Project Case Study: Energiesprong UK Comfort Plan™

Project theme: Innovative finance models

Project lead:

Energiesprong UK

Partners:

This project was delivered as part of a consortium. Carnego developed the software platform to deliver the Comfort Plan™ solution; Smart Klub contributed to the development of the billing system and monthly statements; Everything is User Experience (EIUX), performed consumer research and the Centre for Sustainable Energy and the Money and Mental Health Policy Institute were also engaged to represent consumer views.

Contact:

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Funding:

£204,126

Project duration:

August 2022- February 2025

Date of publication:

April 2025

What were the objectives of the project?

The project aimed to facilitate the deep retrofit of social housing by designing and developing a novel business model - a **'Comfort Plan™'**. Specifically, the project aimed to:

- Engage key stakeholders, including social housing landlords and residents, to identify key principles and test draft outputs for a Comfort Plan™.
- Develop and test the commercial viability of a Comfort Plan™ offering by running delivery models at different deployment scales.

> **What is a Comfort Plan™?** A Comfort Plan™ is a novel business model that enables landlords to directly benefit from retrofit through recouping bill repayments. The Comfort Plan™ aims to overcome the split incentive phenomenon, whereby landlords investing in energy efficiency upgrades do not directly benefit from their investment (from increased rent revenue) while tenants

enjoy reduced energy costs with no capital expenditure[1]. Addressing this would incentivise landlords to invest in upgrading their building stock, enabling further rollout of retrofit measures, including heat pumps. A Comfort Plan™ also adds value for tenants by providing a better-performing home. The Comfort Plan™ offsets the extra cost of the retrofit needed for a higher-performing home, which is balanced by lower energy costs, meaning the occupier pays less (or no more) than they paid before retrofit. Residents also benefit from a performance guarantee which protects them against any underperformance of the retrofit solutions.

What activities were funded?:

- Extensive user research to inform the design of a Comfort Plan™ proposition. Engagement was conducted with social housing residents, landlords, utility providers, and consumer action groups.
- User acceptance testing and financial modelling of different commercial structures for the Comfort Plan™ offer.
- Developing and designing the technological processes underlying the performance guarantee and billing process. This included using automated data analysis to monitor performance and integrating key data into the billing system. Moreover, the project established a performance investigation process triggered by issues, customer complaints, or maintenance team inputs.

What did the project achieve?

1. **Energiesprong engaged in consumer research to assess demand for deep retrofit and the billing system.**

Energiesprong's project gained insights into the Comfort Plan™ proposition through consumer research with various stakeholders, including residents and utility providers. Key principles identified included the need for a clear narrative, fair financial benefits, robust affordability checks, and transparent billing when delivering a Comfort Plan™. The research emphasised the importance of meeting residents' expectations, delivering outcomes rather than just technologies, and ensuring a good customer experience. Additionally, interviews with utility companies, landlords, and solution providers with the Centre for Sustainable Energy and Money and Mental Health Policy Institute highlighted the necessity for adaptable, fair, and trusted solutions to scale up retrofit efforts effectively.

2. **Energiesprong developed Comfort Plan™ statements for residents, landlords, and retrofit providers to provide billing and performance information.**

The Comfort Plan™ statements are designed for residents and are accessible to landlords and solution providers to monitor performance and support contractual guarantees. To ensure the statements were fit for purpose, annual billing cycles were modelled using a combination of real performance data (from existing projects) and simulated scenarios (including payment issues and underperformance of the retrofit). Testing involved data from ten Energiesprong properties and additional dummy data to ensure

[1] For further information of split incentives, see: Roadmap to Accelerate Building Decarbonisation and Address Split Incentives | Sustainable Markets Initiative.

a holistic range of scenarios was explored. The modelling of these failure scenarios provides data on how poor energy efficiency standards in a home can impact the billing service. Further work implementing the statements with actual households who are paying a Comfort Plan™ is targeted following completion of the project.

3. **The project identified and tested five different commercial structures for the Comfort Plan™.**

Energiesprong explored five commercial structures for delivering the Comfort Plan™. These options include third-party delivery, in-house delivery by landlords, new energy efficiency service charges, rent adjustments, and utility company tariffs. Financial analysis showed that no delivery structure met the target landlord payback time of 25 years, which is the assumed lifespan of a standard domestic heating system.

Energiesprong has established a market-ready, end-to-end consumer services agreement (i.e. third party-delivery) mechanism by landlords. This provides a small but positive benefit to the landlords when retrofitting at scale, with circa 3-5% of retrofit costs recovered annually. This approach was highlighted by social housing landlords as the most logistically desirable structure. Energiesprong is continuing to work with the industry to explore the alternative financial mechanisms which are not within their control.

Financial analysis showed that all models positively contribute to the repayment of retrofit capital costs at scale (i.e. above 400 homes included in a Comfort Plan™ scheme cumulatively). However, payback periods are all beyond 25 years, even assuming maximum cost recovery and zero VAT. The long payback times are primarily due to fixed service costs, which must be applied to each retrofit, the high capital cost of retrofit and the rates that can be acceptably charged to the tenants.

Project objective 1: Engage key stakeholders, including social housing landlords and residents, to identify key principles and test draft outputs for a Comfort Plan™.

Why is this important?:

The Comfort Plan™ is a novel business model that has been developed by Energiesprong UK and has previously been piloted in real homes at a small scale (through different mechanisms) but not at scale. The development of the dedicated consumer services agreement (and alternative approaches) through the project was intended to enable wide-scale adoption of the model. The success of a retrofit proposition for social housing requires a structure acceptable to both landlords and tenants. Initial engagement is important to understand the requirements of the Comfort Plan™ design from both a landlord and tenant perspective, with iterative development of outputs needed to design an effective service.

What activities were funded?:

- Everything is User Experience (EIUX) conducted resident interviews. Energiesprong conducted additional interview-based research focusing on customer satisfaction with The Centre for Sustainable Energy and the Money and Mental Health Policy Institute via 1-2-1 web interview sessions with key representatives from each organisation.
- Drafting, refining and finalising the Comfort Plan™ billing statements and testing the billing service across various potential scenarios (including payment issues and retrofit underperformance).
- Direct engagement with three housing providers (via 1-2-1 web interview sessions) that have previously and/or are currently undertaking Energiesprong retrofit projects. These were Wolverhampton Homes, Enfield Council, and Clarion Housing. Energiesprong also engaged with a wider panel of their partner housing providers through the RAHIP project including the London Borough of Barking and Dagenham, Hammersmith and Fulham, and Ealing.

What were the project findings and did the project achieve this objective?:

Stakeholder engagement findings

Energiesprong conducted user research with different groups, including residents, as well as groups who are involved in delivering retrofit solutions. The research findings are summarised:

1. **A balanced approach to retrofit should be taken, considering the potential impacts (as well as benefits) on residents.**

While a warm home is desirable, it alone does not make the retrofit experience worthwhile for all residents. The retrofit process can be disruptive and intrusive, and the benefits of enhanced thermal comfort should be balanced against other significant factors. For instance, some of the residents engaged highlighted that the management and schedule of the works can be so disruptive that they diminish the overall value of the retrofit process.

Meeting expectations is essential for success. Setting and meeting appropriate expectations is crucial. This includes meeting agreed schedules for accessing the building, attendance times, and deliveries. It

is also important to carry out work as agreed and involve residents in decision-making when changes are necessary. Understanding and managing residents' expectations is a significant activity that should be thoroughly explored.

Fair deal for residents. Social housing residents typically do not request retrofit measures; they are applied to them. It is important to ensure that all retrofits are performing adequately to ensure operating costs do not increase, protecting residents from excessive costs. Regular reviews of the Comfort Plan™ may be necessary depending on local and national contexts.

2. **Flexibility is required to tailor the approach to different customer groups.**

No "one size fits all" approach. There is a consensus on the need to grow retrofit efforts and make them more cost-effective and scalable. Social housing landlords indicated an interest in the Comfort Plan™ proposition. However, engagement indicated that it must be adaptable to the specific needs of stakeholders, including agreeing on commercial models and approaches to underperformance and investigations**.** Moreover, retrofit projects must account for residents' unique behaviours, preferences and tolerances, requiring a tailored approach for each customer.

Post-occupancy evaluation (POE) is key. Understanding how residents use their homes and assessing outcomes such as warmth, air quality, and comfort is essential. A robust POE process is required to adapt retrofit solutions to each customer's diverse needs and contexts.

3. **Providing user-centric communications (including billing) from a trusted source is important.**

Clear Comfort Plan™ narrative. A straightforward, resident-focused narrative is needed to explain the Comfort Plan™ retrofit opportunity and its benefits, including comfort, cost savings, and mental health improvements. This narrative should help residents understand the tangible benefits and ensure they provide informed consent. To cater to residents ' preferences, communication should be multi-channel, including phone, SMS, and web.

Simple and transparent statements and billing: Statements and bills should be clear and simple. Transparency can be enhanced by providing clear method statements, audit trails, and detailed information upon request. Although demonstrating 'notional savings' is challenging, it is crucial for building trust in and acceptance of the service. A range of billing options should be available, but care must be taken to avoid confusion with traditionally fixed charges like rent.

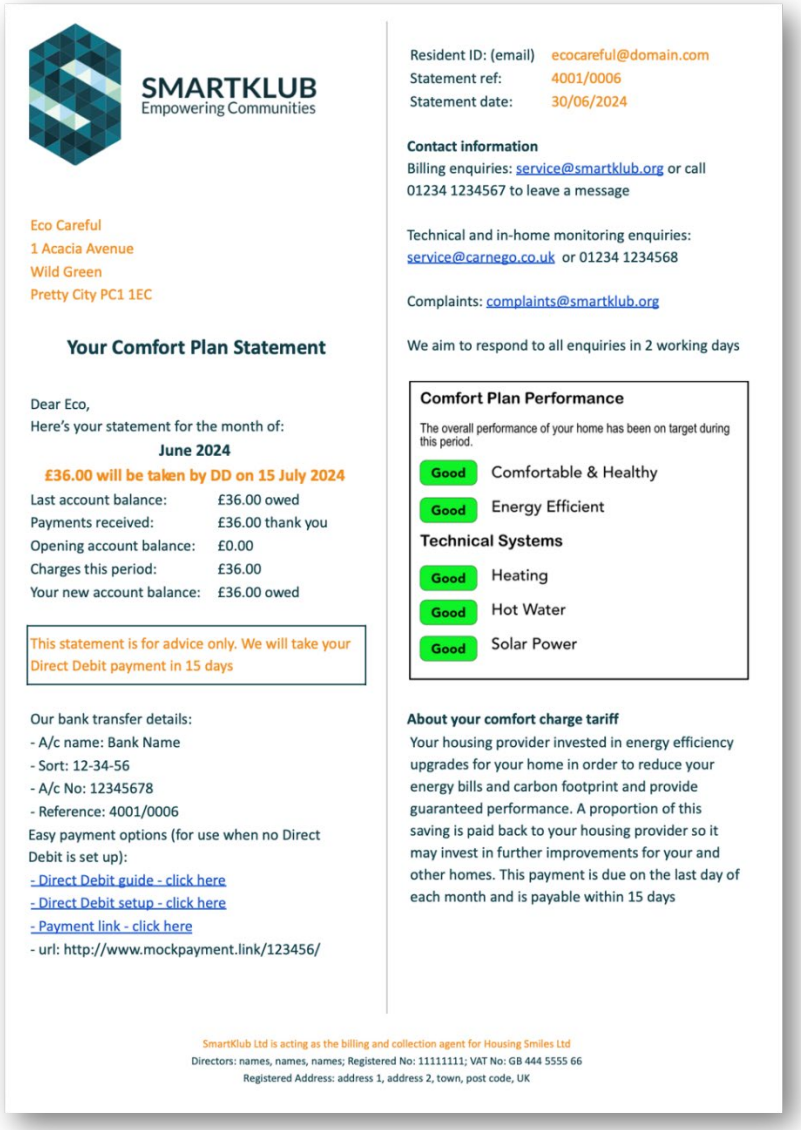
Consistency and predictability with swift and reliable investigation: Consistency and predictability in billing are essential for residents. In case of issues, normal monthly billing should continue until rebates or refunds are calculated. Swift and reliable investigation processes are necessary to maintain trust.

Developing and testing draft outputs

The project developed prototype monthly statements for the Comfort Plan™ service. The statements are two-page documents containing each property's relevant billing, performance, and contact details. They are designed for residents and are accessible to landlords and solution providers to monitor performance and support contractual guarantees. For the Landlord and Solution Providers, there are also portfolio level "state-of-the-nation" reports generated to facilite wider monitoring of all properties who are paying a Comfort Plan™.

The design process for the statements and state-of-the-nation reports involved iterative agreement on their format and content. To ensure the statements were fit-for-purpose across a range of scenarios (including payment issues and underperformance of the retrofit), the statements were piloted based on

real data from ten Energiesprong properties with a variety of technical issues, mimicking a live billing service over 12 months. Supplementary dummy data was included to ensure a holistic range of scenarios was explored. The dataset was used to develop an automated process to monitor home performance and report its performance through the billing system.



SMARTKLUB
Empowering Communities

Eco Careful
1 Acacia Avenue
Wild Green
Pretty City PC1 1EC

Your Comfort Plan Statement

Dear Eco,
Here's your statement for the month of:

June 2024

£36.00 will be taken by DD on 15 July 2024

Last account balance:	£36.00 owed
Payments received:	£36.00 thank you
Opening account balance:	£0.00
Charges this period:	£36.00
Your new account balance:	£36.00 owed

This statement is for advice only. We will take your Direct Debit payment in 15 days

Our bank transfer details:
- A/c name: Bank Name
- Sort: 12-34-56
- A/c No: 12345678
- Reference: 4001/0006

Easy payment options (for use when no Direct Debit is set up):
- Direct Debit guide - click here
- Direct Debit setup - click here
- Payment link - click here
- url: http://www.mockpayment.link/123456/

Resident ID: (email) ecocareful@domain.com
Statement ref: 4001/0006
Statement date: 30/06/2024

Contact information
Billing enquiries: service@smartklub.org or call 01234 1234567 to leave a message

Technical and in-home monitoring enquiries: service@carnego.co.uk or 01234 1234568

Complaints: complaints@smartklub.org

We aim to respond to all enquiries in 2 working days

Comfort Plan Performance

The overall performance of your home has been on target during this period.

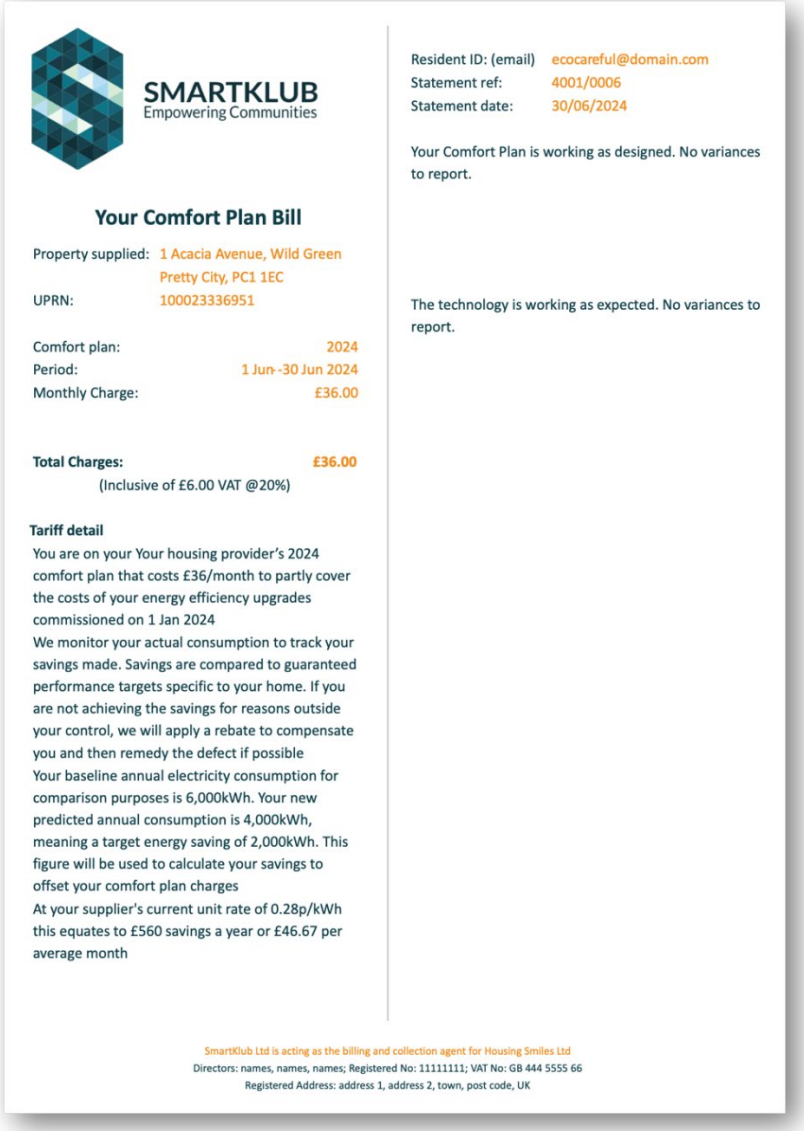
Good Comfortable & Healthy
Good Energy Efficient

Technical Systems

Good Heating
Good Hot Water
Good Solar Power

About your comfort charge tariff
Your housing provider invested in energy efficiency upgrades for your home in order to reduce your energy bills and carbon footprint and provide guaranteed performance. A proportion of this saving is paid back to your housing provider so it may invest in further improvements for your and other homes. This payment is due on the last day of each month and is payable within 15 days

SmartKlub Ltd is acting as the billing and collection agent for Housing Smiles Ltd
Directors: names, names, names; Registered No: 11111111; VAT No: GB 444 5555 66
Registered Address: address 1, address 2, town, post code, UK



SMARTKLUB
Empowering Communities

Your Comfort Plan Bill

Property supplied: 1 Acacia Avenue, Wild Green, Pretty City, PC1 1EC
UPRN: 100023336951

Comfort plan:	2024
Period:	1 Jun -30 Jun 2024
Monthly Charge:	£36.00

Total Charges: £36.00
(Inclusive of £6.00 VAT @20%)

Tariff detail
You are on your Your housing provider's 2024 comfort plan that costs £36/month to partly cover the costs of your energy efficiency upgrades commissioned on 1 Jan 2024
We monitor your actual consumption to track your savings made. Savings are compared to guaranteed performance targets specific to your home. If you are not achieving the savings for reasons outside your control, we will apply a rebate to compensate you and then remedy the defect if possible
Your baseline annual electricity consumption for comparison purposes is 6,000kWh. Your new predicted annual consumption is 4,000kWh, meaning a target energy saving of 2,000kWh. This figure will be used to calculate your savings to offset your comfort plan charges
At your supplier's current unit rate of 0.28p/kWh this equates to £560 savings a year or £46.67 per average month

Resident ID: (email) ecocareful@domain.com
Statement ref: 4001/0006
Statement date: 30/06/2024

Your Comfort Plan is working as designed. No variances to report.

The technology is working as expected. No variances to report.

SmartKlub Ltd is acting as the billing and collection agent for Housing Smiles Ltd
Directors: names, names, names; Registered No: 11111111; VAT No: GB 444 5555 66
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Figure 1 Prototype monthly billing statement for the Comfort Plan

Project objective 2: Develop and test the commercial viability of a Comfort Plan™ offering by running delivery models at different deployment scales.

Why is this important?

Multiple stakeholders are involved in delivering the Comfort Plan™ offering, and several possible delivery structures exist, each with a different allocation of responsibility, risk, and financial reward. Testing the commercial viability and stakeholder acceptance of different delivery structures is crucial for ensuring the success and sustainability of an offering. Energiesprong aimed to identify the most cost-effective and efficient approach to delivering the Comfort Plan™ by identifying and evaluating various delivery methods.

What activities were funded?

- Developing five potential commercial structures for delivering the Comfort Plan™ service and modelling each structure at different deployment scales from pilot to mass market.
- Developing a commercialisation strategy which estimates service fees and revenue generation for different service models.

What were the project findings and did the project achieve this objective?

Energiesprong proposed five alternative commercial structures for delivering the Comfort Plan™ service. These options include delivery by a third-party organisation established by Energiesprong, in-house delivery by a landlord with support from Energiesprong, implementation via a new energy efficiency service charge, rent adjustment by the landlord, and delivery through a utility company as part of their tariff[2]. The delivery models vary in the allocation of responsibility between stakeholders (including payment collection and performance validation). Each model, therefore, carries a different risk profile and financial return for the involved stakeholders.

Note that, in all the scenarios modelled, the following assumptions were made (which are realistic based on the current state of the nation but negatively impact the savings achievable):

- 15% of residents in social housing under-heat their homes
- 20% savings are provided back to the resident post-retrofit so that there is still a significant financial benefit to them in having the disruptive works completed on their homes

[2] Note that introduction of a new services, charge, rent adjustment, and inclusion of Comfort Plan™ payments via utility providers require development work (and potential policy changes) from stakeholders outside of the project team. The project therefore focussed on developing the third-party mechanism for the Comfort Plan™ to provide a working solution now. Exploration of the alternative models allowed assessment of the most financially attractive mechanism(s) for future research and development

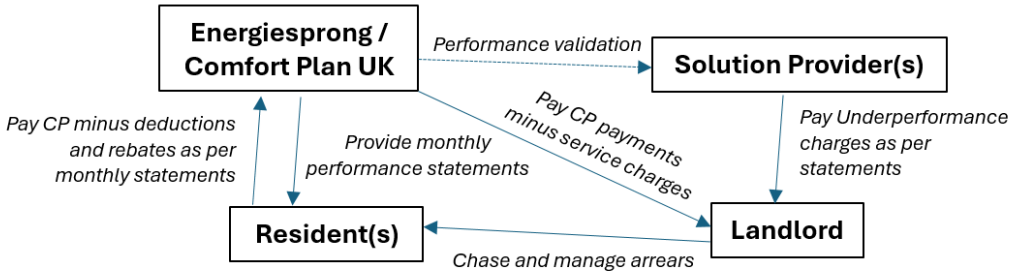

Figure 2 Comfort Plan™ delivery structure with direct implementation through Energiesprong.

Initial stakeholder engagement indicated that landlords and solution providers are sceptical about taking on significant responsibility for the Comfort Plan™. Landlords are resource-constrained but are under pressure to upgrade their housing stock. These resource limitations mean landlords are unlikely to begin a service agreement where Comfort Plan™ charges are collected directly by the landlord. Moreover, initial discussion indicated that retrofit solution providers are happy to work with other suppliers to deliver the Comfort Plan™ but are wary of performance guarantees. Finally, utility companies do not want to confuse their business models. For example, fabric measures typically rely on grant funding schemes (ECO4 and SHDF) and applying to these would be a challenge to utility providers.

The commercial viability of various delivery models was simulated at different deployment scales, ranging from pilot scale (~20 properties) to mass market scale (~1,000 properties). Regardless of scale, fixed costs were incurred by the organisation delivering the retrofit scheme. Therefore, the total cost per home decreases as the number of properties increases, both because of a greater distribution of fixed costs and reduced development costs from the bulk procurement of technologies. By way of an example, at the scale of 2,000 homes with a Comfort Plan™ implemented, the split of savings generated is 49% to the landlord (to recover retrofit capital costs), 20% to the resident (to provide incentive to have disruptive retrofit works installed), and 31% to operate and manage the Comfort Plan™ service. These fees are required to; manage payments and resident statements, manage performance data, provide analysis of performance data, initiate underperformance investigations, provide impartial review of performance outcomes to protect the residents, landlords, and solution providers, etc.

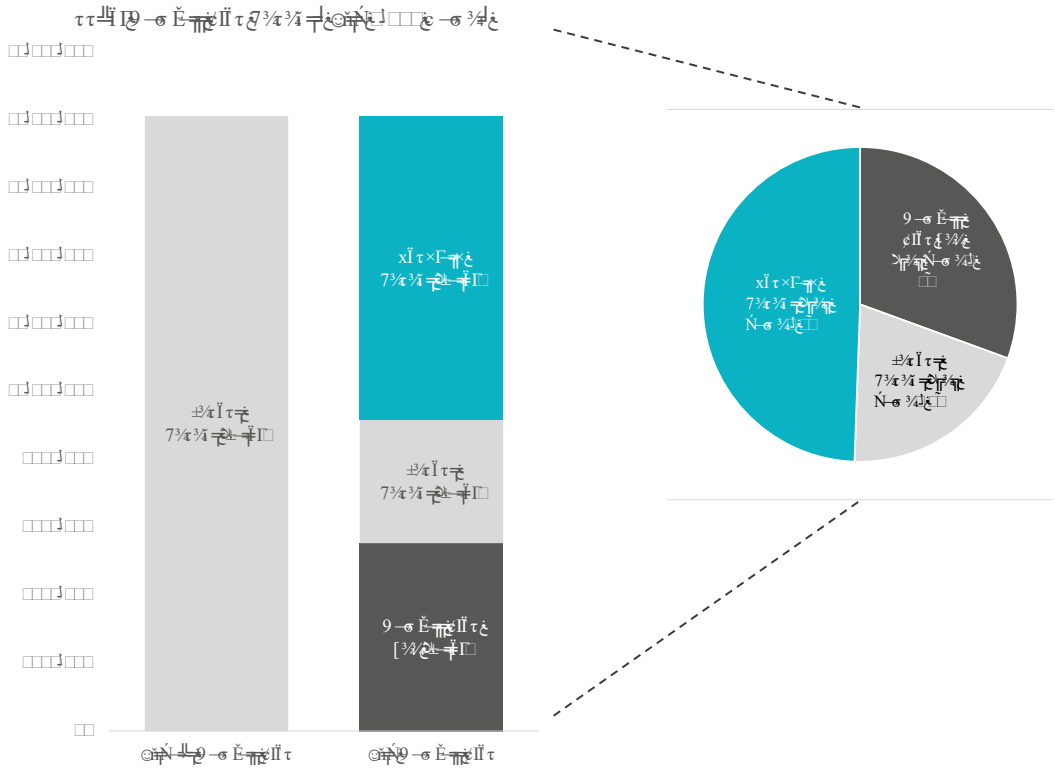

Figure 3 Comfort Plan™ costs and benefits at 2,000 home scale

The landlord payback period was a key metric to determine the commercial viability of the Comfort Plan™, with a target of less than 25 years (an assumed lifespan of a typical domestic heating system). Even at mass market scale, where economies of scale apply, the landlord payback time for a Comfort Plan™ delivered through Energiesprong – highlighted by social housing landlords as the most logistically desirable structure – was 78 years. The lowest landlord payback time (39 years) was achieved if the landlord runs the Comfort Plan™ themselves, which still far exceeds the 25-year target. The long payback times are primarily due to;

- The high capital cost of retrofit
- Assumptions regarding the performance of existing homes and resident affordability including:
    - Assumed 15% of social residents under-heating their homes currently
    - Minimum of 20% savings to be provided to residents to incentivise them to participate
- Fixed service costs applied to each retrofit to implement the Comfort Plan™ service and performance guarantees
- VAT treatment of cost recovery mechanisms
- "Spark gap"[3] constraining savings of moving from gas to electric heating (and hot water) systems

The commercial models were simulated assuming that a minimum of 20% of the financial incentive of the retrofit works is returned to the resident, with the remaining benefit being returned to the service provider and landlord. However, customer feedback indicated that tenants would like a larger share of the financial benefit if they were to undertake retrofit measures; consumers argued that owing to the

[3] The ratio of electricity to gas prices i.e. high electricity prices and low gas price = large spark gap

invasive nature of retrofit, a larger incentive would be needed to get them on board. This creates additional pressure on the commercial viability of the Comfort Plan™.

Finally, a significant challenge identified is the lack of historic energy consumption data available for individual properties. This data significantly improves the accuracy of household-specific estimates (including changes in energy usage, emissions and costs) for a retrofit project, which is crucial for accurately calculating the Comfort Plan™ charges. Additionally, it would provide clarity on the proportion of under-heated homes in a social housing context (assumed as 15% based on market research). Energiesprong supports the wider use of robust data collection methods such as property logbooks, smart metering with accessible data, performance measurement, and occupant surveys. These measures would improve Energiesprong's ability to accurately model a home's energy demands and expedite the Comfort Plan™ design.

Summary:

What impact could this have on accelerating the heat pump rollout?:

This project has engaged with residents, retrofit solution providers and social housing landlords to inform the design of their Comfort Plan™ offering. A market-ready, end-to-end consumer services agreement approach to the Comfort Plan™ has been developed as part of the project to facilitate early market adoption of the concept. Further work is proposed to continue the development of alternative finance models and to tackle the issues constraining the commercial model. The insights from this engagement will help future projects better understand the commercial landscape in which they hope to operate. Five commercial structures were identified, and analysis was performed to determine the financial viability of each structure at different deployment scales. Relative to a split incentive model, the analysis indicates that the Comfort Plan offers a small but positive benefit (circa 3-5% of retrofit costs) to landlords when retrofitting at scale™. Without the Comfort Plan™, this financial benefit is passed entirely to the residents which is attractive for those lucky enough to receive retrofit works, but is inequitable to the majority of the nation. To improve the attractiveness of the Comfort Plan™ model, there is a need to continue research and development work to:

- Reduce the capital cost of retrofit
- Minimise the cost of providing the performance guarantee
- Validate and utilise on-board monitoring systems rather than third-party systems
- Facilitate direct recovery mechanisms i.e. via rent adjustment linked to performance

What next?

While Energiesprong had hoped to implement the Comfort Plan™ alongside their delivery partners, Clarion and Wolverhampton Homes, this has not gone ahead. At the small scale of their respective projects (10 homes each), the partners prefer to pay capital costs to build expertise by overseeing an in-house retrofit scheme rather than outsourcing to a third-party service provider. The projects are both being used as pilot projects to understand the wider applicability of the Comfort Plan™ model. Energiesprong is continuing to work with its delivery partners to unlock more attractive financial propositions, which may also attract additional social housing landlords in the future. Further resolution of wider market constraints is needed to unlock improved financial recovery (and payback periods) of the Comfort Plan™. Energiesprong have identified a strong market desire to have a mass-market scale Comfort Plan™ mechanism to provide equitable retrofit strategies with lower long-term costs to the landlords, and the development work through this project will be taken forwards by Energiesprong to enable this.

The wealth of research carried out will inform how future projects can deploy retrofit solutions at scale, considering perspectives from residents, utilities, landlords, and other stakeholders. These principles are applicable across retrofit schemes, and understanding them will help in designing more effective and scalable retrofit initiatives going forward.

Where to find out more

https://energiesprong.org/

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