tenant surveys.

To carry out this research we had two in person workshops in the Canopy offices with a range of Canopy staff, an online meeting with Canopy staff. We used these sessions to supplement the survey findings that Canopy had already undertaken.

We also researched widely existing case studies and reports. It was apparent that Canopy's tenants do share demographics and characteristics with a defined social-economic group which has been reported on and these along with case studies provided very useful findings that were useful.

As this project is not proposing to impact a community outside of Canopy it was felt there was no value in holding any public consultations at this time.

7.1 Key findings

It was found that in general solutions to reduce fuel bills and move to decarbonise were broadly welcomed, but there is concern over how this is implemented fairly, without costs just increasing elsewhere and without causing additional problems such as damp and mould.

Tenant Demographics & Vulnerability

- 70% of Canopy homes are 1- or 2-bedroom properties, often linked to lower incomes and higher fuel poverty risk.
- 66% of households have no adult in paid work and rely on benefits.
- 20% of households requested food vouchers in 2025, with 75% of those being benefit-reliant.

Energy Use & Affordability

- 85% of tenants use prepayment meters, often paying higher tariffs and facing self-disconnection.
- 78% struggle to pay energy bills at least some of the time.
- 31% describe their homes as “cold”; only 54% say they are “warm.”
- 46% expressed interest in renewable energy (e.g., solar panels), though many were unsure.

Behavioural Insights

- Tenants often underheat homes to save money—e.g., going to bed early, avoiding heating altogether.
- These behaviours conflict with optimal use of low-carbon systems like heat pumps, which require consistent operation for efficient energy use.
- Tenants may lack the cognitive or financial capacity to engage with complex energy systems or tariffs.

Risks with Low-Carbon Transition

- Heat pumps may increase bills if not properly installed or understood.
- Complex controls can lead to misuse or non-use.
- Tenants may fear rent increases after energy upgrades.
- Prepayment users may be excluded from beneficial tariffs like Octopus' Tenant Power or Stay Cozy.

Best Practice Recommendations

- “Warmth First” Approach:** Prioritise comfort and affordability over carbon metrics alone.
- Tenant Involvement:** Engage tenants in decisions about installations and system design.
- Clear Communication:** Explain new systems and tariffs in simple, repeated ways.
- Support Systems:** Offer pre- and post-installation help, especially during the first winter.
- Advocacy:** Support broader reforms like social tariffs and fairer energy pricing.

Opportunities

- Canopy could lead a tenant-focused, equitable decarbonisation model.
- Potential for funding to support deep engagement and inclusive retrofit strategies.
- Peer support roles (e.g., “tenant champions”) and partnerships with advocacy groups could enhance impact.

For the full write up see Appendix A.

8 OPTIONS APPRAISAL

We have spent time researching options for the interventions to meet the needs. The overall solution will be a combination of interventions and actions.

To conduct the options appraisal, we have consulted with Canopy through workshops with staff, we have conducted research of the technologies available, the tariffs and research of other projects.

The individual interventions considered are described in more detail in this section.

We have also carried out substantial research on community energy solutions for Canopy. This is outlined in Appendix B

8.1 Matrix of Solutions vs Criteria

From the research into interventions we have found that the solutions fall into four high level themes that can be described as:

- **Administrative Solution** – a solution that is about managing existing energy use and purchase. So using new tariffs like “Tenant Power” and supporting tenants with switching to the best rates.
- **Technology based solution** A first low intervention step of implementing PV and batteries to all properties to reduce the bills and provide ‘free energy’ ”
- **Technology based solution** – A comprehensive installation that provides PV, Batteries and ASHP heating and hot water this provides a complete solution to address energy use for warmth.
- **Administrative and technology solution.** If canopy became the energy supplier (ESCo.) and integrated PV, Batteries and ASHP it would be possible to Canopy minimise the energy costs through bulk purchase and flexible billing, as

well as being able to provide smart energy use management.

To enable us to assess how these themes meet the needs of Canopy’s vulnerable tenants, we have developed set of criteria that provide considerations above and beyond capital and running costs, and carbon emissions. These are then used with the themes to complete a red amber green matrix assessment.

The criteria has been arrived at following the Canopy Tenant research, which is described in more detail in Appendix A.

The criteria are headlined as: :

- Does this intervention improve tenant wellbeing?
- Does this system present particular challenges for tenants with dementia, mental health issues or other complex needs?
- Does this system support a “warmth first” approach?
- Are the benefits of this system fully accessible to customers with pre-payment meters?
- Does this system take into account the typical behaviours of tenants on low incomes - in relation to how they heat their homes and manage their bills?
- Does the implementation of this system offer opportunities to offer wider benefits to tenants?
- Does this intervention offer opportunities to fully engage tenants and make them feel the transition is happening with their involvement - not being done to them?

	Does this intervention prioritise tenant wellbeing?	Challenges for complex needs?	Accessible with pre-payment meters?	Support a “warmth first” approach?	Behaviours of heating and manage their bills?	Compatible with Net Zero	With tenant full involvement?
Administrative Solution “Tenant Power”	Helps to reduce fuel bills, but those in need may still struggle with the ‘system’	Helps to reduce fuel bills, but those in need may still struggle with the ‘system’	No, needs credit meters	Not directly, only that tenants should be able to keep homes warmer	Yes, agnostic to how energy is used.	No	Should be easy to explain and implement, but requires ongoing work to keep tenants engaged
Technology based solution “PV and batteries”	Helps to reduce fuel bills, but those in need may still struggle with the ‘system’	Helps to reduce fuel bills, but those in need may still struggle with the ‘system’	Yes, needs credit meters to get full benefits.	Not directly, only that tenants should be able to keep homes warmer	To get full benefits requires some interactions and changes	No	Some complication, it is a direct benefit and could be communicated
Technology – PV, Batteries and ASHP	Helps to reduce fuel bills, but those in need may still struggle with the ‘system’	Helps to reduce fuel bills, but those in need may still struggle with the ‘system’	Yes, needs credit meters to get full benefits.	Not directly, only that tenants should be able to keep homes warmer	To get full benefits requires more interactions and changes	Yes	Some complication, it is a direct benefit and could be communicated
Administrative and technology solution. Canopy as ESCo.	This is the only system that can provide ‘free’ or subsidised warmth	Could be presented as simple, but also if not done correctly there are huge opportunities to get it wrong	Could be a tenant prepayment meter if chosen	Yes, If there is enough ‘Spare energy’ to go around.	Yes, agnostic to how energy is used.	Yes using ASHP	Tenant choice could still be enacted, but this is obviously the most conceptually complex option

The matrix shows us that there are opportunities for solutions that meet some of the criteria we have set. However there is no solution that is without serious challenges.

We consulted with Canopy on our findings. It was agreed that Canopy are not able to take up the responsibility of being an ESCo although that solution did offer the potential for the most favourable outcomes.

It was agreed with Canopy that the most favourable solution would be the technology solution with PV, batteries and (AS)HP that both provides opportunity for reduced fuel bills and decarbonisation.

8.2 Technologies and Economic Options Considered

The next parts of this section review various features and feasibility of the following technologies in some detail. These technologies have been taken from a wide range of possible solutions and have been chosen specifically for this project and the typologies and the homes that Canopy are have.

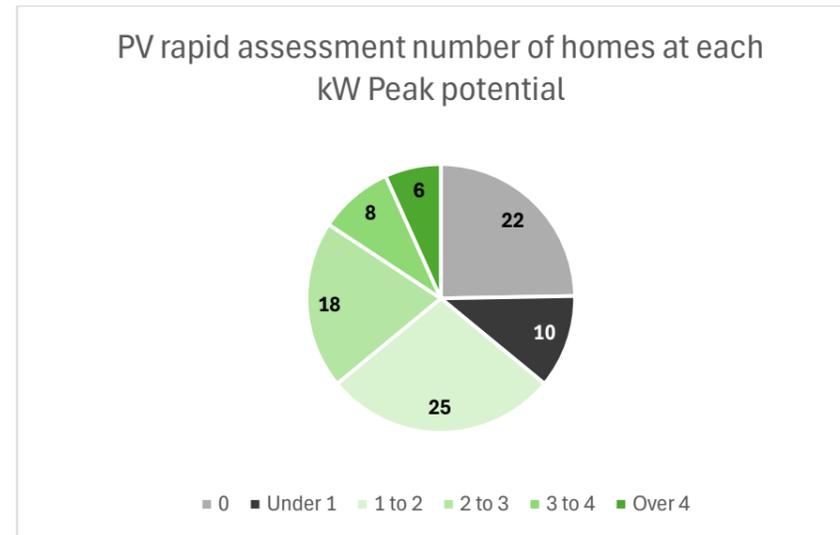
- PV
- Batteries
- ASHP
- Gas (and standing charge) removal
- Community Energy Options

Other technologies reviewed

- Sunamp
- PVT
- Radiant Electric Heating
- District Heating

8.3 Photo Voltaics

We have worked with Leeds Solar to carry out a rapid appraisal of Canopy’s properties:



This shows 1/3rd of homes suitable for PV arrays 2kW and larger, 1/3rd of roofs are suitable for 1 to 2kW arrays, so worthwhile for the tenants although slower to payback, and 1/3 of roofs are unsuitable or only suitable for very small arrays.

The fixed costs of scaffolding and inverter form a large part of the capital cost of the installation, and below 1kW the paybacks are much longer.

8.3.1 Limiting the environmental damage

For this study we have selected European PV panels which have a lower environmental impact than most Chinese alternatives.

When the time comes for final selection of equipment it is important to compare Environmental Product Declarations and limit the environmental damage of making the products.



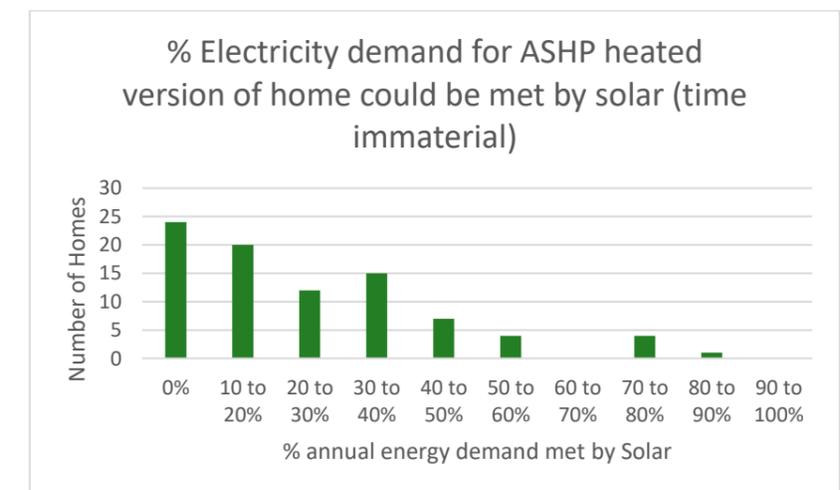
If recycled products become available, these should be investigated.

Another thing to be aware of is that the majority of PV panels continue to be effective beyond the 25 or 30 year notional lifespan, and so making the most of this will maximise the benefit of the panels.

8.3.2 Tenant Experience

The tenant would benefit from some free electricity in the daytime, or anytime if combined with a battery. If they are not on pre-payment meters, they can also benefit from export of PV, with the option to opt for the Tenant Power tariff, which would offer some savings for the tenant alongside building up a landlord pot.

The homes are all different, and the percentage of the hypothetical whole house energy bill for all-electric homes which could be saved for the tenant ranges from 0% for north facing homes, through 15% for a small array to 75% or more for the largest arrays. For this handful of homes, Solar offers a route out of fuel poverty. For the remaining homes where solar is feasible, there are useful cost benefits available for these vulnerable clients.



8.3.3 Planning Permission

PV on these homes is permitted development.

MCS requires all PV panels to be kept 400mm below the roof ridge.

8.3.4 Practicalities

Space available –The inverters can be installed indoors, including in lofts or cellars or outdoors with an additional cover purchased.

Safety – PV panels used in this study are class A fire rated (non-combustible / limited combustibility). They are also above the roof rather than in it. This is the safest kind of PV installation.

Access for installation – Scaffolding will be required. This is achievable even on homes without front yards. Scaffolding forms a significant part of the overall cost, and so if there is a roof which is scaffolded for some other reason, this is an excellent time to put the PV on.

Maintenance – The PV panels themselves are self-cleaning. The system as a whole requires very little maintenance, however we recommend every 12 to 24 months checks on vegetation and wiring. We also recommend performance monitoring, which is likely to highlight most types of issues.

Lifespan – These PV panels have a 25 year warranty are expected to retain and have a performance warranty for 30 years. The inverters have a 10 year warranty.

Tariffs Pre-payment and self-disconnection - Where pre-payment meters are in place, the only benefit to the tenant is through onsite consumption meters it is not possible to benefit from any energy exported, displacing grid electricity. These tenants will benefit from combining with battery to maximise onsite consumption. If the pre-payment meter disconnects, the solar also disconnects and there is no benefit to the tenant or the grid from the generation potential.

Direct debit customers can also benefit from export payments or Tenant Power, which optimises savings and generates a landlord pot.

8.3.5 Cost to Install

The cost to install all of the feasible PV to achieve 130kW peak, with a 20% contingency, would be £305,892.

We recommend installing the most cost-effective larger installations first. The cost to install the 10 highest-yielding installations would be around £60,000 and significantly reduce fuel poverty in those 10 households. If the Tenant Power tariff was used, this could be used to build up a landlord pot to either help with future capital projects or help homes in hardship.

kW Peak each installation	Number of homes	kW Peak total	Cost	plus 20% contingency	Simple Payback (years)
Under 1kW	20	18.6	£65,600	£78,720	19.8
1 to 2kW	24	44.4	£92,880	£111,456	11.7
2 to 3kW	11	29.95	£47,650	£57,180	8.9
Over 3kW	10	37.95	£48,780	£58,536	7.2
Total	65	130.9		£ 305,892	

8.3.6 Suitability of PV

We have carried out a feasibility of PV for all of Canopy's homes, See appendix C. PV is recommended where feasible as it will cut energy costs for tenants and reduce Canopy's carbon footprint. The north-facing roofs would generate around half the output of the south-facing roofs and are considered uneconomic to recommend.

The larger PV systems are the best investment and offer the biggest impact for the Tenants. These should be carried out first.

8.3.7 Third-party roof

Overall the onsite PV generation can only provide an estimated 28% of the electricity needs if the homes were all kept warm and supplied by ASHP. This is insufficient to decarbonise ahead of grid decarbonisation. It also does not help all tenants enough, especially those with north facing or obstructed roof space.

The idea of installing PV on a third-party roof in the city would offer a community share fundable option which could provide profit for shareholders and pay into a pot to help tenants in hardship.

The ideal would be a large strong roof of an occupied building where the occupants use very little of the energy in the daytime, for example a warehouse or community building. If a roof can be identified, a feasibility can be carried out.

8.4 Batteries

Battery technology has been considered for two uses:

1. Used in homes with PV to enable them to consume more of their electricity onsite, rather than purchase it expensively from the grid.
2. Used in homes without PV to enable them to consume electricity imported at night on a cheaper tariff and then used during the day.

8.4.1 Limiting the environmental damage

For this study we have used Solax triple power batteries, they are a global company producing brand new batteries, a trusted brand. However, this uses brand new materials which are environmentally damaging to mine and manufacture.



In 2025, a company called second life in Devon are working to produce repurposed car battery kits and it will be interesting to see what is available when they are ready. From our research the issues around re-purposing car batteries are around the control units which charge and discharge the batteries, as well as the product warranties. This is an emerging technology which has merit and is well worth keeping up to date with. However, it is not available yet.

8.4.2 Tenant Experience

The benefits to the tenant are purely financial through better energy pricing either by maximising onsite consumption of PV or by cycling the battery on a day and night basis.

In the best case, a saving of £219 per year could be generated based on a 5kWh battery cycling once a day, buying at night at 15p and selling at peak export price of 27p. A 13kWh battery would generate a saving of around £650.

8.4.3 Practicalities

Tariffs and control – The benefits to the tenants only present when combined with good tariffs and controls. This is possible through shopping around for tariffs and installing good controls, or through using Octopus Tenant Power controls and tariffs.

Tariffs and Pre-payment - Where pre-payment meters are in place, the only benefit to the tenant is through onsite consumption meters it is not possible to benefit from any energy exported, displacing grid electricity, and if the pre-payment meter disconnects, the battery and solar also disconnects and there is no benefit to the tenant or the grid from the battery discharging to the grid.

Space available – The batteries can be installed indoors, including in lofts or cellars or outdoors, though security should be considered when placed outdoors.

Safety – These units are CE, TUV, UN38.3 certified and are intended to be used within homes. Solax are the leading battery providers and have a good reputation.

Lifespan – These units are warrantied for 10 years and are expected to last 15.

8.4.4 Cost to Install

The cost to install a 5kWh battery is estimated to be just over £2000. To install these in 87 homes with a 20% contingency would cost £211,000.

8.4.5 Suitability of Batteries

Batteries are suitable for all house types.

Batteries would need to be set up and operated in a way which saved the tenant money without adding complication, and where the tariffs were managed for the client to allow them to enjoy the cheapest rates now and in the future.

Tenants would need to allow access to their homes for installation and for a space to be given over to batteries.

Provided this was properly carried out, and the communication was well-managed, the tenant would benefit from the installation.

8.5 Air Source Heat Pump (ASHP)

Air source heat pumps are being considered for both decarbonisation and potential money saving reasons.

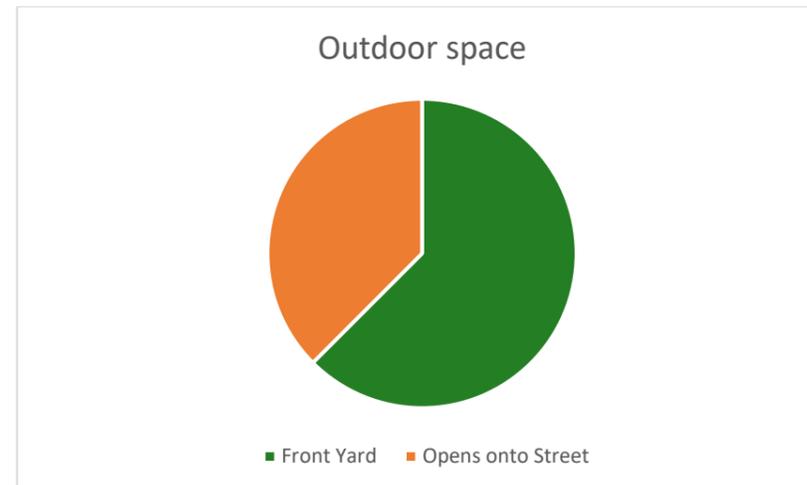


The technology can deliver a COP (coefficient of performance, the higher the number the greater the benefit of the heat pump) of 4.5 if properly sized, designed and programmed to prevent wasteful cycling of the systems. Often systems will only achieve a COP of 3 over the year as they are not optimised. We have used a COP of 4 in our calculations to be conservative. Electricity is about 4 times more expensive than gas at present, and so the unit price of space heat would be similar.

Hot water is a little more expensive, as it would either be generated by the heat pump and stored, which would incur losses, or generated by direct electricity close to where it is needed, which would not benefit from the COP.

If cooking is electric, the gas supply could be disconnected, thus saving an average of £108 annually in standing charges. However, the potential cost of completing the disconnection process will need to be investigated.

If PV provides some of the electricity, or a cheap source of electricity can be found, this technology can benefit from it.



A quick outdoor space assessment shows around 2/3rds of homes have a front yard, and some of these yards are small.

8.5.1 Limiting the environmental damage

The use of low GWP refrigerant is essential to prevent unwanted direct emissions of global warming gasses.

The units considered should use low GWP and natural refrigerants listed here:

Low GWP Refrigerant	GWP
R290 (Propane)	3
R600 (Butane)	3
R1234ze	7
R744 (CO2)	1
R32	675

The wet heating products (mono block ASHP) considered in this feasibility study use R290 Propane as a refrigerant.

We also consider a DX unit, which uses R32 contained within the outdoor unit, with heating and cooling circuits in water, meaning that the system uses a low volume of refrigerant for minimum environmental impact.

8.5.2 Tenant Experience

The tenants would have to have a water tank inside their homes, and an outdoor unit outside which would make some noise, although this will need to be minimized to be permitted development. The radiators would need to be re-piped which would cause minor disruption. This would come with a possible need to redecorate around the altered radiators. It is important that this cost is considered within the project costs and not passed on to tenants.

The controls would need to be simple enough for anyone to use, and it is likely that people will be wary of the new technology at first. Getting these set up correctly for warm homes and getting the tenant's acceptance will be a challenge.

We are recommending that for larger homes, the wet heating ASHP products are considered, which warm up the radiators to keep the whole house warm. The best way to control this for best price would be to use the Octopus Stay Cozy tariff and controls. This would allow the tenant to set the desired temperature for their house using the heating controls. Octopus would optimise the time of day the heat pump was operating to achieve this temperature for the tenants as cheaply as possible. Alternatively, those on pre-payment meters should be set up with simple controls which operate as efficiently as possible.

Considering the smaller homes, we have put some thought into the best way to serve these, and would recommend piloting a DX solution, which is normally seen in hotels and offices. These units heat or cool the air and are controlled on a room-by-room basis by the occupant. The reason we think this would be helpful to the occupants is that the heat is delivered directly to the air and does not have to warm up all the pipes in the house. These can be offered with water tanks and qualify for the boiler upgrade scheme.

8.5.3 Planning Permission

Providing certain criteria are met, ASHP installation is a permitted development. The most onerous criteria are around noise, achieving 35dB or less at the nearest neighbour's window.

Whilst this is difficult to do, this is just about achievable both on those homes with front yards and those without. We need to keep the units 3m from the neighbour's window for small homes and 4m for larger homes.

8.5.4 Practicalities

Power supplies – These ASHP units are small enough to not require a grid upgrade to each home.

Space available – The outdoor units could be mounted in the front yards where present or on the homes. There would need to be a space identified for the hot water cylinder, which could be located in an existing or new cupboard, in a loft space or in a cellar space. Each property will be different and need individual assessment.

Access for installation – The heat pump outdoor units are recommended to be ground-mounted if there is a front yard. If not, these are recommended to be wall mounted at an accessible height for maintenance. The DX units could be mounted higher up on the homes, although this would require specialist equipment for access.

Vandalism and crime – Outdoor units can be mounted in cages. For homes with front yards, these can be fenced in and are less vulnerable. For homes without front yards, these can be caged. We don't have any data on thefts or vandalism for this technology, and this risk is a clear barrier to implementation. This is one of the reasons we recommend this is piloted on homes without front yards before a full roll out.

Maintenance – Annual checks, and cleaning are required.

Lifespan – typical lifespan is 15 to 20 years.

Noise, re-piping, tariffs and controls have been covered in planning permission and tenant experience.

8.5.5 Cost to Install

The cost to install ASHP, including switching the radiators, and supplying hot water would be £12,200 to £15,000 and would be eligible for the £7,500 boiler upgrade scheme at present.

Estimate the cost to install the DX systems for smaller homes, with warm/cool indoor air conditioning with hot water tank would be less than the up to £7,500 boiler upgrade scheme, likely around £5,400 per home.

ASHP capital cost for all homes, assuming installation includes hot water and benefits from the boiler upgrade scheme is estimated to be:

Type	No. homes	System cost including hot water	Radiator upgrades	Total ASHP system cost	up to £7500 BUS	Total plus 20% contingency
1 Bed	20	£ 7,023	DX units	£ 140,460	-£ 140,460	£ -
2 Bed	40	£11,500	£ 1,400	£ 516,000	-£ 300,000	£259,200

3 Bed	12	£12,700	£ 1,800	£ 174,000	-£ 90,000	£100,800
4 Bed	16	£12,700	£ 1,800	£232,000	-£ 120,000	£134,400
Totals						£494,400

Note that the DX systems with hot water can qualify for the boiler upgrade scheme at present.

Note that redecoration around the old radiators will also be required and should not be passed onto the tenant as a cost.

8.5.6 Suitability of ASHP

ASHP is suitable technology, and if installed properly and properly-controlled can save the tenants money on their energy bills through removal of the gas and standing charge.

ASHP technology is necessary to decarbonise.

This technology is not cheap to implement however the boiler upgrade scheme helps significantly with the cost at present.

8.6 Disconnecting Gas

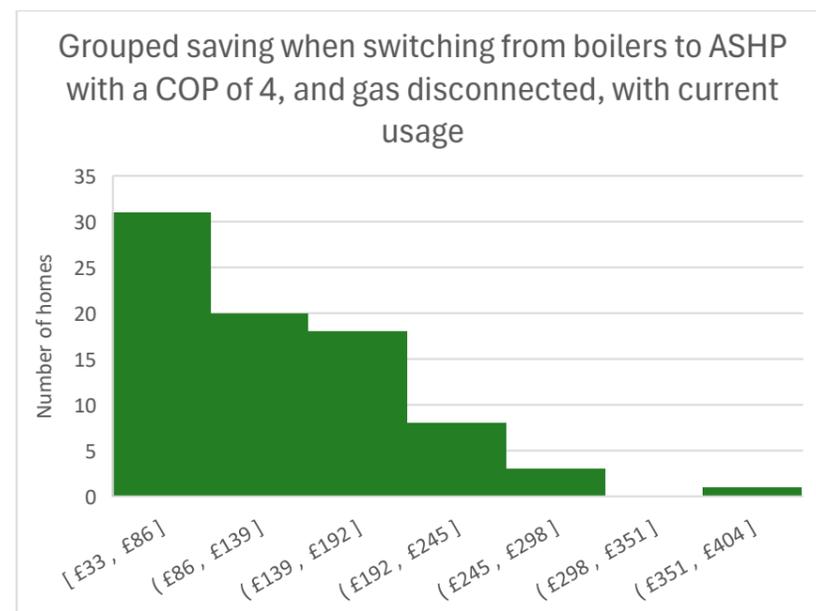
The biggest benefit from ASHP is being able to remove the gas connection (at a disconnection cost). This has a disproportionate effect on very low consuming households suspected of being in fuel poverty, as the standing charge is such a high proportion of the price they pay.

Our study uses as COP of 4 for the ASHP, which assumes that the installations can be installed and controlled efficiently.

£400 to oversee

As yet, we have found no way to avoid the gas disconnection fee.

Total cost for 87 homes with 20% contingency would be £180,000.



8.6.1 Cost to Remove the gas

Once heating and hot water have been removed from the gas.

In order to disconnect the gas, it is necessary to replace any cooking equipment with electric.

Notionally it might cost

£200 for an electrician to install a cooker connection

£200 for an electric oven

£770 + VAT for northern gas networks to disconnect the gas

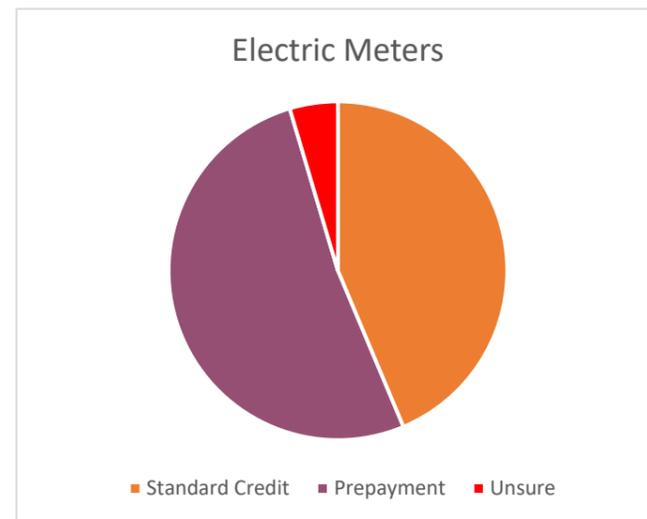
8.7 Community Energy Options

We have carried out extensive research into exploring ways to help the tenants to access better energy tariffs. It is unfair that the poorest are paying the most for their energy.

Switching energy providers in all cases will require any arrears to be cleared with the existing energy provider.

Switching tariffs takes energy and brain space from Canopy and their tenants and would need to be well managed to avoid the tenants feeling 'done to'.

We explored so many options, but in the end, the recommended options became limited to shopping around annually or a couple of Octopus Energy tariffs which are only compatible with standard



credit meters.

8.7.1 Shopping around annually for tariffs

The normal shopping around needs to be done each year and involves the tenant switching tariffs, with research suggesting that they are unlikely to find this easy to do. However, it may be possible

to support tenants through this process - and all the benefit they get will be theirs.

This is available to people on all meter types, however the best deals are available to people who have standard credit meters.

The benefit of shopping around is usually short-lived as deals tend to last a finite amount of time, and with the energy price cap competition is minimal.

8.7.2 Tenant Power and Stay Cozy

Both of these tariffs from Octopus Energy are simple for the tenant to use and do not require annual shopping around as they are pegged to a good rate. They require any arrears with existing energy providers to be cleared.

Octopus Energy take care of the billing and arrears in the normal way, and provide a statement to the landlord of what has happened in their pot, leaving very little paperwork for the landlord to do.

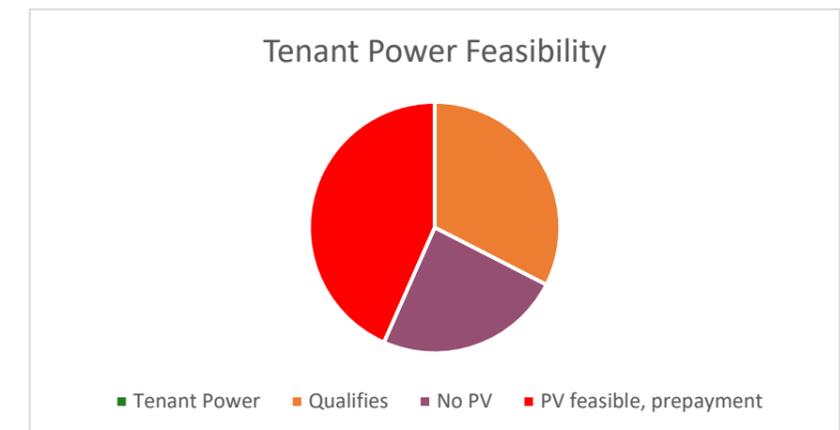
8.7.3 Tenant Power

The prerequisites for Tenant Power are a Standard Credit meter (or willingness to switch to a standard credit meter) and PV availability.

This tariff allows Octopus to use the PV (and battery, where it is available) to get the best rates for the energy.

The tenant is offered energy at a cheaper rate, and takes some benefit from the PV, whilst the landlord also builds up a pot of money. The tariff has been developed to encourage landlords to install PV, offering them some return on their investment. Canopy could then use this money to contribute towards future capital works, or to help people in hardship.

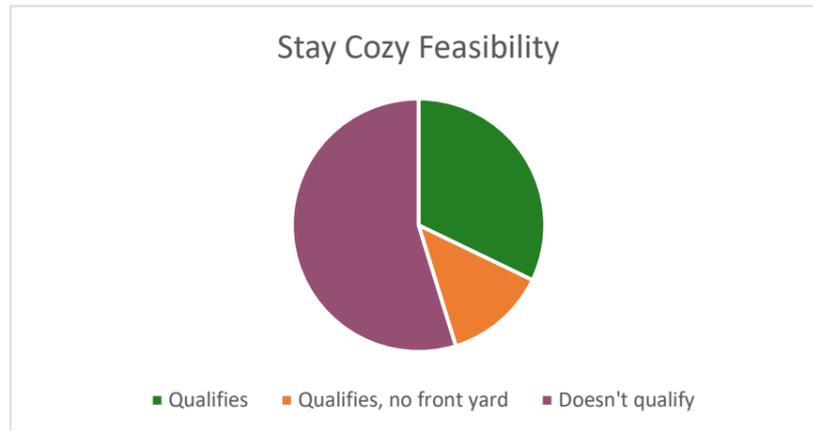
This does not work with prepayment meters. We asked if Octopus would reconsider, but the view was that when tenants self-disconnect, this disconnects the asset from the grid and the landlord won't get the return, and also this cannot offer the best prices to the tenant.



Tenant Power carries some risk of misunderstanding, as the landlord takes some of the income that is being generated into a 'landlord pot'. The tenant may perceive that it is unfair that the landlord is benefiting from the installation of solar panels on the home they live in.

8.7.4 Stay Cozy

The prerequisites for Stay Cozy are Standard Credit meter (or willingness to switch to standard credit meter) and ASHP.



The tenant sets the temperature they want the house to be at and uses Octopus compatible controls on their heating. Octopus then control the heating to make best use of cheaper energy and are able to offer tenants a cheaper bills as a result. This also carries some risk of misunderstanding/concerns as the idea of someone else "controlling your heating system" sounds a bit Orwellian, but mostly we expect tenants to be worried about not being in control of costs.

Consideration will need to be given to the fact that the majority of Canopy tenants are currently on prepayment meters. A process for supporting tenants to consider the transition away from prepayment meters would need to be developed.

8.7.5 Other economic options reviewed

We spent some time researching other economic options such as group switching and bulk purchase, however these have been ruled out.

Bulk purchase seems attractive, however the administrative burden, billing costs, risk in agreeing prices for a group of vulnerable tenants if the market is volatile all limit the benefits which can be passed onto the tenants. Overall we cannot recommend it.

8.7.6 Recommendations

If the risk of misunderstanding is managed, and the Tenant Power and Stay Cozy tariffs are clearly explained and well managed, then taking advantage of these, for the homes (32%) that it works on, will offer those tenants best long term benefits.

8.8 Other technologies reviewed

For completeness, we have reviewed the following technologies.

8.8.1 Sunamp (phase change storage system (PCS))

This technology offers no running cost benefits over a hot water cylinder and because of the high temperatures required to activate the phase change they are not a good match for heat pumps. Though other brands are now making systems that work at a lower phase change temperature, but these are still higher temperature than we could run the ASHP at for hot water generation. PCS could be considered for its space saving benefits at a later date should this be an issue.

8.8.2 PVT

Solink PVT energy collector for ground source heat pumps from Consolar. These systems use PV panels combined with thermal collectors that connect to small water(ground) source heat pump. This has the benefit of not needing an ASHP style outdoor unit to site, but it does require the indoor GSHP. The technology has not really caught on in the UK except with a few individual properties, In theory it's a workable solution for some Canopy homes where a large PV array is an option. But the vast majority would not have the area of roof required for the heat pump to operate. We have therefore worked on the basis of regular heat pumps will offer similar savings. Should a home not have a front yard, then these systems should be considered at the time of detailed assessment before installation.

8.8.3 Radiant Electric Heating

Radiant electric heating is an option that is sold as energy efficient and low cost to run. It can be correctly stated that radiant heating when used sparingly uses less energy than say a gas boiler system

to do the same job. This is because it warms up almost instantly and switches off almost instantly reducing the overall run time. However, a gas boiler system will still cost less to run as the unit price for gas is around 4 times less than electricity. In the situations where we are trying provide a greater level of warmth with greater levels of heating energy use the electric radiant saving from reduced warm up and cool down times becomes insignificant to the overall energy use and becomes significantly more expensive to run.

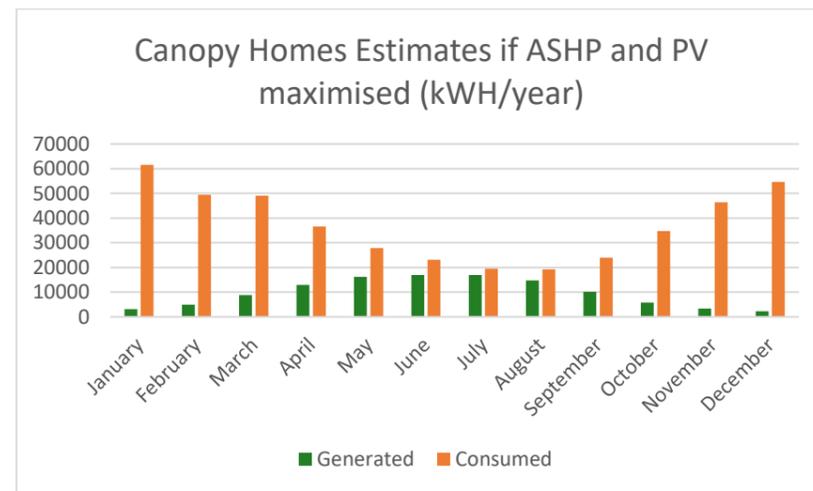
8.8.4 District Heating

With the Canopy homes being spread out and the land between a mix of private and public space, and no space for any communal plant, it is not financially or practically feasible to provide a communal energy system. The Leeds Pipes district heating system is not financially viable due to the very high connection costs and the issues with unit rates for heat that are not any less than a good gas tariff. The Leeds pipes is also primarily served by a waste incinerator so would not help with the decarbonisation aspirations. These systems have not been investigated in any detail.

9 DECARBONISATION

Our PV assessment of all the properties shows that the maximum PV likely to be practical would meet around 1/4 of Canopy tenant's energy requirements, if the homes were all converted to ASHP and kept warm. The remaining 3/4 of the decarbonisation would have to be through grid decarbonisation.

On a home-by-home basis the PV would benefit some tenants but not others.

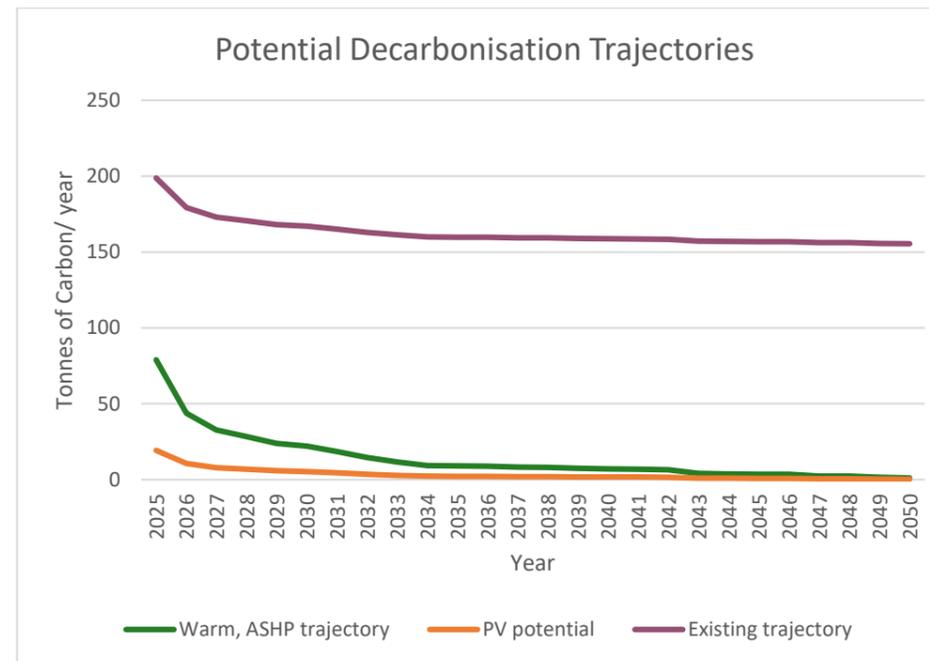


9.1 Potential Decarbonisation Trajectories

In order to decarbonise the homes, it will be necessary to use heat pump technology.

Our assessment shows that a switch to ASHP would decarbonise the homes by 60% now. The remaining decarbonisation would happen as the grid decarbonises.

This would need to be delivered in a phased way, with the consent of the tenants, and it will be important to deliver this alongside other measures which will reduce their energy bills.



10 PREFERRED SOLUTION

There are a rainbow options, with different options being appropriate for different homes. The overall solution is not simple, and instead there will be a basket of options.

10.1.1 Recommendations appropriate for all homes:

- Install heat pump technology, electric cookers and remove the gas, which will decarbonise the homes and save the standing charge, which will benefit the most fuel poor/low consumption households the most.
- Install a battery and as a minimum charge on a cheaper night-time tariff or store solar for onsite use.

10.1.2 Recommendations for heat pump technology

- For larger homes where the gas is being used, and a front yard is present, a conventional ASHP connected to radiators is recommended. The installation must be properly designed and controlled to prevent this becoming inefficient and expensive to run. Implementing Octopus' stay cosy package, which makes optimum use of cheap energy to run the heat pump, requires a standard credit meter or pre-payment meter and willingness to move onto a standard credit meter. Any arrears would need to be cleared before the tariffs could be switched and there are technological requirements alongside this which are practical to implement.
- Pilot using the conventional ASHP system as described above on some of the larger homes without front yards.
- Pilot using a DX heating and hot water systems in some of the 1-bedroom homes. These are able to be controlled by the occupant on a room-by-room basis, and warm up the air quickly when switched on. These have more of a hotel feel

to them rather than homely, however they meet all the technical requirements for decarbonising the most fuel poor homes whilst offering fully flexible heating and even cooling option to limit overheating.

- If feedback is positive for the DX heating in 1 bed homes, roll out to the remaining 1 bed homes and consider whether this is the best option for 2 bed homes also.

10.1.3 Recommendations for PV

- Install PV on the homes with the most PV potential first. Offer tenants the option to implement Octopus' tenant power package which makes optimum use of cheap energy alongside the battery. This requires a standard credit meter or pre-payment meter and willingness to move onto a standard credit meter. Any arrears would need to be cleared before the tariffs could be switched and there are technological requirements alongside this which are practical to implement.
- This package generates a landlord pot which could be used to contribute towards supporting poorer tenants with their fuel bills, or be used for future phases of capital works. Realistically this pot is likely to be modest. The complexity of the way that savings are delivered through this option needs to be carefully explained to tenants.
- For tenants keen to stay on pre-payment meters, PV should still be installed. However, it is important to note that there can be no benefit from the PV if the pre-payment meter is not topped up and self-disconnects. It is important to include batteries in these situations.
- PV should be rolled out for smaller roofs when funds allow and/or when roofs are being scaffolded for other reasons.

10.1.4 Recommendations based on fuel use observations

Energy data has been gathered and crude estimates have been made as to how much energy is likely to be needed to keep a home warm. This process contains assumptions, and not all the data is available. These are estimates and should not be considered fact, but may provide useful insights. We recommend that:

- In homes where there is an apparent under-consumption of energy, a welfare check is offered
- In homes where there is an apparent over-consumption of energy, an energy audit is offered

10.2 Tenant Experience

A key finding of our community engagement research is the importance of the tenants coming on the journey and not being done to. High importance needs to be placed on good communication and listening to tenants' concerns. The recommendations for pilot or demonstrator projects will help with better understanding of the tenants' needs and tenant experience.

Tenants would need to learn to live with new technologies and control systems in their homes, and support should be offered upfront and in subsequent months and years.

10.3 Next Steps

More work needs to be carried out to develop the recommendations into a deliverable project that is phased to deliver the work in fundable pieces.

Ideally the next tranche of work on this would include demonstrator projects to iron out the practicalities of implementing the recommended interventions, and work out what engagement work is required to ensure it is a success for the tenants.

The capital costs involved in delivering the interventions are not trivial, and the next tranche of work needs to align with the type of projects which will meet potential funders' requirements.

trivial exercise and the work for this should be properly funded to ensure success.

10.4 Conclusions and Next steps

- Identify and engage with potential funders.
- Identify specific homes for demonstrator projects and fund these along with the next phase of the study.
- Engage with the tenants in these homes and see if there is a willingness to participate in these bundles of work.
- In due course: Measure the outcomes including tenant experience and financial performance of the demonstrator projects and share knowledge and experience with other housing associations and community groups.
- Package together phases of work which are fundable and appeal to the potential funders identified.

10.5 Capital Costs of the demonstrator projects

We recommend that the next steps include demonstrator projects, to gain a better understanding of the practicalities and tenant experience ahead of a wider roll out of these measures.

Demo	Install ASHP /DX heating and hot water	Benefit from BUS	Switch Cooker	Disconnect gas	Install PV	Install battery	Total including 20% contingency
4 bed home	£12,700	-£7,500	£400	£ 924	£4,910	£2,022	£16,147
1 bed home	£7,023	-£7,023	£400	£ 924	£4,910	£2,022	£9,907

In addition to these measures, we recommend that processes are put in place to support tenants to consider switching to Tenant Power/Stay Cozy tariffs where appropriate. This would not be a

11 APPENDIX A – CANOPY TENANT RESEARCH REPORT FINAL

11.1 The aim of this research

The primary aim of this research is to better understand the reality of Canopy tenants, in relation to how they heat their homes & pay their energy bills. These insights can then inform the future development of low-carbon heating solutions which provide direct benefits to tenants (and which do not result in negative impacts - such as higher energy bills or colder homes).

Canopy has a goal to do as much as possible to decarbonise its properties - first of all through taking a fabric-first approach based on retrofitting its homes - many of which are hard-to-treat back-to-back properties - and then by exploring low-carbon heating and energy generation opportunities.

Together, we are aiming to further Canopy’s understanding of the best ways to decarbonise their housing stock - in ways that also provide direct benefits to tenants - such as:

- Warmer, more comfortable homes
- More affordable energy bills
- Potentially, access to financial benefits as stakeholders in community energy business models

It is widely recognised that the transition away from traditional forms of heating homes - including gas boilers - has the potential to make life more difficult for social housing tenants who are on low incomes and in fuel poverty. At the same time, as a society we need a rapid & widescale transition away from carbon-intensive ways of heating our homes. It is in this context that we are working with Canopy to find ways to support a fair, affordable transition away from fossil

fuels, which contributes to our societal response to the climate emergency.

11.2 Wider context - the Climate Emergency, Net Zero targets, and homes

We are in a Climate Emergency and as a society we need to transition away from fossil fuels at pace over the next decade. In the UK home heating accounts for 18% of greenhouse gas emissions - and as such represents a key sector where significant progress is required. Historically, progress on decarbonising homes, e.g through improved insulation, has been patchy, due to a number of factors including poorly-designed Government programmes & the challenges of retrofitting hard-to-treat homes, particularly in the rented sector.

Whilst there remains some uncertainty about targets and policies (for example in relation to the phasing out of gas boilers, or the EPC requirements for rental properties), it is clear that decarbonising the nation’s housing stock will be a major focus of our approach to reducing carbon emissions and tackling the climate emergency.

11.3 Information about Canopy’s housing stock, and information about tenants

Canopy currently own or have long leases on 81 properties, of which:

- 20 have one bedroom
- 36 have two bedrooms
- 13 have three bedrooms
- 12 have four bedrooms

In summary, approximately 70% of their properties have one or two bedrooms. Various research reports point to the fact that smaller households - in particular single person households - are more likely to experience fuel poverty and have difficulty paying their energy bills due to lower household incomes.

Canopy data suggests that currently 27 of their 81 households have at least one adult who is in work. This means that 54 households - 66% of households - do not have anyone in paid work and are therefore reliant on benefits. Widespread research confirms that households that are reliant on benefits are particularly vulnerable to issues relating to fuel poverty and difficulty paying energy bills.

Canopy data relating to requests for food vouchers during 2025 shows that 16 (20%) of households have requested at least one food voucher this year - and of these, 12 (75%) are households that are reliant on benefits. This data helps to illustrate that households without an adult in work are most likely to struggle to pay all their bills, including their energy bills.

Canopy undertook a tenant survey in 2021 - which had a response rate of 16%. Whilst this doesn’t give a full picture - it points to some broad trends which are in line with what is outlined above:

85% of respondents were either on a key and card pre-payment meter, or a smart pre-payment meter. All other respondents were billed monthly. This data illustrates that tenants are mostly paying a “poverty-premium” - as pre-payment and monthly-billed customers are usually on higher tariffs than customers who pay by direct debit. Wider research confirms that many pre-payment meter customers use “energy rationing” (effectively cutting themselves off by not feeding the meter) as a way to manage their bills. Standing charges continue to be accrued, even when the energy supply is effectively disconnected.

78% of respondents said that they struggle to afford to pay their gas and electricity bills some or all of the time.

31% of respondents described their home as “cold” - (compared to 54% who described it as warm).

Close to half of respondents (46%) were interested in renewable energy options, such as solar panels (most of the other respondents didn't know).

Only 23% of respondents would like Canopy to provide them with a tumble dryer to dry their clothes - even though many homes lack outdoor space in which to dry clothes. This is likely to be because of concerns about the costs of using a tumble dryer - pointing to anxiety around the affordability of energy bills.

In summary, data shared by Canopy confirms that many of their tenants experience difficult financial circumstances, which can result in difficulties keeping their homes warm and comfortable, and in challenges paying their energy bills. The high number of households that are reliant on benefits, and the large number of smaller households, point to the importance of exploring future energy options which do not risk pushing tenants further into poverty. In short, it is clear that a clear strategy around ensuring a fair and affordable transition away from fossil fuels for Canopy tenants is of vital importance.

11.4 Secondary research - fuel poverty and behaviours re heating and paying bills

There is a large amount of in-depth research into the typical behaviours and strategies of people in fuel poverty - in relation to how they manage their energy bills and heat their homes. Given the demographics of Canopy tenants, and based upon previous

anecdotal feedback from tenants, it can be assumed that a significant proportion of Canopy's tenants will act in at least some of the ways highlighted by the research.

Typical behaviours in relation to how people heat their homes, highlighted in research reports (which are referenced at the end of this report) include:

Many low-income households deliberately underheat their homes to manage bills, leading to uncomfortable and unhealthy living conditions.

Strategies can include turning heating off even when cold, going to bed early to stay warm, leaving curtains closed all day, and leaving the house to avoid using heating at home.

Following steep energy price rises in 2022, there has been a significant reduction in reported thermostat setpoints, with the proportion of households setting temperatures below the recommended 18°C increasing substantially. Research suggests that low-income and single-person households disproportionately set these low thermostat setpoints.

Significantly, given the focus of this research, typical heating practices can conflict with low-carbon systems such as heat pumps. The typical behaviour of using gas boilers for short, intense bursts of heat conflicts with the optimal, continuous operation of low-temperature heat pumps. This can lead to heat pumps being switched off or not used optimally, increasing fuel costs and decreasing the comfort and warmth people experience in their homes.

It is also increasingly recognised that households with health conditions or complex needs may struggle to adapt to new behaviours required for optimal heat pump use.

Low income households in fuel poverty **experience particular challenges in relation to paying their energy bills**, such as:

Prepayment meter users (who make up the majority of Canopy tenants) are vulnerable to self-disconnection due to lack of credit, which is problematic for systems requiring continuous running, like heat pumps.

Fuel-poor households are disproportionately likely to be in debt to their energy supplier, which can restrict them from switching to more suitable energy tariffs for new low-carbon systems, such as variable tariffs.

Low income households are more likely to lack understanding of and engagement in retail energy markets, preferring not to be "active" consumers - and are therefore less likely to switch to new suppliers or tariffs.

11.5 Secondary research - issues with the transition away from gas boilers & other fossil-fuel powered systems, particularly for people in fuel poverty

As highlighted above, the transition away from traditional ways to heat homes (primarily gas boilers) to low-carbon technologies such as heat pumps could potentially have a range of negative impacts on people on low incomes in rented homes. There is extensive research on this topic (referenced at the end of this report), relating to previous experiences of low carbon retrofits, and some of the issues are summarised below.

Despite their energy efficiency, heat pumps often result in higher running costs than gas boilers due to the UK's electricity-to-gas

price imbalance, where electricity can be four times more expensive per kWh when compared to gas.

There is a significant risk of (or at least concern amongst tenants about) rent increases following energy efficiency improvements, which could entirely negate any energy bill savings for tenants, thereby having an impact on tenant wellbeing and exacerbating their financial vulnerability.

Fuel-poor households often struggle with complex controls of new heating systems like heat pumps, and may need more support to understand and effectively operate them. A lack of knowledge can lead to inefficient use, inadvertently increasing bills, or non-use of the system entirely.

Although it is recognised that Canopy work hard to build strong, trusting relationships with tenants, the complex nature of the relationship between landlord and tenant can create barriers to engagement in the process of introducing low carbon technologies.

11.6 Secondary research - best practice guidance to inform Canopy's approach

Whilst recognising the challenges inherent in the transition to low-carbon energy solutions for Canopy's homes, it is clear that with a thoughtful approach Canopy could pioneer a tenant-centred strategy for helping people to reduce their energy bills, enjoy more comfortable, warmer homes, whilst also reducing the carbon footprint of Canopy's housing stock.

There is extensive research which highlights best practice in relation to effective involvement of low-income tenants in the process of decarbonising their homes. Some of the key learnings are listed below, with relevant research reports referenced at the end of this report.

It is vital to prioritise a "Warmth First" Approach: the fundamental goal of decarbonisation should be to achieve genuinely warmer homes and better outcomes for tenants, rather than merely serving as a way to reduce carbon emissions from Canopy housing stock.

There should be active tenant involvement in decision making. Tenants should be included in decision-making processes regarding the placement of items such as heat pumps or batteries - balancing their needs and preferences with technical requirements for effective operation of the systems.

There should be a concerted effort to actively involve residents in design processes, for example, by encouraging the formation of a tenant group - or strengthening existing approaches to tenant engagement. Canopy's values and self-help ethos provide a strong foundation for working in this way.

It is important to provide detailed, tailored, and repeated explanations and demonstrations on how new heat pump systems operate, their running costs, and how they differ from traditional heating systems. It is important that this support is offered pre and post installation - and also during the first winter season after installation. This is crucial because fuel-poor households often struggle with complex controls and may revert to inefficient use or non-use if not properly informed. This can increase costs for tenants and have maintenance implications for the systems themselves.

It is also important to be clear and realistic with tenants about the scope, duration, and potential disruption of works to install low-carbon technologies - including associated works for "making good" after the installation (such as redecorating). Clear, timely communication is essential to minimise disruption for tenants.

Alongside the strategies listed above, it is also good practice to use your platform as a respected social housing provider to advocate for reforms to energy pricing, such as shifting environmental and social levies from electricity bills to gas bills or general taxation, so that low-carbon heating could be genuinely cheaper to run for tenants. Similarly, supporting campaigns by organisations such as Fair By Design for the introduction of a more affordable social tariff, is an important way to encourage wider systemic changes that can benefit Canopy tenants on low incomes. You may also seek out opportunities to advocate for changes to the existing EPC system - which currently demonstrates a bias against low-carbon technologies.

It is clear that tenants' financial circumstances will need to be taken into account during the process of transition to low-carbon systems - a process which already forms part of how Canopy offers support to its tenants. This is particularly important in this context as households in arrears may be restricted from switching to more suitable tariffs for low-carbon technologies, such as Time of Use tariffs.

Canopy staff are well-trained in supporting tenants who are experiencing financial issues, and as part of this process it will be important to review and further strengthen current support that is offered via Canopy and partner organisations. This includes support in relation to income maximisation - such as benefit entitlement checks, Warm Home Discount applications etc. This process of deeper engagement with tenants can be seen as an opportunity to improve tenants' overall financial resilience.

Alongside the installation of new energy systems in their homes, people with lived experience of fuel poverty and living on low incomes should be offered the opportunity to be involved in shaping solutions and addressing injustices in the wider energy system. This

could be, for example, by being supported to engage with key stakeholders such as the Leeds Poverty Truth Commission or Fair By Design on issues such as social tariffs and the “poverty premium”.

11.7 Opportunities & recommendations

In summary, the opportunity for Canopy appears to be in pioneering the design of a tenant-focused, relational approach to introducing low-carbon measures, ensuring that tenants experience the benefits of warmer, more comfortable homes, and more affordable energy bills.

In developing this approach, Canopy can provide a range of benefits to tenants, whilst also reducing the carbon emissions associated with its portfolio of homes. It can also demonstrate leadership in the social housing sector - encouraging other housing providers to develop similar approaches to creating a fair, affordable transition for low-income tenants.

In developing and communicating its intention to adopt this approach to decarbonising its housing stock, it is hoped that Canopy could be successful in attracting funding for the process of ensuring a fair and affordable transition.

Such a process of deep tenant engagement will require staff time, and other resources dedicated to meaningful tenant engagement and support - and this process could form the basis of future funding bids. As the need to decarbonise the country’s housing stock becomes ever-more urgent, it is clear that the risks of implementing measures which could negatively impact on low income tenants will increase.

In this context, the leadership of values-led organisations such as Canopy will be crucial, and, hopefully, attractive to funders

interested in a just transition which has meaningful citizen engagement & buy-in.

There are opportunities to train, upskill and recruit Canopy staff to help to design and implement this person-centred, inclusive, relational approach to ensuring a fair, affordable transition away from fossil fuels. Similarly, there may be scope to support a role such as a “tenant champion” - encouraging peer to peer support amongst tenants.

There may also be opportunities to get involved in collaborative projects which are exploring innovative approaches to retrofitting social housing in a more relational, people-centred way, such as the Relational Energy Group project.

Given the wide recognition of the risks associated with this transition, a project such as this from Canopy may well be attractive to funders that have an interest in ensuring a just transition for people on low incomes.

11.8 References

To compile this report, the following articles, reports, websites and projects were reviewed:

Retrofit for All Toolkit - Carbon Co-op

Project Heat Pump - Carbon Co-op & the Levenshume Area Based Retrofit Scheme

Centre For Sustainable Energy - Smart And Fair - and Phase 1 report & Phase 2 report

The Right Time For Heat Pumps - The Passivhaus Trust

Settling for colder homes as energy prices rise: evidence from 4200 households in Great Britain Clare Hanmer and Ellen Zapata-Webborn via National Energy Action.

Making Heat Pumps Work For Fuel Poor Households - National Energy Action

Low Carbon Housing For People On Low Incomes - Joseph Rowntree Foundation

National Energy Action - UK Fuel Poverty Monitor

National Energy Action (NEA) response to Review of the Fuel Poverty Strategy – Summary

Fair By Design - Response to DESNZ consultation on review of the Fuel Poverty Strategy for England

Rethinking retrofit: Relational insights for the design of residential energy efficiency policy - Donal Brown et al

Inside Housing - Engaging Residents in Decarbonisation - roundtable.

Retrofit Reimagined - designing policy that works for people and place - Lighthouse

Shelter - Building Climate Justice Report

12 APPENDIX B – COMMUNITY ENERGY MODELS RESEARCH

12.1 Executive Summary

This research addresses "community energy" broadly, focusing on three key questions:

1. How Canopy tenants can purchase energy at the cheapest possible rate using innovative tariffs, technology, potential inclusive bills rental models, and collective energy purchasing.
2. Innovative business models for energy generation that could bring additional benefits to Canopy tenants.
3. Opportunities for Canopy to develop or invest in community renewables projects and benefit from local low carbon energy infrastructure.

Domestic energy bills remain high - currently 51% higher than in 2021/22. While the energy regulator, Ofgem, has taken action to tackle the "prepayment premium" which has historically resulted in higher tariffs for prepayment meter (PPM) customers, PPM households still often lack access to innovative tariffs.

Data analysis indicates that the mean total annual energy bill for a Canopy property is around £1480. This is approximately 11% lower than the national forecast, pointing to the fact that people on low-incomes underheat their homes, whilst also potentially reflecting the positive impacts of previous retrofit interventions. Low-income households are disproportionately affected by fixed standing charges, which made up 16% of a typical bill in April-June 2024, as they typically use less energy.

In our research we explored various tariff types and approaches to reducing bills:

- **Social Tariffs:** these are popular with campaign groups and would be below the cheapest available rate for those in fuel poverty, but the Government appears to have no current plans to consult upon the introduction of such tariffs.
- **Zero Standing Charge Tariffs:** These tariffs could benefit low-usage customers who struggle with standing charges, especially those who self-disconnect. However, fixed costs would be recovered through a higher unit rate (per kWh), potentially resulting in relatively higher bills during periods of greatest need (e.g., cold weather). A zero standing charge tariff, if a decision is made to introduce it, should be available by January 2026.
- **Time of Use (ToU) Tariffs:** These tariffs, which charge less during off-peak periods, are becoming more common. However, research suggests that low-income households are less likely to access the benefits of ToU tariffs due to factors like appliance limitations, inflexible daily routines, or a lack of the "cognitive bandwidth" required to actively manage energy consumption. It is acknowledged that poor implementation of innovative tariffs could increase inequality.
- **Collective Switching:** Current savings gained from switching supplier are often limited due to the price cap mechanism, particularly for low energy consumers. Collective switching can potentially provide some savings - but may meet with resistance from tenants. If a 10% saving on the average Canopy bill was possible, this might save a tenant £120 to £150 per year.
- **Inclusive/Zero Bills Models:** Inclusive bills models are deemed unlikely to be feasible in the social housing context,

partly because Local Housing Allowance cannot be used for energy costs.

Our research emphasises the importance of finding ways to equitably share the benefits generated from renewable energy installations.

- **Tenant Power Tariff:** Launched by Octopus Energy, this tariff is aimed at social housing providers who install solar and battery systems, offering tenants a discount of "up to £200 per year" compared to a standard variable tariff.
- The Tenant Power tariff offers the potential for Canopy to use the income generated by solar energy to equitably support all tenants with their energy bills, rather than just those whose homes have panels installed.
- It is evident that clear communication is critical to manage tenant expectations regarding "free energy" and how the benefits of solar generation will be shared.

The transition to low-carbon infrastructure presents opportunities for Canopy:

- The Government's Local Power Plan aims to accelerate local renewable energy projects and offers opportunities for Local Authorities and Community Energy Groups to access funding and support.
- Canopy could apply for a Stage 2 Development Grant of up to £100,000 from the Great British Community Energy Fund to further investigate technology selection and develop a full investment business plan.
- Government proposals are exploring mandating community benefit funds and shared ownership opportunities for low-carbon energy infrastructure, potentially providing Canopy

with a future source of funding for retrofit work or fuel poverty alleviation.

- Canopy could explore investing in local private-sector-led renewable energy projects, which could generate returns used to offer financial or in-kind support to tenants. Alternatively, Canopy could fund its own project through a community share offer, potentially accessing the Booster Fund.

Given the rising financial pressure on households, continued support for tenants to ensure they are on the most affordable tariffs and accessing benefits remains vital. Further engagement with Octopus Energy is recommended to understand the realistic financial savings achievable for Canopy's tenants under the Tenant Power tariff, given that they are mostly low consumers of energy.

Although savings from switching suppliers may be minimal while the price cap is in place, there is value in staff remaining aware of available tariffs - so they can support tenants to benefit from a fair and affordable transition. Alongside this, it is important that Canopy continues to explore ways to share the benefits of future energy generation equitably among all tenants.

12.2 Introduction

Having considered various themes within the original brief which in broad terms relate to “community energy”, we have developed three questions which include the various questions highlighted in the brief, and which form the basis of this phase of research:

1. Research how Canopy tenants can purchase energy at the cheapest possible rate using innovative tariffs, technology, potential inclusive bills rental models & collective energy purchasing.

2. Research innovative business models for energy generation which could bring additional benefits to Canopy tenants.
3. Research opportunities for Canopy to develop or invest in community renewables projects, and opportunities to benefit from the development of local low carbon energy infrastructure.

We identified a fourth question, based upon the original brief - *Investigate the feasibility of solar panels and batteries for Canopy properties*. This is being considered elsewhere in this project, as part of the research into the feasibility of various low-carbon energy generation systems.

We acknowledge that the term “community energy” is a broad one and can include a wide range of initiatives and approaches. Based upon the broad scope of questions in the original brief, we have taken a broad perspective on “community energy”, so that we can include consideration of the following:

- Opportunities for Canopy in relation to community-led local energy generation and storage, which offer benefits to tenants and the organisation itself.
- Innovative, co-operative, tenant-focused approaches which aim to reduce energy bills for tenants.
- Opportunities for Canopy and its tenants to benefit from local private-sector-led renewable energy projects - in the context of Government proposals to introduce mandatory community benefits and shared ownership opportunities.

12.3 Research how Canopy tenants can purchase energy at the cheapest possible rate using innovative tariffs, technology, potential inclusive bills rental models & collective energy purchasing.

12.3.1 Context

Domestic energy bills have increased significantly over the last five years - with the average annual bill currently 51% higher than in 2021/22. This impact has been felt by all households, but in particular by people on low incomes - who are more likely to manage their energy consumption with prepayment meters. Historically households paying their bills via prepayment meters or on receipt of a three-monthly bill have paid higher tariffs than customers paying by direct debit - who have been able to access a broader range of tariffs.

However over the last few years the energy regulator, Ofgem, has taken action to tackle this “prepayment premium”, most recently by introducing an annual “levelisation charge” of £10 on the bills of direct debit customers, which has resulted in lower bills for prepayment meter customers when compared to direct debit customers. It is forecast that for the period July to September 2025 average prepayment meter bills will be around 3% lower at £1,672, versus £1,720 for direct debit. More information is available in this [House of Commons Library](#) report).

For comparison, we estimate the average annual energy bill for Canopy tenants to be around £1480 - approximately 11% lower. This is likely to reflect the greater incidence of people on low incomes underheating their homes - and may also reflect the work that Canopy has done to improve the energy performance of their homes.

Whilst progress has been made with regards to the “prepayment premium”, another impact for prepayment meter customers is that they do not necessarily have access to all of the tariffs that are available to consumers - including a range of more innovative tariffs that are being introduced. It is also suggested in various research reports that households on lower incomes are less likely to switch to a new supplier - thus losing the potential opportunity to save money.

Research undertaken as part of this piece of work suggests that Canopy tenants get their gas and electricity from at least twelve different energy suppliers - including some that specialise in offering prepayment meters. Whilst the difference between tariffs will currently be limited, due to the ongoing price-cap mechanism, there may still be opportunities to help tenants to switch to a better tariff - either via a prepayment meter or by switching to another payment method.

12.3.2 Social tariffs - and zero standing charge tariffs

The rising cost of energy over the past five years has resulted in increasing interest in the development and introduction of tariffs which could make energy bills more affordable for people living in fuel poverty.

Much of this research is led by [Fair By Design](#) - an organisation focused on tackling the “poverty premium” in essential services such as energy, credit and insurance.

Alongside a number of other organisations, they have advocated for a [social tariff](#) - a tariff which is typically below the price of the cheapest available energy tariff and targeted at those living in fuel poverty or on a low income.

It appears that the Government has no current plans to consult upon the introduction of a social tariff, despite ongoing advocacy from a number of campaign groups, alongside [calls for action from a number of MPs](#). The current approach appears to focus primarily around offering targeted support with bills via initiatives such as the [Winter Fuel Payment](#) and the [Warm Home Discount](#).

Within this context, continued support to Canopy tenants around income maximisation - to ensure that households access any benefits to which they are entitled, will be important.

Alongside advocating for a social tariff, organisations such as [National Energy Action](#) highlight how [the current system of standing charges](#) is particularly unfair to people on low incomes who tend to use less energy.

Figures for the period April to June 2025 show that average standing charges are 53.8 pence per day for electricity and 32.7 pence per day for gas. Standing charges are a fixed cost, meaning customers pay them regardless of energy consumption, and they made up 16% of a typical bill in April-June 2024.

Low-income households typically use less energy when compared to the average household, so a higher proportion of what they pay annually goes towards standing charges.

Lower usage customers are often on prepayment meters and must pay these standing charges in advance before they can access energy in their home. This can mean households that haven’t used any energy, particularly gas, over a period of time accrue unmanageable standing charges which they are likely to struggle to clear.

Within this context, Ofgem recently [held a consultation](#) regarding a proposal to introduce a requirement that energy suppliers must offer

at least one lower standing charge tariff. The proposal was generally [welcomed by consumer groups but suppliers raised a number of concerns](#).

Whilst it seems that a zero standing charge tariff could potentially benefit households that use less energy, it is important to note that a zero standing charge tariff would generally lead to a more expensive unit rate (per kWh), as the fixed costs previously covered by standing charges would need to be recovered through consumption-based charges. This could potentially still benefit households who effectively self-disconnect from gas for long periods - but would result in relatively higher bills during periods of greatest need (e.g. during a prolonged period of cold weather).

The introduction of a zero standing charge tariff is now subject to another consultation, and if introduced, [should be available by January 2026](#).

12.3.3 Rising block tariffs

Alongside social tariffs and zero standing charge tariffs, various campaigning groups advocate for the introduction of other tariffs, including a rising block tariff.

[Rising block tariffs](#) - which offer a cheaper rate for an initial monthly fixed block of energy, are popular in other countries and have been promoted by organisations including [New Economics Foundation](#) - through their [National Energy Guarantee](#) campaign.

Whilst there is considerable support for rising block tariffs amongst campaign groups, one of the main suppliers that is currently offering innovative tariffs, Octopus, [suggest](#) there is a “cliffedge” for consumers with rising block tariffs - and they favour time-of-use tariffs more.

Yet, from an affordability and fairness perspective, it is important to recognise that research suggests that people on low incomes are less likely to access innovative tariffs such as time of use tariffs. This is because they are often seen as more complicated, may require reliable broadband or a smartphone app, and shifting energy consumption to other times often requires a level of “cognitive bandwidth” that people living in challenging circumstances may not always have.

As this market develops, it is also possible that some of the more innovative, cheaper tariffs will not be available to people with prepayment meters - or who are paying their bills quarterly in arrears.

This context acts as a reminder of the need to acknowledge the lived reality of people in poverty - including Canopy tenants - and the need to fully consider the “user experience” of switching to a more innovative, potentially cheaper, tariff. If a switch to a different tariff results in more difficulties for a tenant, and potentially limited savings or no savings at all, this could not be considered to be in line with the principles of a “fair and affordable transition”.

12.3.4 Time of use (ToU) tariffs

A type of tariff that is becoming increasingly common - and is likely to become more common as we continue to transition to more renewable energy generation - is [Time of Use tariffs](#).

A Time of Use tariff charges a higher price for any electricity used during periods of high demand - e.g. 4 - 7pm. It also charges a lower price during lower demand, off-peak periods.

Given that these tariffs are likely to become more common, it will be important for Canopy to understand where there may be potential

to encourage tenants to consider switching to them - particularly in homes where solar panels or heat pumps are installed.

However, there is evidence (for example via the [Centre for Sustainable Energy's Smart and Fair programme](#)) that low income households are less likely to be able to shift their energy consumption and access the benefits of time of use tariffs, for various reasons including:

Appliance limitations: older or less efficient appliances may not have smart features or timers to schedule usage.

Daily routines: Work schedules, childcare responsibilities, or health conditions might limit the flexibility to use energy during specific off-peak windows.

“Cognitive bandwidth”: Households facing financial stress or challenging circumstances may lack the time or mental capacity to actively monitor and manage their energy consumption to make the most of ToU tariffs.

It is clear, if not implemented well, that the roll-out of innovative tariffs could increase inequality, and fail to benefit people in fuel poverty.

Consideration will need to be given to this when exploring the potential savings that Canopy tenants could make - as it is possible that “real-life” savings may turn out to be less significant than those achieved by people with the capacity to make the most of the flexibility offered by time of use tariffs - and who are typically using more energy than households in fuel poverty.

But given that time of use tariffs are likely to become more common, it will be important for Canopy to consider opportunities to support tenants to make the most of these tariffs. This could be, for example, by supporting them to fully understand how such tariffs

work, or perhaps by offering assistance with purchasing items such as white goods with delay timers.

12.3.5 Tenant Power tariff

[Tenant Power](#) is a new tariff, launched in May 2025 by Octopus Energy, which [aims to](#) “offer tenants in social, affordable and shared ownership housing a discount on their energy bills of up to £200 per year compared to a standard variable tariff”.

In summary, a landlord installs an approved solar and battery system - and then the tenant signs up to the [Octopus Tenant Power tariff](#).

The discounted rate for tenants is set by the landlord and depends on the number of solar panels, the size of the battery and the share taken by the landlord.

As part of this research, we met with Nigel Banks from Octopus Energy, to better understand this tariff and to explore other potential opportunities for future collaboration.

Once LEDA have identified homes which could potentially benefit from solar panels and batteries, Nigel has offered to provide illustrations of how this could work in practice. Given that we have energy use data for the majority of Canopy homes, we should be able to provide a more realistic estimate of the potential savings that could be shared with tenants and earned by Canopy.

Given that energy use by Canopy tenants is relatively low - and the roof space for solar panels is often limited on a typical Canopy-owned terraced home, it will be important to get a more detailed understanding of how much of a saving can be expected, in return for the investment into solar panels and battery systems.

As this is a tariff aimed at social housing providers that are installing solar panels and battery systems, it is clearly worth further consideration. Future discussions with Octopus could include exploring the following:

More detailed estimates of the amount of income that could be shared from typical Canopy solar & battery systems - based on the energy generated by the installations that are proposed by LEDA.

More detailed estimates of the potential savings that could be made by tenants. Research that has been undertaken as part of this project suggests that typical energy usage by Canopy tenants is below the UK household average - and therefore potential savings may be lower. "Up to £200" could, potentially, be quite a bit less than £200.

Detail in relation to the requirement to switch to the Tenant Power tariff will need to be explored. It is unclear whether this tariff is compatible with prepayment meters - which are the current preference of many Canopy tenants. Meanwhile, it is likely that any tenants who are in debt to their current supplier would be unable to switch.

There are also practical and ethical considerations around requiring tenants to switch to a particular supplier. This process would require careful engagement with tenants - to help them to fully understand the potential benefits of switching to the Tenant Power tariff.

12.3.6 Tenant Power and equity considerations

There is a broader question for Canopy to consider within this project - in relation to how the benefits of energy generation on Canopy homes are shared amongst tenants.

In short, should the benefits of this energy generation only be felt by tenants whose homes have solar panels installed? Or should the benefits of solar generation be shared equitably by all Canopy tenants, regardless of whether solar panels are installed on their particular roof?

It would seem more equitable to share the benefits of solar generation amongst all Canopy tenants. The Tenant Power tariff appears to offer the potential to do this - as Canopy could decide the level of discount that is offered to each tenant.

For example, *(these figures are hypothetical - but could be explored further in more detailed discussions with Octopus)*, Canopy could decide to take all of the income from the energy that is generated by solar panels on homes that it owns.

Canopy may then decide to retain some of this income (to contribute towards payback on the investment) and then use the rest to equitably support all tenants with their energy bills (e.g. by offering all tenants £50 off their annual bill).

It is clear that more detailed work would need to be carried out to better understand how this tariff could work for Canopy and tenants. But it certainly appears to be worth exploring further - and Octopus are happy to explore this in more detail with you to help you to make an informed decision.

12.3.7 The importance of effective engagement with tenants regarding solar energy generation

It is clear, from evidence from other solar schemes on social housing, that good communication about what happens to the energy generated by solar panels on a tenant's home is vital.

It would appear, for example, that there was significant miscommunication between the landlord and tenants on the high profile [Penderi solar installation](#) by [Pobl](#) in Wales.

As outlined in this case study, this project aimed to install solar panels and batteries in all suitable homes, alongside an "intelligent heating management system", which, in conjunction with [an app](#), helps residents to manage and measure their energy use. The technology [aims to](#) "enable everyone in the development to benefit, whether they have panels on their roofs or not."

However, [their FAQ page](#) states: "We have heard very clearly that not everyone was aware that there would be a charge for their solar electricity. We can only apologise to those of you who didn't feel that this was clear from the beginning, and we completely understand your frustration and anger about this. It was never Pobl's intention to fit this technology into anyone's home who didn't understand what the project is about, and how it works."

We do not have more detailed information on exactly what happened with this project, but it is clear that there has been a significant misunderstanding amongst tenants with regards to the benefits they would receive from having solar panels on their roofs. It is clear that effective communication with Canopy tenants will be vital - in particular in relation to how much "free" energy householders can enjoy, and how the income from the sale of any excess energy will be shared.

12.3.8 Solar sharing tariff

In our initial scoping discussions, Octopus Energy's [Solar Sharing tariff](#) was mentioned as one that we should explore further in this research.

Through this tariff, Octopus customers can donate the income that they receive from selling excess energy back to the grid - with donations going either to [National Energy Action](#) or the [Octopus Assist Fund](#).

There appear to be no current plans to expand this scheme - for example by offering the opportunity to donate to other organisations - such as Canopy. Nonetheless, it is possible that in the longer term schemes such as this will be expanded - and it could be a way for Canopy to generate income - which could be used to fund initiatives to support tenants.

12.4 Technology

In the original brief, a question was asked in relation to “technology associated with energy acquisition which will complement renewable energy, battery storage options, to benefit those in fuel poverty.” This is assumed to refer to battery technology.

Our study considers the benefits to tenants from battery technology either to store PV to be consumed onsite, or to purchase energy at a cheaper price at night and consume or export during the day.

The example we give is for a 5kWh battery which is cycled once a day with a night time purchase price of 15p per kWh and an export price at peak times of 27p would have an annual benefit of £219.

12.4.1 Inclusive bills rental models

As part of this research, we also considered “inclusive bills” rental models, which are common in some parts of the private sector - including in the student rental and build to rent markets.

Within this model, bills such as energy and broadband are bundled together alongside rent in one monthly payment. This can provide benefits to the tenant with regards to budgeting, as there is a level

of certainty in relation to monthly payments - which will not increase above a set, pre-agreed amount (as long as energy consumption is classed as “fair use”).

Whilst there are clearly some benefits to tenants of this inclusive bills model (particularly in shared accommodation, such as shared student homes), it tends to only work with private sector rentals, where rents are much higher than in the affordable housing sector.

Given that Local Housing Allowance cannot be used to contribute towards energy costs, it is unlikely that this model would be feasible in a social housing context. This could only be feasible if Canopy were to secure funding to support tenants’ energy bills, but it seems unlikely that a funder would cover such a liability.

For these reasons, we have discounted this option as one that could be worth further exploration by Canopy.

A similar model which is being explored, particularly in relation to new builds, is the Zero Bills model, which is being offered by Octopus Energy.

12.4.2 Zero bills model

Their [Zero Bills](#) model is being trialled by Octopus Energy, primarily in new-build homes - with the installation of solar panels, batteries and heat pumps, alongside insulation.

Due to the roof configurations it is not possible to fit the PV systems required to meet the standard which would make offering a zero bills model feasible.

For this reason we have not considered this model in any more detail - but believe that initiatives such as [Tenant Power](#), which has been explored above - could be more relevant to Canopy.

12.4.3 Collective energy purchasing/collective switching

We investigated the potential to save money on energy through bulk purchase. This involves purchasing energy in advance to satisfy the demand from the tenants, and individually billing tenants at a cheaper rate for their energy.

We gathered information through an energy broker about carrying this out on the national grid using multiple locations and meters as well as speaking with a landowner about their experience of bulk purchase on a host of private wire sites, and came to the conclusion this is not a practical option which we can recommend.

Whilst the initial kWh energy cost price looked attractive, the risk, responsibility, paperwork, billing, and general uncertainty around this would not be appropriate to recommend for a social housing provider with vulnerable tenants, and would not be economic on this scale.

There are other group switching options available which tenants could opt for on an individual basis, which remain an options, although anecdotally are not sources of significant savings.

12.4.4 Gas usage

The total annual gas usage of 86 properties for which information was available is 647,860 kWh, which means that the mean gas consumption for these properties is 7,713 kWh.

For comparison, the UK average annual gas consumption for a medium-sized household is around 11,500 kWh, according to EDF Energy.

The typical current charge for gas is approximately 6.33p per kWh. Meanwhile, the average annual standing charge for gas is

£108.84. We can therefore estimate the mean annual gas bill for a Canopy property to be £597.

12.4.5 Electricity usage

The total annual electricity usage of the 86 properties that were surveyed is 203,637 kWh.

The mean annual electricity consumption of these homes is 2425 kWh

The typical price per kWh of electricity is currently around 25.73p, whilst the typical annual standing charge for electricity is £187.50.

We can therefore estimate that the mean annual electricity bill for properties is £811.

12.4.6 Estimate of typical energy bills for Canopy tenants

Therefore, the mean total energy bill for a Canopy property is likely to be around £1480.

We can estimate that the total amount paid in energy bills by Canopy tenants is likely to be around £127,000. This figure may be helpful when exploring any future options for collective energy purchasing.

Helping tenants to secure a 10% saving on their bills - e.g. through better tariffs or collective switching, could save the average tenant around £120 to £150 per year.

12.4.7 Options for collective switching

We explored the option of collective switching for Canopy Housing as a group with our energy broker, however this is not practical and cannot be recommended.

There are other options that could be potentially considered by tenants themselves - such as involvement in the [Big Community Switch](#) service that Leeds City Council promotes to householders - which is run by [iChoosr](#).

Tenants could also be supported by Canopy staff to personally review who they get their energy from - using easily available online resources such as [Money Saving Expert's Cheap Energy Club](#).

However, it is worth acknowledging that given the current price cap mechanism, the savings that can be gained from switching are often limited - particularly given that householders on low incomes are typically relatively low energy consumers. Householders can also be reluctant to switch because of the perceived inconvenience that is involved in switching - and they are likely to be unable to switch if they are in arrears with their current supplier.

12.4.8 Conclusions

Given the significant and rising financial pressure that many households - including Canopy tenants - are facing - it is clear that there will be a continuing focus on finding ways to support people with their energy bills.

Efforts within the energy system to reduce the "prepayment premium" are welcome - particularly as the majority of Canopy tenants currently use prepayment meters.

Continuing to provide support to tenants - to ensure that they are on the most affordable tariff, will be important. Similarly, support with management of energy arrears - alongside other debt issues - will continue to be important.

It seems likely that Government support will in the short to medium term primarily be provided via the energy price cap mechanism and

via interventions such as the Warm Home Discount. A social tariff appears unlikely to be introduced in the short to medium term. In this context, continuing to provide support to tenants to help them to access any benefits to which they are entitled will be vital.

It is likely that there will be continued innovation in relation to other tariffs - in particular Time of Use tariffs. It is important to note that research suggests that households on low incomes are less likely to fully benefit from flexible tariffs such as Time of Use tariffs. This will require ongoing engagement with tenants - to understand their needs and to explore how best to support them to access new tariffs. Some tariffs may not be available to customers on prepayment tariffs - or customers in debt to their current supplier. Tenants will need continued support to gain access to the best deals that are available to them.

The Tenant Power tariff is worth exploring further - as it is likely that Canopy will seek to install solar panels and battery systems in some of its homes. Undertaking further research - in conjunction with Octopus - to better understand how much of a saving could be made by tenants will be important.

Continuing to explore options for collective energy switching - either by Canopy negotiating a deal with a broker - or by actively encouraging tenants to participate in collective switching schemes - may also have some value - although it is worth recognising that the savings that are possible are likely to be minimal whilst the energy price cap mechanism is in place.

In summary, it is likely that there will be continued innovation in relation to tariffs - and it will be important for Canopy staff to remain aware of this - so they can effectively support tenants. Nonetheless, given the relatively low energy consumption of a typical tenant, it is

important to be realistic about how much of a financial saving can be offered by a switch to a different tariff or supplier, particularly whilst the price cap mechanism is in place. Broader support to tenants around income maximisation will likely remain the most impactful support that can be provided by Canopy staff.

12.5 Research innovative business models for energy generation which could bring additional benefits to Canopy tenants.

The main focus of our research for this theme relates to the question of how to ensure that the benefits of the transition to renewable energy generation are shared equitably amongst all Canopy tenants.

There are questions to explore with regards to how the benefits of energy generation are shared:

- Should tenants whose homes have solar panels (and potentially battery systems) receive free electricity?
- Who should receive the income from the sale of excess electricity to the grid? Should the tenant benefit from this, or the landlord, or both? Or should this income be shared equitably with all tenants, regardless of whether their home has solar panels?
- Is it fair to seek to increase the rent on a home which has had renewable energy measures installed? Or, should the rent be reduced, given (potentially) the loss of some usable space to battery storage, the perceived/real inconvenience of having this system installed, or the benefits enjoyed by

the landlord (such as income from the sale of excess energy)?

These are questions which will require deeper consideration by Canopy, in association with tenants. To help to inform these discussions, we can look at examples in the broader social housing sector.

Housing association [Hanover Scotland](#) developed [an innovative approach to sharing fairly the benefits of solar generation](#) with all residents at its Kelvin Court development, which consists of 35 flats (some of which have solar panels on their roofs, whilst others do not). More information on this development is available [here](#).

For this project, they partnered with [Allume Energy](#), who have developed a system called [Solshare](#) - a [Solar PV Sharing Device](#) that physically splits the energy from a single rooftop solar system and divides it between multiple dwellings.

Whilst it is clear that this system is not appropriate for Canopy's needs (as Canopy has multiple houses in various neighbourhoods, rather than one development of flats), we can take inspiration from the principles behind the project - which aims to share the benefits of solar energy generation equitably amongst all tenants, whether or not they have solar panels on their particular property.

The [Penderi](#) project, previously highlighted in this report, offers another example of a project which is aiming to share equitably the benefits of solar installations with all tenants - some of whose homes have solar panels, whilst others do not.

[According to Sero](#), who provide the technology behind the scheme, "...the technology we have created enables everyone in the development to benefit, whether they have panels on their roofs or

not. Every resident will see a reduction in their energy bills and usage."

We have been unable to find an evaluation of how the project is working in practice - although as highlighted earlier in the report, [there have clearly been some issues around communication with tenants](#), particularly around the energy generated by the solar panels.

Whilst this particular technology is unlikely to be appropriate for Canopy (with lots of individual properties spread across the city), it would seem that the [Tenant Power](#) tariff, explored elsewhere in this report, could offer the potential to offer a similarly equitable sharing of the benefits of solar generation.

At the same time, as has been explored earlier in this report in relation to the Penderi project, it will be important to communicate clearly with tenants who have solar panels installed on their homes, and to manage expectations around "free energy". The concept of sharing the benefits equitably amongst tenants is attractive in theory, and likely to be in sympathy with Canopy values - but it may require a certain amount of explanation, to avoid misunderstandings amongst tenants.

12.5.1 West Yorkshire Housing Partnership - Solar PV and Battery Storage project

[This project](#) has recently received support from West Yorkshire Combined Authority to install solar panels and battery systems on up to 1500 social housing properties.

WYCA will invest £5,000,000 directly into 500 of the total 1500 solar PV and battery storage installations. The project aims to deliver 5.43MW of solar installations and CO2 savings of 915 tonnes per annum in total. [The programme overview](#) suggests it is also

expected to achieve annual bill savings of between £180,000-£270,000 for participating residents by March 2026.

The project partners are Together Housing Association, Connect Housing, Leeds Federated Housing, and Wakefield and District Housing.

More information about the contract and the suppliers that will be installing the systems is [here](#).

As this is a local, large-scale project, installing solar panels and batteries on social housing, it should provide opportunities for Canopy to learn about how to successfully implement a similar project.

We have scheduled a meeting with Martyn Broadest from Connect Housing, who is also a Canopy Board member, to find out more about the project and to identify if there any opportunities for Canopy to learn from this project - or other potential benefits (such as identifying potential suppliers with experience of working with social housing clients).

The project may also offer insights into a financial model which could equitably share benefits between tenants and landlords. WYCA documentation suggests that they will be receiving a return on their £5 million investment - a return which will be presumably balanced against the savings for tenants that are highlighted above. It will be interesting to see if the project includes adoption of the Octopus Tenant Power tariff - and if so, how this transition to a new energy provider and tariff is negotiated with tenants.

Learning from the implementation of this project may prove valuable to Canopy as it develops its own similar project.

In summary, Canopy will need to continue to consider how best to ensure that all tenants can benefit, in a fair and equitable way, from the transition to more low-carbon energy generation. Other projects in the social housing sector demonstrate how technology is being used to offer a way to share these benefits equitably. Whilst these particular technological solutions may not be appropriate for Canopy’s particular circumstances, it seems clear that there will be other appropriate solutions in the short to medium term - with the Tenant Power tariff offering one immediate option to consider further.

12.6 [Research opportunities for Canopy to develop or invest in community renewables projects, and opportunities to benefit from the development of local low carbon energy infrastructure.](#)

12.6.1 [Context - Great British Energy, The Local Power Plan and community energy](#)

The main opportunities for Canopy in relation to community energy relate to the Government’s [Local Power Plan](#), which was [announced](#) last year at the launch of [Great British Energy](#).

The Government [states that](#) Great British Energy’s mission is to “drive clean energy deployment to create jobs, boost energy independence, and ensure UK taxpayers, billpayers and communities reap the benefits of clean, secure, home-grown energy.”

A key part of this mission is the development of the [Local Power Plan](#), which, according to the Government, “will put local authorities and communities at the heart of restructuring our energy economy.

The plan will give them a stake in the transition to net zero as owners and important stakeholders in local clean power projects.”

The Government also states that “The plan aligns with the UK’s broader ["Clean Energy Superpower Mission"](#) and ["Clean Power 2030 Action Plan"](#), aiming to accelerate the deployment of low-carbon energy infrastructure. It seeks to boost energy independence, reduce reliance on imported fossil fuels, and **ensure a fairer distribution of costs and benefits from the energy transition.**

Great British Energy [says](#) that, “Through partnering with and providing funding and support to Local and Combined Authorities and Community Energy Groups, the Local Power Plan will roll out small and medium-scale renewable energy projects, using established technologies, to develop up to 8 GW of cheaper, cleaner power. This will include shared ownership projects in partnership with private developers. This will support a more decentralised and resilient energy system, with more local generation and ownership.”

Elsewhere, the Government has spoken of wanting there to be 'a million owners' of community energy projects by 2030.

To set this in context, it is estimated that the community energy sector generated 398 MW of energy in 2024 - so an increase in generating capacity to 8 GW by 2030 would equate to a twenty-fold increase in the sector’s capacity over the next five years - and enough to power up to 4.35 million homes.

The Local Power Plan [outlines](#) that Great British Energy will “support local and combined authorities, and community energy groups in accessing funding, [... and] also provide commercial, technical and project-planning assistance, increasing their

capability and capacity to build a pipeline of successful projects in their local areas.”

[Elsewhere](#), the Government has also referenced offering £600 million in grants for local authorities and £400 million in low-interest loans for community groups annually. The importance of affordable and patient finance is widely recognised, as outlined in [this Joseph Rowntree Foundation thinkpiece](#). This is likely to involve the scaling up of initiatives like the [Great British Community Energy Fund](#) which provides grant support for community-led clean energy projects - and which, through [North East and Yorkshire Net Zero Hub](#), has [funded](#) this piece of work via a [Stage One Feasibility Grant](#).

Clearly the main opportunity here for Canopy is to consider the recommendations of this report, to decide upon next steps and then apply again to the Great British Community Energy Fund.

[Stage 2 Development Grants](#) of up to £100,000 are also available to “enable more detailed investigation into the key areas of technology selection including [...] developing a full investment business plan.” [The website states](#) that applications will be accepted on a rolling basis until 12th November 2025.

Other sources of grant funding that may be worth considering include the [Energy Redress Scheme](#). Canopy has [previously secured £200,000](#) via this fund.

In 2024 the Energy Redress Scheme launched a [Just Transition Fund](#). The first round of this fund closed in November 2024 and there is currently no information available as to when a second round may open - but this could potentially be a good source of funding for a Canopy project which has a just transition focus.

In summary, it is to be hoped that over the coming months and years there will be a significant increase in the funding and business support available to organisations such as Canopy that wish to develop community energy projects. Continuing to engage with the [North East And Yorkshire Net Zero Hub](#) is obviously a priority - as is bidding for a [Stage 2 Development Grant](#). Engaging with other sources of support, such as [Community Energy England’s webinar series](#), will be valuable - as will continuing to engage with the Leeds Community Energy project co-ordinated by Lucy Meredith.

12.7 Opportunities to benefit from local renewable energy projects

As well as getting directly involved in community energy projects, there may be opportunities for Canopy to benefit from **mandatory community benefit funds** and **shared ownership opportunities** for low-carbon infrastructure, which are currently being explored by the Government.

In May 2025, the Government published a working paper - [Community Benefits and Shared Ownership For Low Carbon Energy Infrastructure](#).

The paper considers mandating the provision of community benefit funds for low carbon energy infrastructure - aiming to create a “level playing field” for developers and ensure consistent, fair, and tangible benefits for communities that host energy infrastructure.

Community benefits are currently provided on a voluntary basis, but are inconsistent across sectors and locations. Scotland and Wales have existing voluntary frameworks and guidance, whilst internationally, some countries such as Ireland have implemented mandatory schemes.

Two potential models for calculating contributions are being considered: based on installed capacity (£/MW) or actual generation output (£/MWh). It is envisaged that a developer would establish a Community Benefit Fund for its project - and would work with local community representatives to design the Fund, agree priorities etc.

The paper suggests that the earliest that a Mandatory Community Benefits Scheme could come into force would be 2027.

Whilst it is clear that this strategy is still at the design stage, it would seem to present potential opportunities for Canopy - relating to potentially securing funding via a Mandatory Community Benefits Scheme that is run by a local renewable energy project. It is feasible, for example, that Canopy could receive funds from such a scheme to support ongoing retrofit work on its homes, or to provide other support to tenants relating to fuel poverty alleviation.

12.7.1 Potential opportunities to invest in local renewable energy projects

Alongside the potential opportunities relating to receiving funding via a Mandatory Community Benefits Scheme, there may also be opportunities for Canopy to invest in local private-sector-led renewable energy projects.

The [Community Benefits and Shared Ownership For Low Carbon Energy Infrastructure](#) paper, published in May 2025, explores how local communities could become investors in local schemes, promising, according to Government, benefits such as:

Local financial benefits over the lifetime of the project - supporting the development of a **just transition**, where benefits are shared

Increasing community acceptance of renewable energy infrastructure near to where they live

The paper references examples of shared ownership - including the [Forest Gate Solar Farm](#) - which is due to be completed in 2026 and which will include a 10MW community share - which is expected to “generate an estimated £5 million over the project's 40-year lifetime from a 10MW community share.”

Another recent example of a renewable energy investment opportunity is [Thrive Renewables](#), who recently launched a £5 million share offer via [Triodos Bank's crowdfunding platform](#).

Clearly, any such investments by Canopy would need to be considered as part of the organisation's wider financial strategy - alongside legal advice relating to the organisation's ability to invest. There are of course risks in any investment - as recently highlighted by [Ripple Energy entering administration](#). Nonetheless, it seems clear that investment in local renewable energy projects offers the potential to generate returns, which could, for example, be used to offer financial or in-kind support to tenants, in a similar way to how returns from [this Welsh Government investment in a community energy project](#) are funding work on fuel poverty reduction.

12.7.2 Funding a Canopy-led community energy project through a community share offer

One way for Canopy to develop its own community energy project could be to launch a [community share offer](#).

There are examples of community energy projects which have successfully raised finance through a community share offer, such as Reading Hydro, which raised a total of £1.2 million through three community share offers - whilst also receiving [Booster Fund](#) investment.

Closer to home, [Leeds Community Homes](#) successfully raised [£360,000 through a community share offer in 2017](#) - with money mainly raised from local people.

Development Grants of up to £15,000 are currently available via the Booster Fund to develop a community share offer, and it is also possible to apply for equity match investment of up to £100,000 (with typical match investments £20k -£50k). The Co-ops UK website indicates that they are “particularly interested in projects that address climate change issues”.

Alongside community shares, there are other examples of social housing providers using social finance to fund solar panels on homes - including [Energise Barnsley's solar bond](#). Energise Barnsley is a community benefit society and its most recent bond raised £3.3 million to support the installation of solar panels on 1000 council homes. The amount raised included a £1 million grant from the [Energy Redress Fund](#). Sources of ongoing income for the project include the [Smart Export Guarantee](#), whilst tenants receive free use of generated electricity. Previous Energise Barnsley projects have installed batteries in 150 homes - although they did not install batteries as part of their latest project.

Energise Barnsley also have a [Community Fund](#) which supports a number of local projects including some which aim to tackle fuel poverty. Surplus income from the project (including a significant amount from Feed in Tariffs - which are no longer available to new projects) contributes to this fund.

It is important to acknowledge that a number of projects installing solar panels on social homes - including [Leeds City Council's installation of panels on 1000 homes in 2015](#) - were undertaken at a time when [Feed In Tariffs](#) were available. A different business model is required - but the reducing costs of solar panels and

batteries, alongside possible funding streams - mean that it is still feasible to develop a project which can generate benefits for tenants and for the organisation.

In summary, the Government's ambitions around a twenty-fold increase in the capacity of the community energy sector offer a positive context within which Canopy could explore involvement in the development of renewable energy infrastructure - either directly on Canopy homes, as a separate project, or potentially as an investor in a local project. However, it is clear that projects such as these would require significant investment - and would therefore need to be considered carefully as part of the organisation's wider financial and business strategy.

12.8 References

The following reports, websites and documents were reviewed as part of this research

12.9 Projects

[West Yorkshire Housing Partnership - Solar PV and Battery Storage](#)

[Progress on UK's first community energy sharing scheme - elemental](#)

[Generating Hope | Localis](#)

[Barnsley Solar Bond Series III Offer](#)

[Emergent Energy](#)

[Penderi case study](#)

[Market Assessment for Financing Solar Power on Council Housing at Scale](#)

[Net-Zero Accelerator Oldham | Carbon Co-op](#)

[Stoke-on-Trent residents to sue council over 'mis-sold' solar power contracts](#)

12.10 Think pieces and research reports

[IS A SOCIAL TARIFF FOR ENERGY FEASIBLE AND EFFECTIVE? - York Research Database](#)

[Standing charge - National Energy Action \(NEA\)](#)

[New energy social tariff would lower bills for low income households. - Fair By Design](#)

[Smart prepayment customers' experience of the Demand Flexibility Service | Nesta](#)

[Energy Networks, Justice and Vulnerability](#)

[Community energy and low-income households | Joseph Rowntree Foundation](#)

<https://www.linkedin.com/pulse/energy-networks-justice-vulnerability-rvate/>

[A relational approach to prosuming through energy communities: The case of CIREN in France - ScienceDirect](#)

[Community Energy in Action: Demonstrating the value of community-led solutions to net zero](#)

[Solving the Cost of Living Crisis: The case for a new social tariff in the energy market - Barrow Cadbury Trust](#)

[Closing the fuel poverty gap: A plan for targeted energy support - Public First](#)

12.11 Government initiatives and consultations

[Community benefits and shared ownership for low carbon energy infrastructure - GOV.UK](#)

[Great British Energy founding statement - GOV.UK](#)

[Improving the Energy Efficiency of Socially Rented Homes in England - GOV.UK](#)

[DESNZ Solar Roadmap](#)

12.12 Other

[100k Zero Bills homes by 2030 | Octopus Energy](#)

[Energywise \(also known as Vulnerable Customers and Energy Efficiency\) - UKPN Innovation](#)

[Energy Redress: Carbon Emissions Reduction Priority Just Transition Fund Supplementary Guidance](#)

13 APPENDIX C – PV RAPID ASSESSMENT

Address	Postcode	Quick assessment number of panels	Quick assessment number of panels	kW peak achievable (ballpark estimate for feasibility)	Roof Orientation	Roof width (m)	Roof slope length (m)	Roof slope length on google (m)	Roof pitch (assumed roof pitch)	Roof pitch in radians	Kwh Electricity taken from Billing Information Tab	Notes	Capital costs estimate, not specific quotation	Government MCS data estimate	Octopus installation data estimate	Leeds Solar data estimate	General Comments from Leeds Solar	
	LS6 1RA	1	3	475	1.425 West	3.7	4.7	4.07	30	0.52	1398.40	Central Velux prevents more than 1x row of 3no panels below calculation **Structural assessment needed of dormer roof - large load due to Ballast with Flat roof mounting (124,88 kg per	£ 2,674	£ 5,587	£ 5,530		We assume scaffolding is to be included in the solar quote, however if scaffolding is up for another reason this would be a good time to add solar	
	LS6 1RB	1	0	0	0 West		0.0				1175.80		£ -	£ -	£ -		Panels are 1.91m wide (500W) or 1.7m wide (475W)	
	LS6 1RH	1	8	500	4 South East	4.6	4.7	4.1	30	0.52	330.00	4 panels across, 2 rows	£ 7,506	£ 7,295	£ 4,910		On tile roofs panels are portrait unless otherwise stated	
	LS6 1QP	1	0	0	0 North East		0.0				5939.70	Only NE facing roof, shaded by chimney	£ -	£ -	£ -			
	LS6 1RA	1	0	0	0 North West		0.0				1395.10	Only NW facing roof, shaded by chimney calculation **Structural assessment needed of dormer roof - large load due to Ballast with Flat roof mounting (124,88 kg per	£ -	£ -	£ -			
	LS6 1RB	1	0	0	0 South East		0.0		30	0.52	1232.50	with Flat roof mounting (124,88 kg per calculation **Structural assessment needed of dormer roof - large load due to Ballast with Flat roof mounting (124,88 kg per	£ -	£ -	£ -			
	LS6 1QP	1	0	0	0 North East		0.0				5918.80	with Flat roof mounting (124,88 kg per calculation **Structural assessment needed of dormer roof - large load due to Ballast with Flat roof mounting (124,88 kg per	£ -	£ -	£ -			
	LS6 1RB	1	0	0	0 South East		0.0		30	0.52	71.20	with Flat roof mounting (124,88 kg per calculation **Structural assessment needed of dormer roof - large load due to Ballast with Flat roof mounting (124,88 kg per	£ -	£ -	£ -			
	LS6 1RD	1	0	0	0 North West		0.0		30	0.52	620.90	with Flat roof mounting (124,88 kg per calculation **Structural assessment needed of dormer roof - large load due to Ballast with Flat roof mounting (124,88 kg per	£ -	£ -	£ -			
	LS6 1RB	1	8	500	4 North West	5.7	4.9	4.23	30	0.52	717.40	2 rows of 4 panels, as close to neighbouring property edge as possible to reduce shading from chimney to the South calculation **Structural assessment needed of dormer roof - large load due to Ballast with Flat roof mounting (124,88 kg per	£ 7,506	£ 7,295	£ 4,910			
	LS6 1RD	1	0	0	0 North West		0.0		30	0.52	2134.30	with Flat roof mounting (124,88 kg per calculation **Structural assessment needed of dormer roof - large load due to Ballast with Flat roof mounting (124,88 kg per	£ -	£ -	£ -			
	LS6 1RE	1	6	500	3 North West	5	4.8	4.2	30	0.52	1491.80	2 rows of 3 panels, as close to neighbouring property edge as possible to reduce shading from chimney to the South	£ 5,629	£ 7,295	£ 4,370			
	LS6 1NR	1	4	500	2 South East	2.6	6.3	5.2	35	0.61	803.20	1 x row of 4no panels above lower chimney up to end chimney, house to North of photo	£ 3,753	£ 5,587	£ 3,830			
	LS6 1NP	1	8	500	4 South East	4.8	5.8	5	30	0.52	5352.60	2 rows of 4 panels strung with the top row as 1 MPPT string & bottom row as 2 MPPT string to mitigate shading	£ 7,506	£ 7,295	£ 4,910			
	LS6 1QA	1	4	475	1.9 North East	3.2	4.9	4.28	30	0.52	737.80	2 rows of 2 panels possible but NE facing	£ 3,565	£ 5,587	£ 3,790			
	LS6 1QG	1	4	500	2 South West	3.2	5.1	4.4	30	0.52	2486.40	2 rows of 2 panels, as close to North chimney as possible to reduce shading from dormer to the South	£ 3,753	£ 5,587	£ 3,830			
	LS6 1PP	1	2	500	1 South	4.4	1.3	1.15	30	0.52	733.50	Row of 2 panels above dormer in landscape	£ 1,876	£ 3,163	£ 3,290			
	LS6 1QD	1	4	500	2 South	3.2	4.8	4.2	30	0.52	3957.80	2 rows of 2 panels	£ 3,753	£ 5,587	£ 3,830			
	LS6 1QJ	1	6	500	3 East	4	4.7	4.1	30	0.52	1864.10	2 rows of 3 panels	£ 5,629	£ 7,295	£ 4,370			
	LS11 7DX	1	5	500	2.5 South East	4	5.0	4.3	30	0.52	5425.20	1 row of 3 panels below chimneys + 1 rows of 2 panels	£ 4,691	£ 7,295	£ 4,310			
	LS11 6JD	1	4	500	2 South	2.2	5.4	4.7	30	0.52	2717.40	Column of 4 panels Landscape, to left of dormer	£ 3,753	£ 5,587	£ 3,830	Landscape Panel Orientation		
	LS11 6JD	1	4	500	2 South	5.8	5.4	4.7	30	0.52	1040.70	Column of 4 panels Landscape, right of dormer	£ 3,753	£ 5,587	£ 3,830	Landscape Panel Orientation		
	LS11 6JP	1	2	500	1 South	2.4	5.5	4.8	30	0.52	4119.00	1 column of 2 panels between dormer and chimney	£ 1,876	£ 3,163	£ 3,290			
	LS11 6HU	1	8	500	4 West	5.4	5.1	4.4	30	0.52	1054.90	2 rows of 4 panels calculation **Structural assessment needed of dormer roof - large load due to Ballast with Flat roof mounting (124,88 kg per	£ 7,506	£ 7,295	£ 4,910			
	LS11 6JN	1	0	0	0 North		0.0				0.00	4278.00	panel)	£ -	£ -	£ -		

LS11 6JS		1	3	475	1.425	East	4	5.8	5	30	0.52	5814.90	1 row of 3 panels in above dormer	£ 2,674	£ 587	£ 3,530		
LS11 6JY		1	4	500		South	2	2.4	5.1	4.4	30	0.52	2882.00	2 rows of 2 panels north side of velux	£ 3,753	£ 587	£ 3,830	
LS11 6LF		1	6	475	2.85	East	6	4.7	4.1	30	0.52	1094.00	1 row of 4 panels above & 1 column of 2 panels between veluxes	£ 5,348	£ 7,295	£ 4,310		
LS11 6DA		1	2	475	0.95	North	4	5.2	4.5	30	0.52	3842.30	1 row of 2 panels in landscape above dormer	£ 1,783	£ 163	£ 3,270	Landscape Panel Orientation	
LS11 6EG		1	3	500	1.5	West	4.2	5.3	4.6	30	0.52	4984.60	Column of 2 panels north side of velux, 1 panel below chimney south side of velux	£ 2,815	£ 587	£ 3,560		
LS11 6HT		1	0	0	0	West	4.9	4.5	4.5		0.00	3718.80	**Structural assessment needed of dormer roof - large load due to Ballast with Flat roof mounting (124,88 kg per m²) - see example data set calculation	£ -	£ -	£ -		
LS11 6HT		1	0	0	0	West	4.9	5.2	4.5	30	0.52	3721.10	**Structural assessment needed of	£ -	£ -	£ -		
LS11 6HD		1	6	500		North	3	4.5	4.6	4.6	0.00	4593.70	2 rows of 3 panels NB: not lots of roof penetrations on g-maps overhead - just pigeons!	£ 5,629	£ 7,295	£ 4,370		
LS11 7EL		1	1	500	0.5	East	13.9	6.4	5.5	30	0.52	620.00	1 row of 3 panels above dormer, 1 panel run to 44a inverter	£ 938	£ 163	£ 3,270		
LS11 7EL		1	2	500	1	(flat)	13.9	6.4	5.5	30	0.52	1540.80	1 row of 3 panels above dormer, 2 panels run to 44b inverter	£ 1,876	£ 163	£ 3,290		
LS11 7EL		1	1	500	0.5	(Flat)	13.9	6.4	5.5	30	0.52	1217.20	1 panel left of hip	£ 938	£ 163	£ 3,270		
LS11 9LU		1	4	500	2	East	5	5.2	4.5	30	0.52	1755.20	1 row of 4 panels, towards ridge below vent tiles **OR 2 rows of 4x 500Wp panels if panels can be fitted over the vent tiles	£ 3,753	£ 587	£ 3,830		
LS11 0AR		1	0	0	0	North	5.2	4.8	4.2	30	0.52	1123.60	**Structural assessment needed of dormer roof - large load due to Ballast	£ -	£ -	£ -		
LS11 0AR		1	4	500	2	North	5.2	5.1	4.4	30	0.52	957.90	1 row of 4 panels, towards ridge below vent tiles **OR 2 rows of 4x 500Wp panels if	£ 3,753	£ 587	£ 3,830		
LS11 0AR		1	8	500	4	South	6.2	6.0	5.2	30	0.52	2656.80	2 rows of 4 panels	£ 7,506	£ 7,295	£ 4,910		
LS11 9LT		1	5	475	2.375	East	6	5.2	4.5	30	0.52	2525.80	1 row of 3 panels above velux, 1 panel either side of velux	£ 4,457	£ 7,295	£ 4,310		
LS11 6HS		1	3	475	1.425	East	4	5.5	4.8	30	0.52	2076.80	1 row of 2 panels below velux, 1 panels above velux	£ 2,674	£ 587	£ 3,530		
LS11 6EN		1	2	500	1	East	6.4	5.2	4.5	30	0.52	3667.20	1 row of 2 panels below dormer NOT viable - see example data set calculation	£ 1,876	£ 163	£ 3,290		
LS11 0DG		1	0	0	0	South	4.3	6.1	5.3	30	0.52	3188.20	**Structural assessment needed of dormer roof - large load due to Ballast	£ -	£ -	£ -		
LS11 7DX		1	2	475	0.95	West	4	4.8	4.2	30	0.52	1998.80	column of 2 panels right of velux Column of 2 panels to South side of dormer, 2 x panels in landscape between gutter & dormer	£ 1,783	£ 163	£ 3,270		
LS11 9LG		1	4	500	2	West	5.8	5.2	4.5	30	0.52	3424.00		£ 3,753	£ 587	£ 3,830		
LS11 7PD		1	3	475	1.425	West	4	2.0	1.75	30	0.52	Unavalle	Central velux prevents PV, 1 row of 3 panels below velux	£ 2,674	£ 587	£ 3,530		
LS11 0AW		1	5	475	2.375	South	5.4	5.8	5	30	0.52	2491.00	1 row of 4 panels above veluxes, 1 panel between veluxes	£ 4,457	£ 7,295	£ 4,310		
LS11 8TW		1	0	0	0	West	5.6	5.5	4.8	30	0.52	2163.60	**Structural assessment needed of dormer roof - large load due to Ballast NOT viable - see example data set calculation	£ -	£ -	£ -		
LS11 9LX		1	0	0	0	East	5.5	5.5	4.8	30	0.52	1548.80	**Structural assessment needed of dormer roof - large load due to Ballast	£ -	£ -	£ -		
LS11 0AU		1	2	475	0.95	North	5.4	4.5	3.9	30	0.52	7111.00	1 row of 2 panels in landscape above dormer	£ 1,783	£ 163	£ 3,270	Landscape Panel Orientation	
LS11 6EE		1	2	500	1	East	4.8	5.5	4.8	30	0.52	6067.70	1 landscape panel above velux, 1 portrait panel north side of velux	£ 1,876	£ 163	£ 3,290	Landscape Panel Orientation	
LS11 6NA		1	2	500	1	West	6	5.0	4.3	30	0.52	428.60	Column of 2 panels between dormer and SVP	£ 1,876	£ 163	£ 3,290		
LS11 7DT		1	5	500	2.5	West	5.4	5.8	5	30	0.52	774.00	2 rows of 2 panels right of SVP, 1 panel above velux left of SVP	£ 4,691	£ 7,295	£ 4,310		
LS11 0DG		1	8	475	3.8	East	4.5	5.3	4.6	30	0.52	2574.00	2 rows of 2 panels Heavy shading from chimney Possibly not viable**	£ 7,130	£ 7,295	£ 4,830		
LS8 3QS		1	2	475	0.95	East	6	5.2	4.5	30	0.52	1378.70	**NB: Large tree needs to be cut back to below gutter level to reduce shading impact on PV.	£ 1,783	£ 163	£ 3,270	**NB: Large tree needs to be cut back to below gutter level to reduce shading impact on PV.	
LS9 6AF		1	2	500	1	West	5.8	6.0	5.2	30	0.52	1620.00	Column of 2 panels above dormer as close to neighbouring property line as possible away from dormer.	£ 1,876	£ 163	£ 3,290		
LS9 6AJ		1	4	500	2	West	5.8	5.8	5	30	0.52	1103.80	Column of 4 Landscape next to dormer landscape as close to neighbouring property line as possible away from chimney to the SW.	£ 3,753	£ 587	£ 3,830	Landscape Panel Orientation	
LS9 6AF		1	2	475	0.95	West	5.8	5.8	5	30	0.52	423.20		£ 1,783	£ 163	£ 3,270	Landscape Panel Orientation	
LS8 3QL		1	2	500	1	East	5.2	5.7	4.9	30	0.52	2708.20	Column of 2 panels next to neighbouring chimney landscape as close to neighbouring property line as possible away from chimney to the SW.	£ 1,876	£ 163	£ 3,290		
LS9 6AZ		1	3	475	1.425	East	6.5	5.7	4.9	30	0.52	1716.60		£ 2,674	£ 587	£ 3,530	Landscape Panel Orientation	

	LS9 6AR	1	0	0	0	North East	3.9	5.0	5	2227.60	Not Viable - see example ballast calculation **Structural assessment needed of dormer roof - large load due to Ballast with Flat roof mounting (124,88 kg per panel) Not enough viable roof space for panels	£ -	£ -	£ -			
	LS9 6BE	1	3	475	1.425	North West	5.9	4.0	4	1694.60	Column of 3 panels as close to dormer as possible away from neighbouring dormer to the south.	£ 2,674	£ 587	£ 530	Landscape Panel Orientation		
	LS6 1QD	1	4	475	1.9	South West	3.7	5.2	4.5	30	0.52	3957.80	1 row of 2 panels below velux, 1 row of 2 panels above velux	£ 3,565	£ 587	£ 790	Landscape Panel Orientation NB: Not the correct post code or address? Panel layout is for: 9 Bellbrooke Grove, Harehills, Leeds LS9 6AT LS6 1QD = Burley Lodge Terrace
	LS9 6BH	1	6	475	2.85	North East	4.3	3.9	3.9	2172.40	2 rows of 3 panels as close to neighbouring property as possible away from chimney to the south.	£ 5,348	£ 295	£ 4,310			
	LS9 6BA	1	6	500	3	North East	5	5.0	4.3	30	0.52	3619.40	2 rows of 3 panels as close to neighbouring property as possible away from chimney to the south.	£ 5,629	£ 295	£ 4,370	
	LS8 5DB	1	5	500	2.5	West	5.5	5.8	5	30	0.52	2335.40	1 row of 3 panels above velux, 1 panel either side of velux	£ 4,691	£ 295	£ 4,310	
	LS9 6HW	1	4	475	1.9	South East	4.7	5.7	4.9	30	0.52	3977.60	Column of 4 panels landscape next to velux calculation **Structural assessment needed of dormer roof - large load due to Ballast with Flat roof mounting (124,88 kg per	£ 3,565	£ 587	£ 790	Landscape Panel Orientation
	LS8 3RJ	1	0	0	0	South West	4.5	5.9	5.9	4	0.07	3680.10	1 row of 4 panels on west (rear) roof face. 1 row of 3 panels on east (front) roof face, as close to neighbouring property line as possible away from chimney to the South.	£ -	£ -	£ -	
	LS8 4LN	1	7	500	3.5	East/V	4.2	5.9	5.1	30	0.52	3371.90	1 row of 2 panels above and below velux towards chimney to reduce shading from neighbouring dormer.	£ 6,568	£ 295	£ 4,830	NB: Wrong roof pictured
	LS9 6AR	1	4	475	1.9	South West	2.9	5.2	4.5	30	0.52	2691.30	Column of 2 panels north side of dormer next to neighbouring property dormer.	£ 3,565	£ 587	£ 790	
	LS9 6AR	1	2	475	0.95	North East	4.4	5.3	4.6	30	0.52	3799.00	Not Viable Not enough viable roof space for panels, heavy shading from dormers Not Viable - see example ballast calculation **Structural assessment needed of dormer roof - large load due to Ballast	£ 1,783	£ 163	£ 3,270	
	LS8 5PD	1	0	0	0	North	6.9	5.1	4.4	30	0.52	4535.00	Column of 2 panels to next to dormer and neighbouring property.	£ -	£ -	£ -	
	LS9 6JD	1	0	0	0	North West	4.5	5.0	4.3	30	0.52	1622.50	Column of 2 panels in landscape above dormer	£ 1,876	£ 163	£ 3,290	Landscape Panel Orientation
	LS9 6EP	1	2	475	0.95	West	5.2	5.3	4.6	30	0.52	2319.90	1 row of 4 panels above velux, 2 NW side of velux and 1 panel NE side.	£ 1,783	£ 163	£ 3,270	
	LS9 6JB	1	4	500	2	South East	5.7	5.7	4.9	30	0.52	227.20	2 rows of 2 next to dormer	£ 3,753	£ 587	£ 3,830	
	LS9 6AZ	1	2	475	0.95	South West	6	5.8	5	30	0.52	1601.40	1 row of 2 panels above velux calculation **Structural assessment needed of dormer roof - large load due to Ballast	£ -	£ -	£ -	
	LS9 6JB	1	0	0	0	North West	7.6	5.2	4.5	30	0.52	2233.50	1 row of 2 panels in landscape above dormer	£ 1,876	£ 163	£ 3,290	Landscape Panel Orientation
	LS9 6JB	1	2	500	1	South East	5.8	5.5	4.8	30	0.52	4110.40	1 row of 4 panels above velux, 2 NW side of velux and 1 panel NE side.	£ 6,239	£ 295	£ 4,830	
	LS8 5NX	1	2	500	1	South West	5.9	5.9	5.1	30	0.52	4636.10	Column of 2 panels, left of dormer	£ 1,876	£ 163	£ 3,290	
	LS9 7AL	1	8	500	4	North East	6.6	5.1	4.4	30	0.52	1435.80	2 rows of 4 panels	£ 7,506	£ 295	£ 4,910	
	LS9 6EP	1	4	475	1.9	South West	6.3	5.8	5	30	0.52	2530.60	1 panel left of dormer, column of 2 panels right of dormer. calculation **Structural assessment needed of dormer roof - large load due to Ballast	£ 3,565	£ 587	£ 790	
	LS9 6AR	1	0	0	0	South West	4.1	5.9	5.1	30	0.52	3130.20	1 row of 6 panels above dormer - 3 panels run to Flat 1 inverter	£ 2,674	£ 587	£ 530	NB: 1 row of 3 flat roof panels, 1 row of 6 or 7 panels above dormer (depending on shading), 1 row of 10 panels on lower roof (depending on if this roof is owned by plumbers merchant or not)
	LS8 5LN	1	3	475	1.425	South West	9.75	5.9	5.1	30	0.52	1393.40	1 row of 6 panels above dormer - 3 panels run to Flat 2 inverter	£ 2,674	£ 587	£ 530	
	LS8 5LF	1	0	0	0	South West	9.75	5.9	5.1	30	0.52	1393.40	Roof Not Viable Not enough viable roof space for panels, the 1m slope of the sawtooth dormers	£ -	£ -	£ -	
	LS11 9LU	1	7	475	3.325	North West	5.5	4.7	4.1	30	0.52	1755.20	1 row of 4 panels above velux, 2 NW side of velux and 1 panel NE side.	£ 6,239	£ 295	£ 4,830	
	LS6 1QP	1	2	500	1	South West	5	5.7	4.9	30	0.52	0.00	1 row of 2 panels in landscape below dormer	£ 1,876	£ 163	£ 3,290	Landscape Panel Orientation

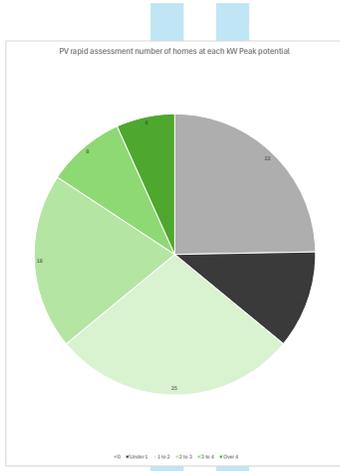
kW peak

0	22
0.5	2
0.95	8
1.4	0
1.425	8
1.475	0
1.9	5
2.375	2
2.5	3
2.85	2
3.325	2
3.5	1
3.8	1
1	11
1.5	1
2	11
3	4
4	6

Condensed list

kW peak

0	22
Under 1	10
1 to 2	25
2 to 3	18
3 to 4	8
Over 4	6
	89



14 APPENDIX D – ASHP WET SYSTEM HIGH LEVEL QUOTATION

Hi Jenny,

As per our discussion, please find pricing below for various installation options. I cross referenced gas usage on the spreadsheet with some EPCs and there seemed to be a number of disparities; there's an amount of variation in insulation levels, and presumably some households are not using the heating very much, so it's difficult to build a picture of energy demand relative to house type/floor area.

I've therefore provided options for supply & installation of small (4kW heat pump, 170l hot water cylinder), medium (8kW heat pump, 200l hot water cylinder) & large (14kW heat pump, 250l hot water cylinder) systems, which should give a useful range. Prices are excluding VAT and do not allow for any Boiler Upgrade Scheme funding that may be available. Decommissioning and disposal of existing boilers and a powerflush of the existing pipework is included. A price range for upgrading radiator systems is also included (assumes existing pipework can be retained/reused)

The minimum distance from the heat pump to the neighbour's nearest window/door has been provided for permitted development compliance. Noise is the main issue with terraced houses as it's difficult to meet the PD requirements at such close proximity. I'm assuming Carrier Aquasnap heat pumps for this exercise as they have very good noise outputs (brochure attached).

Finally, I've allowed additional cost for wall mounting where no yard is available. It is assumed wall mounting would be at low level – no allowance has been made for scaffolding. It is assumed that floor mounted systems will have a suitable hardstanding already in place to mount the heat pump.

Heating & hot water

System cost clearance		Rad upgrade	PD
Small um 3m	£10,800	£900	minim
Medium um 3m	£11,500	£1400	minim
Large mum 4m	£12,700	£1800	mini
Wall mount	£500/unit		

Heating only

System cost clearance		Rad upgrade	PD
Small um 3m	£9,800	£900	minim
Medium um 3m	£10,500	£1400	minim
Large mum 4m	£11,900	£1800	mini
Wall mount	£500/unit		

I hope this is useful. If you have any questions or need further information please feel free to get in touch.

Kind regards

Jeremy French

Senior Technical Sales Consultant

T: 0114 327 0100

M07497159131

E:jeremy.french@imsheatpumps.co.uk

Wwww.imsheatpumps.co.uk

24 Lucas Works

Sheffield Road

Dronfield, S18 2GG

///design.punks.bonus

Unit 3 Ruthvenfield Way,

Inveralmond Industrial Estate,

Perth, PH1 3UF

///early.daily.movies



This e-mail may contain confidential information. If you are not the intended recipient it may be unlawful for you to read, copy, distribute, disclose

or otherwise use the information contained in this email. If you have received this email in error, please delete it and notify the sender immediately.

E-mails cannot be guaranteed to be secure or error-free as information could be intercepted, corrupted, lost, destroyed, arrive late or

incomplete,

or contain viruses. The sender, therefore, does not accept liability for any errors or omissions in the contents of this message, which arise as a result of the e-mail.

IMS Heat Pumps Limited. A Company Registered in Scotland. Registered Office: Unit 3 Ruthvenfield Way, Inveralmond Industrial Estate, Perth,
PH1 3UF. CRN: SC177385

15 APPENDIX D – RAINBOW OF RECOMMENDED INTERVENTIONS

Suitability Indicators	Suitable roof and Full benefit if on Standard Credit, part benefit if on prepayment	If this house was decarbonised, and we neglect when the energy is consumed, what % warm home energy is onsite generated	Full benefit if on Standard Credit, part benefit if on prepayment	front yard green no front yard amber	1 bed homes in fuel poverty recommended for DX initially to pilot. Homes with front yards and over 2 bed 1st tranche of wet systems	fuel poverty homes particularly benefit from removing standing charge, higher consuming homes are neutral	Higher consuming homes would benefit from energy savings	Homes which are likely too cold and would benefit from a welfare check up, and help with fuel bills	Standard credit meter and PV availability - Tenants have to be willing to switch to direct debit and to Octopus Tenant Power Tariff	Standard credit meter and front yard green no front yard amber - Tenants have to be willing to switch to direct debit and to Octopus Stay Cozy Tariff
Property Reference	PV	PV % of all electric bills if all electric	Battery	Heat Pump	Wet system or DX?	Removing Gas	Energy Audit	Welfare Check	Tenant Power	Stay Cozy
1	1.425	32%		Opens onto street	DX				No PV, prepayment	Doesn't qualify
2	0	0%		Opens onto street	DX				No PV	Qualifies, no front yard
3	4	75%		Opens onto street	DX				PV feasible, prepayment	Doesn't qualify
4	0	0%		Front Yard	DX phase 2				No PV, prepayment	Doesn't qualify
5	0	0%		Opens onto street	Wet System				No PV	Qualifies
6	0	0%		Opens onto street	DX				No PV, prepayment	Doesn't qualify
7	0	0%		Opens onto street	Wet System				No PV	Qualifies, no front yard
8	0	0%		Opens onto street	DX				No PV	Qualifies, no front yard
9	0	0%		Opens onto street	DX				No PV	Qualifies, no front yard
10	4	75%		Opens onto street	DX				PV feasible, prepayment	Doesn't qualify
11	0	0%		Opens onto street	DX				No PV	Qualifies, no front yard
12	3	56%		Opens onto street	DX				Qualifies	Qualifies, no front yard
13	2	31%		Front Yard	DX phase 2				Qualifies	Qualifies
14	4	39%		Existing ASHP	Wet System				Unsure	unsure
15	1.9	25%		Opens onto street	DX phase 2				PV feasible, prepayment	Doesn't qualify
16	2	31%		Opens onto street	DX phase 2				PV feasible, prepayment	Doesn't qualify
17	1	22%		Opens onto street	DX				PV feasible, prepayment	Doesn't qualify
18	2	26%		Opens onto street	DX phase 2				PV feasible, prepayment	Doesn't qualify
19	3	39%		Front Yard	DX phase 2				Qualifies	Qualifies
20	2.5	38%		Front Yard	Wet System				Qualifies	Qualifies
21	2	26%		Opens onto street	DX phase 2				PV feasible, prepayment	Doesn't qualify
22	2	26%		Opens onto street	DX phase 2				PV feasible, prepayment	Doesn't qualify
23	1	9%		Front Yard	Wet System				Qualifies	Qualifies
24	4	75%		Opens onto street	DX				Qualifies	Qualifies, no front yard
25	0	0%		Front Yard	Wet System				No PV	Qualifies
26	1.425	13%		Front Yard	Wet System				Qualifies	Qualifies
27	2	32%		Opens onto street	DX phase 2				PV feasible, prepayment	Doesn't qualify
28	2.85	37%		Opens onto street	DX phase 2				PV feasible, prepayment	Doesn't qualify
29	0.95	9%		Opens onto street	Wet System				Qualifies	Qualifies, no front yard
30	1.5	17%		Front Yard	Wet System				Qualifies	Doesn't qualify
31	0	0%		Front yard	Wet System				No PV	Doesn't qualify
32	0	0%		Front Yard	Wet System				No PV	Doesn't qualify
33	3	39%		Front Yard	Wet System				Qualifies	Qualifies
34	0.5	11%		Front yard	DX				Qualifies	Qualifies
35	1	22%		Front yard	DX				PV feasible, prepayment	Doesn't qualify
36	0.5	11%		Front yard	DX				Qualifies	Qualifies
37	2	44%		Opens onto street	DX				PV feasible, prepayment	Doesn't qualify
38	0	0%		Opens onto street	DX phase 2				No PV	Doesn't qualify
39	2	44%		Opens onto street	DX				PV feasible, prepayment	Doesn't qualify
40	4	89%		Opens onto street	DX				PV feasible, prepayment	Doesn't qualify
41	2.375	53%		Opens onto street	DX				PV feasible, prepayment	Doesn't qualify
42	1.425	23%		Front yard	DX phase 2				Qualifies	Qualifies

Suitability Indicators	If this house was decarbonised, and we neglect when the energy is consumed, what % warm home energy is onsite generated		Full benefit if on Standard Credit, part benefit if on prepayment	front yard green no front yard amber	1 bed homes in fuel poverty recommended for DX initially to pilot. Homes with front yards and over 2 bed 1st tranche of wet systems	fuel poverty homes particularly benefit from removing standing charge, higher consuming homes are neutral	Higher consuming homes would benefit from energy savings	Homes which are likely too cold and would benefit from a welfare check up, and help with fuel bills	Standard credit meter and PV availability - Tenants have to be willing to switch to direct debit and to Octopus Tenant Power Tariff	Standard credit meter and front yard green no front yard amber - Tenants have to be willing to switch to direct debit and to Octopus Stay Cozy Tariff
	Suitable roof and Full benefit if on Standard Credit, part benefit if on prepayment	neglect when the energy is consumed, what % warm home energy is onsite generated								
43	1	16%		Front yard	Wet System				PV feasible, prepayment	Doesn't qualify
44	0	0%		Front Yard	Wet System				No PV	Doesn't qualify
45	0.95	10%		Front Yard	Wet System				Qualifies	Qualifies
46	2	31%		Opens onto street	DX phase 2				Qualifies	Qualifies, no front yard
47	1.425	19%		Front Yard	Wet System				PV feasible, prepayment	Doesn't qualify
48	2.375	37%		Opens onto street	DX phase 2				PV feasible, prepayment	Doesn't qualify
49	0	0%		Front Yard	DX phase 2				No PV	Doesn't qualify
50	0	0%		Opens onto street	DX phase 2				No PV	Qualifies
51	0.95	10%		Front Yard	Wet System				PV feasible, prepayment	Doesn't qualify
52	1	11%		Front Yard	Wet System				Qualifies	Qualifies
53	1	16%		Front Yard	DX phase 2				Unsure	unsure
54	2.5	40%		Opens onto street	DX phase 2				Qualifies	Qualifies, no front yard
55	3.8	42%		Front Yard	Wet System				Qualifies	Qualifies
56	0.95	15%		Front Yard	DX phase 2				Qualifies	Qualifies
57	1	16%		Front Yard	DX phase 2				PV feasible, prepayment	Doesn't qualify
58	2	31%		Front Yard	DX phase 2				PV feasible, prepayment	Doesn't qualify
59	0.95	15%		Front Yard	DX phase 2				PV feasible, prepayment	Doesn't qualify
60	1	16%		Front Yard	DX phase 2				Qualifies	Qualifies
61	1.425	19%		Front Yard	DX phase 2				PV feasible, prepayment	Doesn't qualify
62	0	0%		Front yard	Wet System				No PV	Qualifies
63	1.425	23%		Front yard	DX phase 2				PV feasible, prepayment	Doesn't qualify
64	1.9	30%		Front Yard	Wet System				PV feasible, prepayment	Doesn't qualify
65	2.85	46%		Opens onto street	DX phase 2				PV feasible, prepayment	Doesn't qualify
66	3	46%		Front Yard	Wet System				Qualifies	Qualifies
67	2.5	39%		Front Yard	DX phase 2				PV feasible, prepayment	Doesn't qualify
68	1.9	21%		Front Yard	Wet System				Qualifies	Qualifies
69	0	0%		Existing ASHP	Wet System				No PV	Doesn't qualify
70	3.5	56%		Front Yard	DX phase 2				PV feasible, prepayment	Doesn't qualify
71	1.9	30%		Front Yard	Wet System				Qualifies	Qualifies
72	0.95	10%		Opens onto street	Wet System				PV feasible, prepayment	Doesn't qualify
73	0	0%		Opens onto street	Wet System				No PV	Qualifies, no front yard
74	0	0%		Front Yard	DX phase 2				No PV	unsure
75	0.95	15%		Front Yard	DX phase 2				PV feasible, prepayment	Doesn't qualify
76	2	31%		Front Yard	DX phase 2				PV feasible, prepayment	Doesn't qualify
77	0.95	12%		Front Yard	DX phase 2				Qualifies	Qualifies
78	0	0%		Front Yard	DX phase 2				No PV	Qualifies
79	1	13%		Front Yard	DX phase 2				Qualifies	Qualifies
80	3.325	52%		Front Yard	DX phase 2				PV feasible, prepayment	Doesn't qualify
81	1	16%		Front Yard	DX phase 2				PV feasible, prepayment	Doesn't qualify
82	4	75%		Front Yard	DX				Qualifies	Qualifies
83	1.9	31%		Front Yard	DX phase 2				Qualifies	Qualifies
84	0	0%		Front Yard	Wet System				No PV	Qualifies
85	1.425	33%		Front Yard	DX				PV feasible, prepayment	Doesn't qualify
86	1.425	23%		Front Yard	DX phase 2				PV feasible, prepayment	Doesn't qualify
87	0	0%		Front Yard	DX phase 2				No PV	unsure
88	130.9	31%		Opens onto street	DX phase 2				Not a tenant	Not a tenant

16 APPENDIX E – ASSUMPTIONS

16.1 Benchmarking

Heating – Ofgem reported typical gas use

Benchmarked typical use using AECB and energy saving trust studies

<https://assets.publishing.service.gov.uk/media/5a75a29ced915d6faf2b4829/3147-measure-domestic-hot-water-consump.pdf>

Small study by energy saving trust

Hot water consumption - between 20 and 70 liters, with an average of around 40-50 per person per day

16.2 Technologies

PV Conversion factor used from kW peak to kWh/year was 831

COP used for ASHP was 4

16.3 Costs

LEDA are not quantity surveyors or cost estimators and out costs have been included to be informative and help with decision making at this early feasibility stage.

20% contingency has been added to our best estimates to help to make these more realistic if they are taken to the next stage, however they are not to be relied upon.

Budget quotation for solar taken from Leeds Solar, and compared with Octopus energy estimates and government MCS estimates. Leeds solar budget seems more appropriate for smaller installations.

Budget quotation for ASHP wet systems taken from IMS heat pump installers.

Estimate of cost for DX system taken from quotation for components plus a reasonable estimate of £1500 for installation.

Gas disconnection cost was taken from Northern Gas Networks website.

PV, DX and ASHP installations are currently 0% VAT rated on domestic properties

16.4 Decarbonisation

DEFRA carbon figures have been used for now, and the future carbon figures are taken from the government green book data Green book data, electricity emissions factors downloaded July 2025.

16.5 Tariffs

Current energy prices were assumed to be the price cap, as many of the tenants are likely to have not shopped around.

Direct Debit - July 2025 average price cap rates taken from British gas

Gas standing charge

29.824

Gas unit rate

6.334

Electricity standing charge

51.372

Electricity unit rate

25.733

The example we give is for a 5kWh battery which is cycled once a day with a night time purchase price of 15p per kWh and an export price at peak times of 27p would have an annual benefit of £219.

For Octopus Stay cozy, suitability indicators were - Standard credit meter and PV availability

For Octopus Tenant power, suitability indicators were - Standard credit meter and front yard green no front yard amber

17 APPENDIX F – CANOPY’S FOLLOW UP CLIENT ENGAGEMENT

17.1 Tenant Surveys

During January 2026, we contacted the tenants with outlying bills: those whose bills were significantly higher, and those whose bills were lower. We wanted to understand the reasons why their bills were different, and what they thought Canopy should do to help solve the problem. After taking out some anomalies (properties that were empty, or where the tenant had changed since the original data was collected), we contacted them individually.

17.2 Tenants with low bills

Two-thirds of those who expressed an opinion thought their home was easy to keep warm in the winter all or most of the time. All of them felt their home was easy to keep cool in Summer all or most of the time. The main reasons given for having lower bills were people not being in very often (43%) and people trying to save money (43%).

When asked what support Canopy could give to them, two asked for help with paying bills, and one suggested tackling drafts and adding a little more insulation. Most of them did not give an in-depth answer. Some responded through their support worker.

17.3 Tenants with high bills

Surprisingly, 63% of respondents with higher bills felt their home was easy to keep warm in the winter all or most of the time! As with the ‘lower bill’ group, all felt their home was easy to keep cool in Summer. The tall and slim form factor of back-to-backs might well

help with this, encouraging the stack effect during the warmer months.

Half of those with higher bills felt poor insulation was a contributory factor, with two of them citing ‘draughts’ as an issue, and another two pointing out that their home warmed up quickly but cooled down quickly too. Three of those contacted had had short-term anomalies with their bills that have now been corrected. Two households said they just liked to be cosy, and a further two said their home was very busy all day, so the heating was rarely off.

When asked how Canopy could help them, tenants asked for help with programming their heating/boiler (3 respondents), improved insulation (2) and help with their bills (2)

Canopy has around a dozen properties that have not been insulated as well as the rest. These are the ones that were acquired early in Canopy’s history, when insulation was not seen as such a high priority. We continue to lobby for more retrofit funding from national, regional, and local government to help tackle fuel poverty.

18 APPENDIX F – NEXT STEPS

18.1 The landlord’s perspective and next steps

Working with LEDA and speaking to our tenants has been extremely valuable. The findings confirmed some of our assumptions and challenged others. LEDA’s recommended approach combines:

- Air Source Heat Pumps
- Gas disconnection
- Solar PV and batteries
- Tariff switching

We recognise the potential benefits of creating a community energy company, but we do not currently have the expertise or scale to do this alone. In the future, we might explore this through a partnership or consortium with organisations like Leeds Community Energy, LATCH, GIPSIL or others.

At this stage, we are unsure whether to follow LEDA’s suggestion of a small demonstrator project or to aim for something more ambitious. We already have limited experience with heat pumps and solar/battery systems across a small number of homes, which gives us a useful starting point.

Our emerging view is that a **Just Transition Pilot involving 15–20 properties** would be more effective. Focusing on homes with front or back yards, and tenants willing to take part, would give the best chance of success. This pilot could include both wet and dry heat pump systems and involve tenants on both credit and prepayment meters.

A project of this scale would:

- Reduce the risk of being derailed by unexpected issues.

- Produce meaningful evidence and learning for wider rollout.
- Justify employing a dedicated staff member to support tenants, oversee co-design, manage installations, and coordinate with energy suppliers and contractors.
- Create a strong group of “tenant champions” who could help encourage and reassure others less sure about the transition.

We estimate the cost of such a pilot to be around **£250,000**. This is a significant amount for a small organisation like Canopy, and we would see little direct financial return. External grant funding will therefore be essential.

Supporting tenants well will be critical. We cannot control how tenants operate their heating systems, nor can we dictate which tariffs they use. If tenants struggle to use the new technology, or end up on unsuitable tariffs, the project could backfire and leave fuel-poor tenants worse off. Ensuring that tenants receive the right support and guidance must therefore be central to any approach.