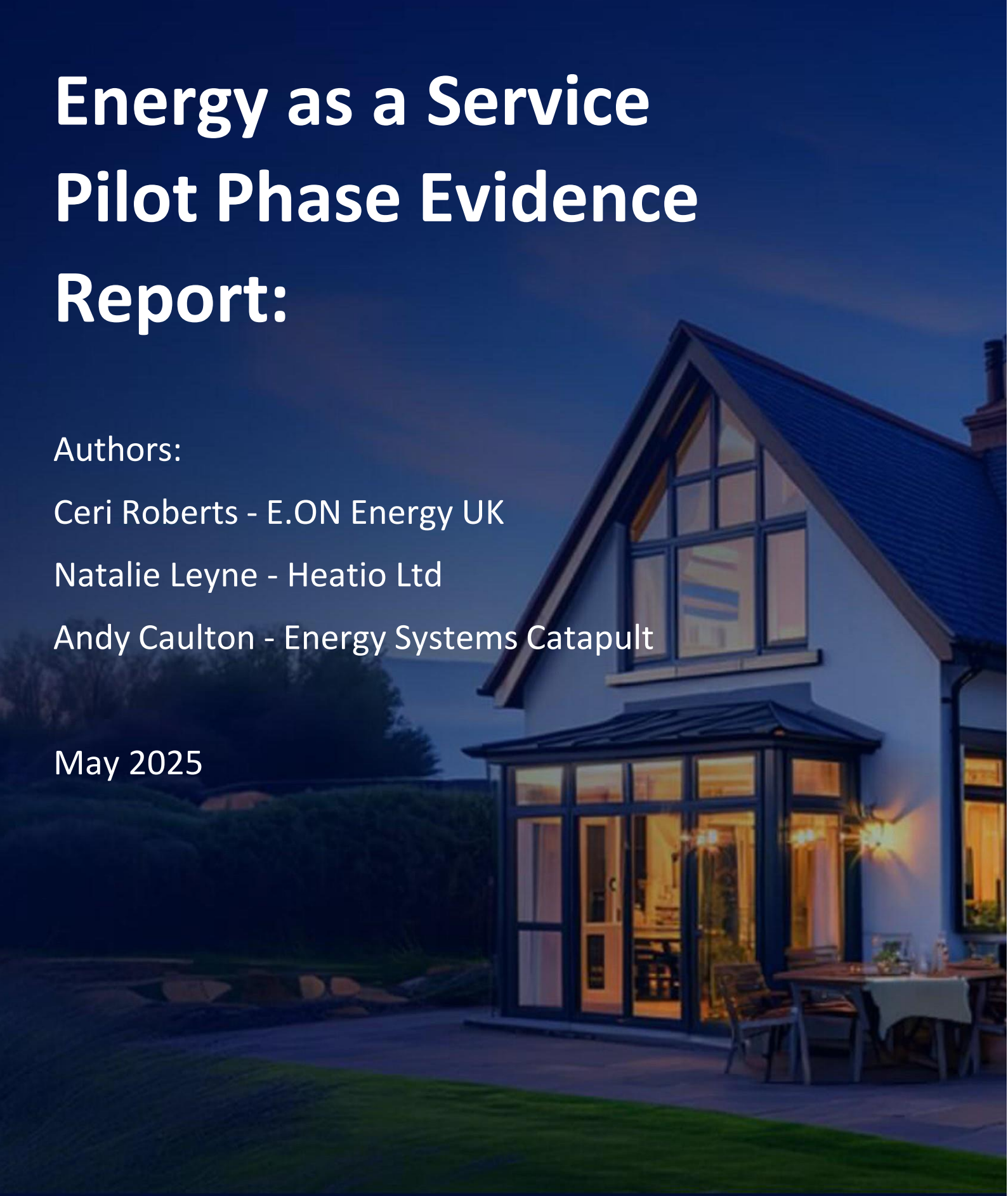
Energy as a Service Pilot Phase Evidence Report:



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Contents

1. Executive Summary

1.1 Purpose and scope

The Green Home Finance Accelerator (GHFA) was a UK government programme that provided funding to support the development and piloting of innovative green finance products. Its aim was to incentivise home energy efficiency, low-carbon heating, and micro-generation improvements by making green finance more accessible to homeowners.

E.ON's optimised Energy as a Service (EaaS) GHFA funded project represents an important step toward enabling the consumer market for low-carbon home energy solutions. Led by E.ON Energy Solutions and supported by Heatio Ltd and Energy Systems Catapult ('the Catapult'), the consortium explored how innovative finance models, specifically those resembling EaaS, could support the uptake of whole house retrofit solutions such as solar PV, battery storage, and air source heat pumps.

The pilot aimed to bridge the gap between consumer demand, financial innovation, and energy system decarbonisation. The full EaaS rollout was constrained by regulatory and funding limitations, notably the Boiler Upgrade Scheme's (BUS)[1] exclusion of third-party ownership of heat pumps. The original model experienced a mid-term disruption that led to a pivot in finance delivery, resulting in the introduction of a new finance partner. The consortium also successfully launched a Minimal Viable Product (MVP) in Q4 2024 that offered solar PV and battery storage through flexible finance over 5–25 years. While the pivoted proposition did not constitute a full EaaS model, it preserved critical research aims and customer engagement, offering valuable insight into scalable retrofit solutions.

1.2 Key findings

Despite the deviation from the original model, the pilot successfully delivered a number of key outcomes that can provide a foundation for future policy and market development:

- **Modular blended finance approach** - In the absence of a unified EaaS contract, the pilot trialled a modular finance pathway, leasing for solar and battery technologies, alongside Boiler Upgrade Scheme supported customer purchase of heat pumps. This hybrid model proved more accessible in today's policy environment, though less streamlined than a full EaaS offer, suggesting that modularity and flexibility are essential design principles for early-stage green finance solutions.
- **Demonstrated consumer appetite and engagement** - Within a three-month window, over 50 households progressed through the retrofit journey. Despite a

[1] The Boiler Upgrade Scheme (BUS) is under consultation at time of writing this report. Proposed amendments include allowing property owners access to third-party ownership finance products alongside the scheme. https://www.gov.uk/government/consultations/boiler-upgrade-scheme-and-certification-requirements-for-clean-heat-schemes

compressed market window and limited marketing reach, 3 full-service contracts were signed and a further 24 are in active stages of development. This highlighted strong consumer engagement in a short time frame, despite minimal marketing, indicating untapped demand for retrofit solutions. This reinforces the opportunity for wider adoption if barriers like financing and clarity of offer are removed, particularly with simplified, compelling messaging.

- **Digital platform innovation** - Heatio's technology enabled real-time energy analytics, remote assessments, and personalised upgrade recommendations using tools such as the Home Energy Score and Digital Twin modelling. Digital tools like Heatio's platform are critical enablers of scalable retrofit solutions. By making complex energy systems more transparent and personalised, they reduce friction for customers and support the development of financeable, performance-based propositions.
- **The Heatio Energy Pod** - A modular, factory-built installation unit, demonstrated that off-site prefabrication can reduce installation complexity and make retrofits more viable in fuel-poor and space-constrained homes. This highlights the potential of modular approaches to widen access to decarbonisation in harder-to-reach housing segments and address skills bottlenecks in on-site installation.

The pilot surfaced systemic barriers to EaaS implementation in the UK:

- **Regulatory barriers** - Full-service contracts resembling EaaS remain unclassified under Financial Conduct Authority (FCA) rules, raising concerns around consumer credit, capital treatment, and compliance. This highlights the urgent need for regulatory clarity and new service definitions to accommodate subscription-style energy models and unlock private capital investment.
- **Funding restrictions** - Third-party ownership is excluded at the time of writing from key schemes like the Boiler Upgrade Scheme, undermining the commercial viability of fully financed propositions. This creates systemic friction with service-led models like EaaS. Addressing this misalignment is essential for creating inclusive, scalable retrofit finance mechanisms.
- **Investor hesitancy** - Institutional capital remains cautious in the absence of proven risk and return profiles for long-term service-based models. This reinforces the need for transparent, real-world pilots and robust performance monitoring to build investor confidence in long-term energy service models.
- **Supply chain fragmentation** - A fully integrated EaaS model of the form originally envisioned by this project requires coordination across finance providers, technology suppliers, installers, and digital platforms. While the pilot's modular delivery model offered greater flexibility for both the consumer and the provider, it also limited the consortium's ability to deliver end-to-end clarity on total system costs and projected savings. For example, the end proposition required Heatio and the finance partner to provide separate quotes for the heat pump and non-heat

pump assets. As a result, customers were unable to receive a single consolidated figure for overall costs and projected savings. This was not a reflection of the lack of customer service, but rather a structural limitation that made it more challenging to present customers with a unified, compelling financial proposition. Fragmentation across finance, tech, and installation hinders cohesive customer propositions. Future EaaS models must prioritise integration across the supply chain to deliver a clear, bundled offer and unified customer experience.

In-depth customer engagement revealed three primary motivations:

- **Reducing energy bills** - Driven by high energy costs and a lack of trust in suppliers, consumers sought greater energy independence. However, modest short-term savings (e.g. £150/year from heat pumps) deterred some, underscoring the importance of communicating lifetime value.
- **Understanding energy use** - Customers valued insight tools like the Home Energy Score as it gave them some understanding of their home's performance and helped identify where to make improvements.
- **Sustainability goals** - While customers valued sustainability, financial savings remained the primary motivator. Many were confused by smart tariffs and how tools like AI-driven optimisation would lower costs. There was also limited understanding of the Smart Export Guarantee (SEG), a government scheme that pays households for surplus electricity exported to the grid. These gaps point to the need for clearer, bundled propositions that show how integrated technologies work together to reduce bills.

Consumer decisions are primarily driven by financial confidence and energy autonomy, not environmental motivations alone. Product design and marketing must focus on tangible savings, simplified journeys, and clear value from smart optimisation, not just green messaging. These insights have already informed changes to product design and customer communications and will shape future proposition development. The pilot also reinforced that investor interest exists, but scaling retrofit finance models will require targeted reform to unlock capital and build market confidence.

1.3 Key recommendations

The pilot has established a foundation that supports a commercially viable model, however, recommendations from the pilot fall into two categories: strategic enablers to unlock growth and systemic impact, and tactical proposition enhancements based on customer research.

The following are recommended as strategic enablers for scaling:

- **Invest in digital infrastructure** - Tools like Heatio's Digital Twin and Home Energy Score enable performance tracking, optimisation, and tailored retrofit journeys,

which are key to scaling demand and attracting finance. By generating trustworthy performance data and personalised insights, these features not only help customers make informed choices, but also give lenders the confidence needed to finance at scale.

- **Leverage proven consumer demand** - Removing upfront costs remains a critical enabler of uptake. There is clear potential to expand flexible, bundled solutions, especially when targeted toward owner-occupiers and the able-to-pay market. Expanding access to zero-upfront financing options could unlock the mainstream retrofit market, especially among financially capable but hesitant homeowners.
- **Unlock value across the lifecycle** - EaaS type models offer long-term value through data-driven services, remote performance optimisation, and customer relationship management. Monetising these layers is central to long-term business viability and can improve returns for investors.
- **Drive policy and regulatory reform** - Amending the Boiler Upgrade Scheme to allow third-party access, and clarifying the FCA's treatment of long-term service contracts, will enable more innovative finance models and facilitate institutional investment.
- **Ensure equity through just transition principles** - Modular, zero-upfront-cost models can open access to decarbonisation for households otherwise locked out by capital barriers. Future schemes must prioritise the inclusion of low-to-middle-income groups.
- **Build public-private delivery frameworks** - Scaling retrofit finance will require repeatable models that combine private capital, digital infrastructure, and government backing, underpinned by clear performance and accountability standards. This is essential to delivering consistent quality, manage risk, and attract sustained investment.

The following enhancements are recommended as proposition design and engagement strategies to strengthen customer understanding and trust:

- **Improve cost transparency** - Customers struggled to understand the financial benefits during the pilot. Transparent breakdowns of savings across monthly, annual, and lifetime timescales must be presented. Use of real-life case studies to demonstrate tangible outcomes and include all cost components (e.g. SEG revenue, finance fees) are essential to building trust and supporting decision-making.
- **Clarify lease and contract terms** - Complexity around contract terms led to customer hesitation. Providing plain-language summaries of lease structures, including exit options, transferability, and asset ownership, supplemented by user-friendly FAQs and scenario walkthroughs will be key to reducing dropouts and increasing conversion.
- **Demystify technology performance** - Some customers had a limited knowledge of how technologies worked together to provide value. Use of visual aids, diagrams, and real-user stories would help explain how integrated systems work and the value

of smart optimisation.

- **Increase engagement in research** - The pilot's compressed timeline limited research depth. Embedding light-touch feedback tools throughout the journey can ensure continuous insight and iterative product improvement, even during scaled rollout.
- **Tailor financial framing to diverse mindsets** - Customers have diverse financial preferences and decision-making styles. Some focus on monthly affordability, while others prioritise long-term value. Providing flexible tools that allow customers to toggle between short- and long-term savings views, alongside clear comparisons of leasing, purchasing, and loan-based options, will improve understanding and support more confident, informed decisions.

With the right policy alignment, investment structures, and delivery innovation, the market for home decarbonisation can shift from niche to scalable. The EaaS pilot has highlighted key structural barriers to scaling such products, while also demonstrating early traction, validating digital and financial tools, and outlining clear next steps for developing a consumer-centric, investable retrofit model. Government-aligned investors now have an opportunity to lead the creation of a national framework for residential decarbonisation, one that is inclusive, cost-effective, and designed for scale.

2. Introduction

2.1 Background and context

The Green Home Finance Accelerator (GHFA) was initiated by the government to address a fundamental challenge in the UK's residential decarbonisation journey: how to make low-carbon home energy technologies more affordable, accessible, and scalable for everyday households. Despite growing public awareness and government support for energy efficiency and electrification, the financial and logistical barriers facing homeowners, particularly around upfront costs and complex retrofit processes, remain significant.

To tackle these issues, the Energy as a Service (EaaS) pilot brought together a consortium of leading innovators in energy, finance, and technology: E.ON Energy Solutions, one of the UK's largest energy suppliers; Heatio Ltd, a digital energy solutions provider; and Energy Systems Catapult ('the Catapult'), a national centre for innovation in clean energy systems. Funded by the Department for Energy Security and Net Zero's GHFA programme (part of the £1bn Net Zero Innovation Portfolio), the pilot tested a new EaaS model, aiming to deliver whole-home energy retrofit solutions through a subscription-style service with no upfront cost to the consumer.

This report outlines the evidence gathered during the pilot project, including insights on consumer behaviour, product feasibility, finance delivery mechanisms, regulatory constraints, and opportunities for innovation. It also captures the lessons learned from the transition between financial partners, and how these shifts impacted project delivery.

In addition to showcasing pilot outcomes, this report offers strategic recommendations for policymakers, investors, and industry stakeholders on how to evolve green finance models and enable broader adoption of low-carbon technologies in UK homes.

2.2 Timing and phases

The project team broke the project down into the following phases, which are referred to throughout this report, typically in-line with reporting conducted by the Catapult:

- **Phase 1: Discovery Phase** – from September 2023 to October 2023: This phase was primarily for the design and agreement of the proposition to be developed and marketed.
- **Phase 2: Pilot Phase (1)** – from February 2024 to May 2024: This phase was primarily for further research and refinement of the initial proposition.
- **Phase 3: Pilot Phase (2)** – from June 2024 to November 2024: This phase was primarily for commercial modelling of the proposition.
- **Phase 4: Pilot Phase (3)** – from December 2024 to February 2025: This phase was primarily for re-assessment of commercial modelling following the change of finance provider.

3. Pilot Summary

3.1 Overview of the pilot

The pilot was designed to test the desirability, feasibility and viability of delivering whole-home, low-carbon energy solutions through a bundled, subscription-style model known as Energy as a Service (EaaS). The pilot sought to enable homeowners to access technologies such as solar panels, battery storage, and air source heat pumps without the need for upfront capital investment, instead paying via long-term, service-based agreements.

The pilot was initially structured around a partnership between Heatio Ltd, E.ON Energy Solutions, and the Catapult, with early-stage financial backing from a New Zealand-based finance company already offering EaaS subscription solutions across New Zealand, and a global investment management corporation. This model was built to include full-service delivery, performance guarantees, and a “Fair Use” energy policy.

However, a significant pivot occurred mid-way through the pilot following the withdrawal of the initial finance partner. This prompted a transition to a new delivery model supported by a new finance provider, which enabled financing for solar and battery systems but not heat pumps. As a result, the final product delivered was a revised Minimum Viable Product (MVP) offering, rolled out in Q4 2024, that included a subset of the original proposition.

Key project deliverables and outcomes included:

- **Pilot launch** - Q4 2024, with a market-ready MVP offering, focusing on solar PV and battery storage, excluding heat pump financing.
- **Customer engagement** - 3 full-service contracts signed; 24 in active progression; and 29 additional leads in early-stage discussions.
- **Digital tools** - Deployment of the Heatio Platform, enabling personalised energy assessments, live energy monitoring, and customer segmentation via the Home Energy Score.
- **Product innovation** - Development of the Heatio Energy Pod, a prefabricated, modular energy system designed to simplify installation, reduce on-site work, and support scalability.
- **Insights and barriers** - The pilot identified key regulatory and market challenges, including Financial Conduct Authority (FCA) finance rules, funding scheme access limitations (notably the Boiler Upgrade Scheme), and complexity in communicating bundled services.

While the pilot did not deliver a fully integrated EaaS model as originally envisioned, it provided strong validation of consumer appetite, demonstrated the feasibility of several technical components, and surfaced actionable insights into how future financing, policy, and delivery models must evolve to enable mass adoption.

3.2 Objectives of the pilot, conclusion, and recommendations

The following (see *Table 1*) outlines the original EaaS pilot project bid objectives, alongside the updated objectives following the scoping adjustments made in October 2024 (see section 3.3). The final column summarises the overall conclusions and recommendations, reflecting insights gained throughout the project. Where revised objectives diverged significantly from the originals, they have been listed separately for clarity. This summary captures the core learnings and recommended next steps to refine the EaaS proposition, address regulatory and finance barriers, and build a scalable, customer- centric offering.

Table 1. Project objectives, conclusions and recommendations.

Original objective	Revised objectives - scope change due to pilot deviation (lender change mid pilot)	Conclusion and recommendations
(1) Launch EaaS for 350 households, providing a comprehensive solution that integrates low carbon energy technologies to facilitate easy and affordable energy savings.	The delivery of a live pilot in Q4 of 2024 offering a Minimal Viable Product (MVP), which includes a whole house solution package of up to four energy efficiency solutions.	• Delivered MVP pilot in Q4 2024, covering solar PV and battery finance (no upfront cost); heat pump finance not secured. • Signed 3 full solution contracts; 24 in progress, 29 in early-stage discussions. • Recruitment delays (Dec 2024) compressed market testing window and limited uptake. • Recommended amending Boiler Upgrade Scheme (BUS) regulations to allow third- party scheme access (which we understand is currently being consulted[2]). • Preserve BUS but adapt structure to support integrated finance solutions. • Explore supply chain efficiency or targeted subsidies to reduce hardware costs.
(2) Financial Innovation: To offer a long-term (20-year) EaaS agreement that eliminates the upfront	(N/A – none of the revised objectives mapped to this original objective)	• Achieved long-term financing for solar PV and battery storage via finance partner, with loan terms ranging from 5 to 25 years; however, heat pumps continue to require separate upfront purchases.

[2] The Boiler Upgrade Scheme (BUS) is under consultation at time of writing this report. Proposed amendments include allowing property owners access to third-party ownership finance products alongside the scheme. Boiler Upgrade Scheme and certification requirements consultation (accessible webpage) - GOV.UK

Original objective	Revised objectives - scope change due to pilot deviation (lender change mid pilot)	Conclusion and recommendations
costs of energy solutions (like heat pumps, photovoltaic systems, and batteries) and installation.		• FCA regulations limited the transparency around financing costs and savings, impacting customer clarity. • The complexity of the proposition hindered clear market positioning and affected affordability for customers. • Commercial viability analysis indicates that an EaaS model is feasible, incorporating financing for all technologies and enabling zero upfront costs. • Recommended engagement with lenders offering competitive green loan rates, supported by data-driven performance tracking to enhance lending confidence. • Suggest integrating a stable, long-term tariff within the financing model to improve financial predictability. • Implementation of monitoring and validation systems for energy savings is needed to build lender confidence and support financing structures.
(3) Consumer Cost Savings: Achieve significantly lower energy costs for consumers by integrating optimised energy tariffs and flexibility/grid services.	To identify any hidden complexities around the commercial model and regulatory process before scaling.	• Financial modelling demonstrated potential savings over 5–25 years, but real-world uptake was constrained by upfront heat pump costs and varying individual finance terms. • Ancillary services, such as flexibility and grid revenue opportunities, could not be tested at scale during the pilot. • Recommend offering tariff “guarantees” or best-tariff commitments to provide customers with greater cost certainty. • Suggest forecasting and integrating flexibility service revenues into financial models, supported by real-time monitoring systems.
(4) Performance Guarantee and	(N/A – none of the revised objectives	• The pilot included solar and battery maintenance through a finance partner,

Original objective	Revised objectives - scope change due to pilot deviation (lender change mid pilot)	Conclusion and recommendations
Support: Ensure consumer satisfaction and peace of mind through a 'Fair Use' Policy guaranteeing the system's energy performance, coupled with ongoing support such as servicing, maintenance, and breakdown cover.	mapped to this original objective)	but heat pump servicing was excluded as the equipment was customer-owned. • A "fair use" performance guarantee was not delivered due to the complexity of implementation and risk aversion from finance providers. • As the insurance market matures, explore underwriting options to enable robust performance guarantees. • Define and clearly communicate a baseline "fair use" policy (e.g., energy saved compared to a counterfactual usage scenario).
(5) Energy Management Optimisation: Utilise the Heatio Home Energy Management System (HEMS) to maintain consumer comfort levels through system optimisation.	(N/A – none of the revised objectives mapped to this original objective)	• The Home Energy Management System (HEMS) rollout is ongoing, with full optimisation and data insights pending as installations are completed. • Recommend mandating both pre- and post-installation monitoring to ensure transparency. • Offer HEMS as an optional add-on, incorporating user feedback mechanisms to enhance usability. • Utilise Smart Meter Efficiency Ratings (SMETERS) to improve system design and overall customer experience.
(6) Market and Consumer Insight Development: Conduct continuous market testing and consumer research through the Catapult to refine the EaaS product based on insights gathered during the pilot phase.	To test the consumer take up in a live environment and gather research to identify the viable iterations of the product design and customer experience to increase the likelihood of a successful roll out at scale.	• Continuous market testing was limited due to pilot delays and small sample sizes. • Phase 1 online survey (approximately 4,000 respondents) identified cost certainty and no upfront costs as the primary consumer motivators. • Feedback revealed complexities for customers in fully understanding the energy savings, how the products worked together, and how the AI optimised the solutions to maximise savings.

Original objective	Revised objectives - scope change due to pilot deviation (lender change mid pilot)	Conclusion and recommendations
	To validate the individual product features alongside the 'package' and gain better understanding of their appeal in a live environment and how drop out is managed.	• Continuous feedback helped to refine the marketing strategy throughout the pilot. • Recommend resuming ongoing quantitative and qualitative research as the pilot scales. • Build consumer trust early by securing financial partnerships prior to allocating research funding.
(7) Tracking and Analysis: Monitor the market performance of the EaaS to identify and overcome barriers to its mass deployment, supported by a robust evidence base from customer interactions during the pilot.	Deliver a robust customer experience/operating model that manages all aspects of the journey, identifying potential demand into the business to ensure it is sustainable.	• High-touch customer engagement is essential in this early market, which lengthens acquisition timelines. The customer journey was disrupted by FCA-regulated finance referrals. To address these challenges, it is recommended to continue tracking customer interactions to refine processes and streamline lender integrations to create a smoother, more seamless customer experience.
(8) Future Strategy and Commercialisation: Establish commercialisation targets and analyse various business models to secure and sustain the market opportunity beyond the pilot phase, based on detailed consumer research and market analysis.	To identify the potential for a wider proposition offering post-pilot which gives further opportunity to build a robust product portfolio that supports the customer and builds a sustainable business/commercial model.	• The early "fair use" service model remains desirable but was limited by finance constraints. Data-driven, tiered adoption models resonate with early adopters, suggesting a need for further testing of "fair use" guarantees and tiered uptake strategies. Unlocking the Boiler Upgrade Scheme (BUS) for third- party ownership and addressing home upgrade prerequisites such as insulation and space are critical. Additionally, financing models and messaging should be tailored to different customer segments, drawing on proven examples from solar finance.
(N/A – none of the original objectives mapped to this revised objective)	To test the feasibility of delivering a whole house proposition via an independent, smaller customer facing	• The pilot demonstrated that smaller providers can successfully deliver whole-house solutions; however, consumer trust tended to favour established brands such as E.ON. To build confidence, it is

Original objective	Revised objectives - scope change due to pilot deviation (lender change mid pilot)	Conclusion and recommendations
	business (Heatio) to identify routes to market to those customers who are not currently E.ON customers, and to understand whether this is an attractive, viable route to market for a wider target market.	recommended to review FCA financial promotion rules for greater clarity and explore co-branding opportunities with trusted energy providers. Integrating energy tariffs and leveraging the authority of established brands can further enhance market acceptance.

3.3 Scope changes

Midway through the EaaS pilot, a significant and unforeseen event forced a fundamental repositioning of the programme's delivery model. The original finance partner, responsible for underpinning the EaaS proposition, entered liquidation. This development had immediate and profound implications, as they had been central to the original vision of offering low-carbon home energy technologies (solar, battery, and heat pumps) through a fully financed, no-upfront-cost service model. Following the insolvency of the finance partner, the global investment corporation, who had been positioned as the primary funder supporting the service offer, also withdrew their backing. Their withdrawal reflected a broader lack of confidence in the readiness of the UK market for EaaS propositions at scale. Several factors contributed to this decision:

- **Lack of scalable deployment opportunity within the pilot phase** - The initial investor strategy for the EaaS model relied on the ability to scale rapidly and deploy at volume across the UK. However, due to the early-stage nature of the programme and the limited scale achievable within a pilot, the consortium was unable to provide the volume projections required to meet their investment criteria. This constraint ultimately led to their withdrawal from the model.
- **Regulatory complexity** - Significant uncertainty remained regarding which party would hold FCA responsibility for the service agreement, and how energy tariffs could be reliably structured and maintained over a 20–25 year period given market volatility and evolving supplier obligations.
- **Boiler Upgrade Scheme (BUS) limitations** - The BUS was only available to property owners and covered the initial upfront cost of the Air Source Heat Pump (ASHP). Because the EaaS finance model involves third-party ownership of the ASHP, the remaining cost beyond the scheme would be financed through EaaS, which is not permitted under the terms of the BUS. This restriction on third-party ownership at

time of piloting meant that including heat pumps within the EaaS model was commercially unviable, weakening the overall investment case for a full-service offering. A potential workaround involved providing the heat pump free of charge to the customer, allowing them to claim the BUS directly. This would then be factored into the EaaS service fee. However, this solution was considered suboptimal and somewhat cumbersome for customer.

The initial finance lender's withdrawal highlighted the challenges of attracting institutional capital into new, complex financing models without a proven operational track record. It underscored the critical need for clearer policy alignment, stronger customer performance data, and simplified regulatory frameworks to enable future scaling.

In response, the consortium undertook a rapid strategic review. Rather than halting the pilot or attempting to replicate the original finance structure immediately, E.ON identified an opportunity to reposition the programme to continue delivering value and learning under a revised model.

The decision was made to:

- Transition the customer-facing experience to an independent provider, led by Heatio Ltd, instead of an E.ON-branded offer.
- Broaden the customer base beyond E.ON's existing customers, opening participation to households across any energy supplier.
- Engage a new finance partner to support the financing of solar PV and battery systems, albeit without the ability to fully finance heat pump installations due to market and grant structure limitations.
- Refocus the pilot's learning objectives to test the viability of an independent service provider delivering whole-home energy solutions to a diverse set of customer personas.

While the revised delivery model did not constitute the original EaaS solution offering, particularly as upfront customer contributions were still required for heat pumps, it preserved the integrity of the pilot by enabling real-world market testing, customer engagement, and critical insight generation. See *Table 2* for a summary of the changes.

Ultimately, the pivot provided valuable lessons not only about finance structures and customer propositions, but also about the flexibility required to adapt to market realities. It demonstrated the resilience of the consortium's approach and the importance of cross-sector partnerships in maintaining momentum towards decarbonisation goals despite external market shocks.

Table 2. Summary of scope changes between the two financing models.

Aspect	Original model (pre-pivot)	Repositioned model (post-pivot)
Customer facing brand	E.ON Energy branded customer journey	Heatio Ltd with independent platform and brand
Finance partner	NZ EaaS financing company	New financing partner
Targeted customer base	Primarily E.ON's customers	Open to all customers, regardless of energy supplier
Product offering	Fully financed package: solar, battery, heat pump with no upfront cost	Financed solar and battery with upfront contribution required for heat pump
Delivery model	E.ON led direct to customer service experience	Independent Heatio-led service experience with E.ON supporting oversight and coordination
Pilot focus	Testing E.ON customer adoption of EaaS model at scale	Testing viability of independent service provider model and broader market adoption
Strategic outcome	Build future E.ON service offerings around EaaS	Gather wider market insights to shape sustainable and scalable green finance models

Following the pivot resulting from the withdrawal of the primary funder and the appointment of a new finance partner, a further scope change was introduced to accommodate delays in the pilot launch. These delays significantly compressed the timeframe available for delivering both the planned qualitative and quantitative customer research activities. Originally, the Catapult had been scheduled to conduct both streams of research during a wider pilot period, but the rescheduled launch reduced the available delivery window. As a result, it was agreed that qualitative research would instead be led directly by E.ON Energy, using internal Group Innovation experts based in Sweden.

Under the revised arrangement:

- Heatio Ltd recruited customers from the pilot pool.
- E.ON Energy conducted 60-minute structured interviews with these customers, capturing insights into customer perceptions, motivations, and barriers within the retrofit journey.
- Heatio Ltd continued to lead the quantitative research, providing data-driven

analysis on customer demographics, engagement patterns, and key trends — including where, when, and why customers dropped out of the journey.

This adjusted approach ensured that the pilot could still generate valuable customer insights despite the compressed delivery window. The combination of qualitative interviews and quantitative analysis helped maintain the robustness of the evidence base, informing both immediate learning and future proposition development.

3.4 Government grants and funding

Government grants and funding schemes have played a critical role in encouraging the uptake of low-carbon technologies in UK homes. Initiatives such as the Boiler Upgrade Scheme (BUS) influenced the project design, delivery, and ultimately the challenges encountered during implementation.

The following summarises key information on how the Boiler Upgrade Scheme (BUS) related to the pilot project:

- **Purpose** - Government funded grant scheme that provides financial support to property owners who install low-carbon heating systems such as air source heat pumps, ground source heat pumps, and biomass boilers.
- **Grant value -** £7,500 towards air source heat pump and ground source heat pumps.
- **Relevant pilot implication:** The scheme posed a structural challenge for the EaaS pilot. Under schemes rules, the BUS is only available where the homeowner is the owner of the heating system (which we understand is under consultation at time of writing). This meant that under an EaaS model (where a third-party owns and maintains the technology), customers were not eligible for the BUS, significantly limiting the ability to finance heat pumps within a no-upfront-cost service structure, and potentially the interest, uptake and engagement from customers.

3.5 Key funding challenges identified

Major schemes like BUS were not originally designed to accommodate EaaS models where assets are owned by service providers rather than consumers. This can therefore make it difficult for innovation service-led model to access public funding. The impact of the above structural limitations directly influenced the pivot away from including heat pumps in the financed offer, requiring homeowners to pay upfront if they wished to install a heat pump, which reduced the attractiveness and scalability of the original proposition.

4. Partnerships

4.1 Consortium members and their expertise

The pilot was founded on a strong collaborative framework, bringing together the expertise of a partnership to develop a scalable, integrated, and user-friendly green finance solution. Each organisation played a vital role in shaping the pilot's deliverables, ensuring that the solution was not only technically robust but also financially sustainable and consumer focused.

4.2 E.ON Energy Solutions Ltd

E.ON Energy Solutions Ltd served as the lead organisation for the EaaS pilot, overseeing programme delivery, consortium coordination, and alignment with the GHFA objectives. From the outset, E.ON provided strategic leadership, governance, and reporting to guide the pilot's direction.

E.ON's residential arm (E.ON Next) developed a tailored energy tariff designed to maximise savings when combined with solar PV and battery storage, one of the most competitive tariffs on the market. This shift enabled the pilot to explore a brand-neutral model (independent of energy suppliers) capable of attracting a broader customer base and testing the viability of independent service providers in the EaaS market.

E.ON's role included:

- Strategic leadership and coordination of consortium partners (Heatio Ltd and the Catapult).
- Oversight of insight capture, ensuring financial, customer, operational, and technical learnings were collected.
- Regulatory and compliance support, particularly in finance, marketing, and energy governance.
- Development of the final evidence report, coordinating contributions and ensuring high-quality outputs.
- Co-design of a future-facing business model with Heatio, supported by the Catapult's synthesis and reporting.

E.ON's leadership ensured the pilot continued to generate robust evidence for scaling whole-home retrofit models and green finance solutions, even under revised delivery conditions.

4.3 Heatio Ltd

Heatio Ltd is an energy data and analytics company helping businesses to accelerate

customer adoption of low-carbon technologies. Using digital twin technology, predictive analytics, and whole-home energy monitoring, Heatio equips energy retailers, banks, and lenders with real-time insights to offer personalised energy-saving solutions and drive decarbonisation. Since launching in 2022, Heatio has been transforming energy delivery to ensure fairer access to clean energy.

Heatio's role included:

- Pilot service provider for the bundled offering (Air Source Heat Pump (ASHP), solar, battery, and optional EV). This covered the system design, installation, performance validation, and flexible finance options.
- Introducer Appointed Representative (IAR), working with an FCA-approved lender to offer finance solutions, including shortfall coverage and asset leasing.
- Market engagement and lead generation, promoting the proposition and supporting customer adoption of low-carbon technologies.

4.4 Energy Systems Catapult (the Catapult)

The Catapult is an independent research and technology organisation. Their mission is to accelerate Net Zero energy innovation. Launched in 2015 by Innovate UK, the Catapult has built a team of 300, with a range of technical, engineering, consumer, commercial, incubation, digital, and policy expertise. They draw on sector-leading test facilities, modelling tools, and data collected from their back catalogue of more than 500 Net Zero innovation projects.

The Catapult's role included:

- Providing consumer insight on the EaaS proposition through both quantitative and qualitative research, and formulating informed and clear recommendations on how to improve proposition appeal and customer experience, to maximise opportunities to overcome barriers to deployment/uptake.
- Providing business model innovation support, including the design of several possible business model options in the Discovery Phase, and ongoing assessment of the chosen proposition(s) through the testing of feasibility and viability of the relevant underpinning business models.

4.5 Third party stakeholders

Delivering the EaaS pilot required close collaboration across the core consortium and with specialist third-party partners. These stakeholders provided essential expertise, financial solutions, manufacturing capability, and technical innovation to support pilot design, delivery, and testing.

Through partnerships with finance providers, manufacturers, installers, and service

innovators, the pilot explored a scalable model for low-carbon home retrofits. The section below summarises the roles, contributions, and insights from key third-party partners, highlighting their value, the challenges encountered, and lessons for future collaborations.

4.5.1 Lender finance partner

The pilot partnered with a UK-based finance provider specialising in zero-deposit, flexible finance solutions for home energy upgrades such as solar panels, battery storage, and heat pumps. Their offering supports homeowners through affordable monthly payments, often offset by energy savings, and delivered via a national network of accredited installers.

As the external finance partner, they played a crucial role in enabling access to finance for solar and battery systems. This included securing investment and designing financial mechanisms that reduced upfront costs for consumers, offered flexible repayment terms aligned with expected energy savings, and supported the pilot's energy platform to enable bundled finance and technology offerings.

Their involvement also broadened equipment choice by removing the brand restrictions associated with a previous finance arrangement, which had limited the offer to specific heat pump manufacturers. This change allowed the delivery partner to expand its supply chain and improve the competitiveness and scalability of the solution.

4.5.2 Heat pump technology partners

To support the delivery of the EaaS model, the pilot engaged multiple global heat pump manufacturers, each contributing to different stages of the programme. This evolving approach allowed for improved flexibility, scalability, and alignment with diverse household needs.

The initial supplier was appointed through a global procurement agreement and acted as the default equipment provider. This partnership delivered early benefits, including a streamlined supply chain, cost efficiencies through bulk purchasing, strong brand recognition, and alignment with the zero-upfront-cost delivery model. However, the pilot's mid-stage shift to a new finance partner prompted a redesign of the delivery model and a move away from the single-supplier approach.

This transition enabled the inclusion of additional suppliers with strong capabilities in smart home and energy-efficient technologies. These partners contributed high-performing, smart-compatible heat pump systems that supported the pilot's goals of reducing carbon emissions, maintaining comfort, and enhancing consumer control. Their involvement also included technical support, installer training, and commissioning assistance to ensure seamless integration and high system performance.

By diversifying its supplier base, the pilot was able to test multiple heat pump options across

different home types, offering a more tailored, competitive, and installer-friendly solution. This approach reflected real-world market conditions and helped reinforce the broader aim of accelerating adoption through trusted, recognisable brands.

4.5.3 Thermal storage technology partner

A UK-based thermal storage specialist was engaged to address one of the key physical challenges in home energy retrofits: limited space for hot water storage. Their compact heat battery technology offers a highly efficient alternative to traditional hot water cylinders and integrates well with low-carbon systems like heat pumps and solar PV.

Their involvement focused on supporting a modular installation approach, particularly within the Energy Pod concept (see section 5.3.9) by simplifying internal plumbing and reducing space requirements. This enabled the delivery of factory-built, pre-wired, and pre-plumbed units that could be installed as a single solution in customers' homes.

The partner's contributions also helped reduce capital costs and on-site installation time, making whole-home retrofits more affordable and scalable within the EaaS model.

4.5.4 Battery storage technology partner

A UK-based battery storage specialist was selected to provide residential storage systems for the pilot. Their product range, including batteries, inverters, and energy management tools, enabled greater self-consumption of renewable energy, supported load shifting, and contributed to household energy independence.

The battery storage partner played a central role in the development of the modular Energy Pod, offering flexible, high-performance systems well-suited to homes with solar generation. Their technology supported time-of-use optimisation by storing electricity during off-peak hours for use when tariffs were higher, reducing bills without requiring customer behaviour changes.

Their systems also facilitated factory pre-assembly and configuration, reducing installation time and complexity. The technology proved compatible with the wider platform and was successfully deployed across the pilot.

4.5.5 Installation and prefabrication specialist

A specialist installation partner was engaged to address one of the pilot's key challenges: the complexity and cost of on-site delivery for whole-home retrofits. Their role focused on developing and testing the modular Energy Pod system, helping to validate an approach that reduced on-site labour and simplified the integration of multiple technologies.

Their contributions included applying design thinking to minimise disruption, shorten installation timelines, and reduce the need for multiple trades. By shifting traditionally on-

site tasks, such as plumbing, wiring, and system configuration, into a controlled factory environment, the partner supported a more predictable, efficient, and cost-effective delivery model.

They also piloted pre-planning methods for ancillary works, like radiator and pipe upgrades, further improving the customer experience and streamlining the installation process.

4.6 Barriers and challenges

The pilot faced a range of challenges, including late partner involvement, regulatory barriers, technology integration issues, and financial uncertainty, all of which affected delivery and timelines:

- **Late engagement of finance partner** – As a result in the pivot to a new finance partner joining later, and consequently the change from an E.ON branded and E.ON marketed proposition over to Heatio branded, this limited the new finance partner's input in early planning and governance. It also led to a reworking of the customer journey, with Heatio having to quickly adapt to regulatory compliance and onboarding processes that were aligned with E.ON, placing pressure on Heatio's resources and contributing to delays.
- **E.ON's regulatory constraints** – Due to the mid-pilot shift in responsibilities, E.ON ceased leading customer acquisition, which in-turn changed their position on their compliance obligations. This responsibility transferred to Heatio, who had not initially budgeted or planned for regulatory and marketing responsibilities. The resulting operational adjustment in resource allocation led to an initial slowdown in project progress.
- **Integration limitations of thermal storage technology** - The thermal storage system required hard-wired controls and was incompatible with the pilot's data-driven platform. This limited real-time optimisation, reduced interoperability with other technologies, and constrained scalability for future use.
- **Delays impacting the Catapult's role** – The pilot's pivot and subsequent installation delays prevented the Catapult from delivering timely consumer insight as originally planned. The financial modelling had to be reworked to align with a revised finance offer, ultimately leading to a shift in the Catapult's focus away from the consumer insight work (which was picked up by E.ON and Heatio) and to concentrate solely on the business modelling work. Compressed timelines placed pressure on resources and limited the opportunity to gather both qualitative and quantitative evidence on the EaaS's performance over an extended period.
- **Market readiness** - The early stage of the pilot and low volume of expected and targeted installs limited the availability of data needed to validate long-term financial returns and operational feasibility.

- **Regulatory complexity** - Key uncertainties included determining liability under FCA regulations and managing energy tariffs over 20–25 years, especially in the context of market volatility and shifting supplier responsibilities.
- **Boiler Upgrade Scheme (BUS) constraints** - The BUS grant could not be claimed by third-party service providers making the inclusion of heat pumps in the EaaS model commercially unviable and reducing the overall attractiveness of the proposition.

4.7 Recommendations

The following recommendations are suggested to address the considerations that emerged:

- **Early engagement from finance partners** - Finance providers should be involved from the start to shape design, governance, and compliance strategies. Early engagement helps avoid disruptive changes and supports smooth adaptation to regulatory requirements.
- **Enable scalable technology integration** - Future collaborations should prioritise technologies with open APIs, accessible performance data, and optimisation capabilities independent of energy suppliers. This ensures customer flexibility and long-term system value.
- **Enhance thermal storage compatibility** - Thermal storage solutions should transition to wireless or cloud-based integration and offer open data access. Modular and easy-to-install designs can lower deployment costs and support scalability.
- **Streamline supply chains and integration** - Early involvement of suppliers ensures system compatibility. Flexible procurement approaches increase adaptability to changing needs and help prevent technical or scheduling delays.
- **Strengthening governance and customer journey design** - Clear governance structures and co-designed customer journeys should be established from the outset. Early co-ordination across partners ensures compliance, avoids role confusion, and supports efficient delivery.
- **Expand finance and policy support** - Introduce tools such as guarantees, risk-sharing mechanisms, or incentives to reduce perceived investment risk. Greater alignment across finance, policy, and technology sectors is essential to support the scale-up of low-carbon solutions.

5. Innovation

5.1 Energy as a Service proposition

A central ambition of GHFA was to test innovative approaches to financing and delivering whole-home, low-carbon retrofit solutions. At the heart of this was the E.ON's optimised Energy as a Service (EaaS) model - a bold, service-led proposition designed to simplify adoption, lower upfront costs, and provide households with a managed, subscription-style energy solution.

Over the course of the pilot, the proposition evolved through three distinct models, each shaped by changes in finance partnerships, delivery risks, and regulatory constraints. Despite these shifts, each version retained core elements of innovation, whether in design, delivery, financing, or customer experience.

5.2 Proposition evolution

5.2.1 Phase 1: The 'fair use' EaaS proposition

The initial proposition explored during the Discovery Phase represented the most innovative and integrated vision for decarbonising UK homes. This model introduced a fully bundled EaaS offering which included:

- No upfront cost to the customer
- A fixed monthly service fee over 20–25 years
- Installation and optimisation of solar PV, battery storage, and a heat pump
- Maintenance and servicing included
- A "Fair Use" performance guarantee, providing reassurance around comfort and savings

Described as "Optimised Energy as a Service," this model offered customers a single, managed energy solution, combining traditional mechanisms like energy performance contracts and power purchase agreements with a retail-style customer journey.

What made this model particularly innovative was the integration of financial, operational, and performance features into a single agreement. This transformed complex, high-cost technologies into a simple, predictable, service-led offering. The aim was to ensure customers would save money over time compared to their existing energy bills, with modelling confirming this potential under a range of assumptions (see *Table 3*).

Table 3. Calculation used to determine consumer savings from EaaS offering.

Component	Description
Customer Savings	Total savings that the end user will experience over 20 years.
Electricity Bill Savings	Savings due to reduced consumption of electricity (due to solar PV). This is likely to be 0 or negative as the heat pump will increase consumption of the property.
Extra Electricity Export	Revenues generated by exporting to the grid the electricity not used by the property.
Gas Bill Savings (incl. standing charge)	Savings due to reduced consumption of gas. Gas consumption should be 0 after retrofit.
Gas boiler maintenance savings	Savings due to avoided maintenance to the gas boiler.
Gas boiler replacement savings	Over 20 years, the gas boiler will need to be replaced. The current model assumes 1 replacement each 10 years. The counterfactual boiler offer used is "EON comfort bundle - Combi boiler, 10 years guarantee, financing at 8% APR included".
EaaS package fee	Fee paid to the EaaS provider for equipment, installation, maintenance, financing, and other benefits included in the proposition.
Customer Savings = Electricity Bill Savings + Extra Electricity Export + Gas Bill Savings (incl standing charge) + Gas boiler maintenance savings + Gas boiler replacement savings - EaaS package fee	

The Catapult explored several variations of the EaaS concept, but the selected model, a service agreement with a Fair Use guarantee, stood out for its ability to balance customer trust, affordability, and long-term value (see *Table 4*).

Table 4. Business models explored by the Catapult.

Business Models	Customer Desirability	Commercial Viability	Technical Feasibility
1 **Service agreement for financing and maintenance**	Very Low	High	High
2 **Service agreement with a guarantee that the savings will at least match the EaaS fee**	High	Low	Low
3 **Service agreement with a Guarantee of same comfort level as a gas boiler**	Low	High	Medium

Business Models	Customer Desirability	Commercial Viability	Technical Feasibility
4 **Service agreement with EaaS fee corresponding to achieved savings**	High	Medium	Low
5 **Service agreement with a guarantee based on "Fair Use" policy**	**High**	**High**	**Medium**
6 **Solar-as-a-Service and Heat Pump financing**	Very Low to High (potential coupling of performance guarantee)	Medium to Very High (potential coupling of performance guarantee)	Low
7 **Comfort-as-a-Service**	Very High	Low	Very Low

5.2.2 Phase 2: The original EaaS proposition

The next evolution of the model came with the entry of an established EaaS financing company from New Zealand (the original finance partner). It retained the core innovation of a zero-upfront-cost, fully managed service covering solar PV, battery storage, and heat pumps, delivered over a 20–25 year term. Customers were offered a package that included full installation, optimisation, maintenance, and servicing, in exchange for a fixed monthly service fee.

While the "Fair Use" performance guarantee was removed, this adjustment reflected the risk appetite of institutional investors, particularly given the absence of long-term cost certainty. Despite the removal of a formal guarantee, the proposition continued to aim for net financial benefits for customers over time.

The model remained distinctive in its integration of private capital with a whole-home retrofit solution and long-term service agreement, supported by home energy insights. The Catapult's review of the financial model confirmed its overall feasibility and highlighted areas for improvement, especially around performance modelling and cost assumptions.

In summary, a consumer without the proposition would have import costs for both their electricity and gas usage with no self-generation, vs a consumer with the proposition having no gas costs, reduced electricity import costs due to the self-generation of electricity, and the service fee costs (see *Figure 1*).

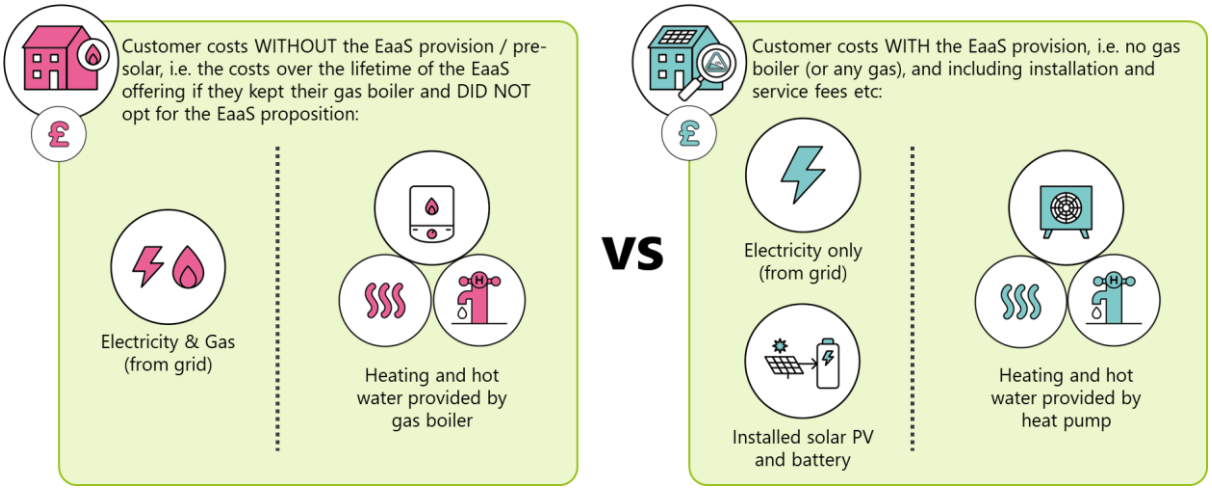

Figure 1. Summary of consumer cost components with and without the EaaS agreement.

5.2.3 Phase 3: The Heatio proposition

The final iteration of the pilot emerged after the original finance partner entered liquidation, prompting a fundamental pivot in the delivery model. In this revised version:

- Customers who wished to install a heat pump were required to purchase it directly, using the Boiler Upgrade Scheme (BUS) where eligible.
- Solar PV and battery systems were financed through a new finance partner using conventional credit agreements, typically over 5 to 25-year terms.
- As a result, there was no longer a single, integrated Energy as a Service (EaaS) contract. Instead, customers were issued separate agreements: one for the heat pump (usually a direct purchase with grant support), and another for the solar and battery system (through asset finance).

Although no longer technically an EaaS proposition (given that the new proposition is a more traditional 'asset finance' type solution, combined with the removal of ongoing 'service' elements, such as asset optimisation and ancillary revenue – see *Figure 2* below for more details), this model retained elements of innovation by offering:

- A modular approach to low-carbon upgrades
- Remote surveys, digital tools, and the Heatio Home Energy Score to support customer decision-making
- Blended financing pathways to reduce upfront cost for key technologies

This version served to test customer appetite for retrofit bundles, financing behaviour, and engagement with data-led insights in a live market environment.

Figure 2. Summary of the business models researched throughout the EaaS pilot lifespan, starting with the Phase 1 proposition and ending with the proposition used for the pilot.

5.3 Heatio technologies and process innovations

The EaaS pilot deployed a suite of digital tools, prefabricated systems, and integrated processes to simplify low-carbon retrofits and enhance the customer experience. Key innovations included scalable software platforms, smart meter integration, modular energy systems, and data-driven personalisation.

5.3.1 The Heatio platform: enabling scalable, data-driven retrofit innovation

At the core of the pilot was the Heatio platform, a modular, cloud-based system for managing, optimising, and personalising whole-home retrofits. The platform uses a real-time digital twin to simulate energy performance, model property suitability for low-carbon technologies, and predict potential savings and environmental impact. It integrates data from energy performance certificates, climate conditions, smart meters, and behavioural insights to generate tailored retrofit proposals.

Homeowners can use the platform's interface to track energy use and costs and receive recommendations for personalised efficiency. With user consent, Heatio accesses smart meter data every 15 minutes via a secure third party, with plans to connect directly to the UK's Smart Data Communications Company (DCC) to simplify data access and improve consent management. The platform is GDPR-compliant and built on secure cloud architecture, using encryption, identity management, role-based access, and audit logging to ensure data privacy and traceability.

Designed for scale and interoperability, the platform was tested extensively and refined through continuous development, integrating key datasets and responding to user feedback. It supports secure, real-time retrofit delivery tailored to each household.

5.3.2 Manufacturer system integration

Heatio integrated manufacturer systems directly into its operational workflows to support commissioning, monitoring, and compliance. This approach enabled remote commissioning and performance verification, real-time diagnostics and early detection, and the creation of digital audit trails for warranties and regulatory compliance. These integrations improved speed, transparency, and co-ordination across installation, support, and maintenance processes.

5.3.3 Digital design and customer onboarding

To improve the solar PV design and proposal process, Heatio used a digital platform that allowed engineers to simulate optimal solar layouts for each property, select tailored components suited to site conditions, auto-generate visual proposals and performance forecasts, and provide customers with clear financial estimates and documentation. This approach streamlined internal workflows and improved the customer experience with clear, data-led proposals.

5.3.4 Post-installation compliance and documentation

After installation, Heatio managed the collection and distribution of essential documentation to ensure both customer understanding and regulatory compliance. This included technical datasheets and operation manuals, manufacturer warranties, and proof of commissioning and MCS (Microgeneration Certification Scheme) requirements. Documents were delivered through a centralised system, ensuring consistency and transparency across the customer journey.

5.3.5 The building physics model

A key innovation in the pilot was Heatio's building physics model, developed to predict how homes use energy and assess the impact of different retrofit measures. Built on a database of over one million property archetypes, it reflects the diversity of UK housing in terms of construction, heating systems, size, insulation, and occupancy patterns.

By matching each customer's property to the closest archetype, the model enables accurate energy performance forecasts and tailored retrofit planning. It leverages smart meter data, local climate inputs, and behavioural factors - such as whether occupants are home throughout the day or only during the evening and the weekends - to simulate real-time energy use and heating demand. This allows for highly personalised retrofit recommendations and reliable Home Energy Scores.

The platform supporting the model was built using scalable cloud technologies and is capable of processing large volumes of data efficiently. It continuously learns from new inputs and feedback, ensuring relevance over time. This infrastructure allows Heatio to scale across millions of homes while maintaining performance.

5.3.6 The Digital Twin

The Digital Twin forms a virtual representation of each home, replicating its physical characteristics, installed systems, usage patterns, and environmental conditions. It enables dynamic simulations that predict how the home will perform under different retrofit scenarios.

As part of the Pilot Phase, only one installation had progressed far enough to allow post-retrofit monitoring. As such, the predictive accuracy of the Digital Twin has not yet been fully validated at scale. Ongoing monitoring of this installation will be used to assess how closely predicted outcomes align with actual performance. Additional funding is being sought by Heatio to expand the sample size and validate the model's reliability across a wider range of homes.

By incorporating data such as structural specifications, smart meter readings, and regional weather, the Digital Twin helps optimise retrofit planning, system configuration, and ongoing energy management. It also supports predictive maintenance by identifying inefficiencies or potential faults before they affect performance. This capability enhances decision-making for homeowners, service providers, and policy stakeholders by offering a high-resolution view of retrofit potential and system optimisation.

5.3.7 The Home Energy Score (HES)

The Heatio Home Energy Score is a personalised, data-driven performance metric designed to support retrofit decision-making. Calculated on a scale of 0 to 999, it reflects a property's energy efficiency and potential for improvement.

Scores are based on a combination of factors including energy usage, property size and age, heating system performance, and behavioural data. The score allows households to benchmark their current performance, understand areas for improvement, and evaluate the impact of different retrofit options.

By linking each score to a tailored set of upgrade recommendations, the system helps convert insights into action. It also identifies high-potential properties that are strong candidates for interventions such as solar PV, battery storage, or heat pump installation.

The scoring tool is underpinned by a robust data infrastructure capable of supporting real-time analytics and large-scale deployment. This makes it a useful tool for demand-led retrofit strategies and ongoing customer engagement.

5.3.8 The Customer Journey

The pilot reimagined the customer journey by replacing traditionally fragmented and complex processes with a streamlined, digital-first experience. Heatio's approach prioritised simplicity, personalisation, and transparency, supported by real-time data and smart meter integration.

Customer engagement began with the Home Energy Score, which served as both an educational tool and a prompt for action. Prospective users were invited to register and connect their smart meters, unlocking access to tailored energy insights, retrofit proposals, and eligibility checks for schemes or finance.

A fully remote engagement process was introduced, including video-based consultations, virtual property surveys, and digital system design. This allowed customers to co-design their systems, explore options in real time, and receive personalised financial advice.

Remote surveys enabled early identification of suitable homes, improving conversion rates and reducing acquisition costs. Customers also received accurate cost and savings estimates, proposed designs, and funding options ahead of in-person technical surveys.

Initial feedback suggested that this data-led, transparent approach improved trust, engagement, and the likelihood of proceeding with installation. Customers valued the clarity of information, and involvement in their own journey appeared to increase commitment and satisfaction. This aligns with qualitative findings from structured interviews conducted by E.ON, where participants highlighted that personalised insights, upfront financial information, and digital walkthroughs increased their confidence in the offering. Additionally, the pilot achieved strong early engagement despite minimal marketing, with over 50 households entering the retrofit journey**,** 3 full-service contracts signed**,** and 24 others in active development**,** indicating a high conversion rate given the compressed timeline.

Key innovations in the customer journey included the use of the energy score as an engagement tool, integration of smart meter data for real-time personalisation, remote surveys to replace site visits, and automated filtering of pre-qualified customers based on digital twin data.

5.3.9 The Heatio Energy Pod

To reduce installation time and customer disruption, Heatio developed the Energy Pod, a prefabricated, modular unit integrating solar, battery, and heat pump technologies. Funded in part through the Boiler Upgrade Scheme and customer contributions, the Pod was designed to simplify retrofit delivery and improve system performance.

The Energy Pod is designed for quick, low-disruption installation. All key components, like the hot water battery, battery, and inverter, are pre-fabricated in a single unit, most of the complex work is done off-site. This means the Pod arrives pre-configured, significantly reducing the time, disruption, and coordination typically required inside the home. For consumers, this translates to a quicker installation process and fewer tradespeople onsite.

The Pod aimed to meet four goals: lowering lifetime costs, enabling scalable production, reducing installation errors, and building lender confidence through consistent performance monitoring. Factory assembly reduced variability and improved reliability, while centralised

data collection enabled benchmarking and transparency.

Partnerships with manufacturers supported product development and helped shift some traditionally on-site installation work, such as radiator upgrades, into the factory setting. This approach also helped mitigate supply chain risks, with strategies including diversified sourcing, stockpiling key components, and collaborating with compatible technology partners.

Although large-scale cost savings were not fully realised during the pilot, the Energy Pod demonstrated significant potential for future scale-up by reducing on-site complexity and supporting more standardised delivery.

5.3.10 The optimisation service

A key feature of the original EaaS proposition was a system optimisation service designed to passively enhance the performance of solar PV, battery storage, and heat pump systems.

Using real-time analytics and automated controls, the service aimed to maximise self-consumption, improve energy efficiency, and reduce costs without requiring manual input from customers.

The optimisation feature was intended to run continuously throughout the system's lifetime, adjusting to household usage, weather conditions, and tariff structures to deliver consistent comfort and value.

The pilot also explored the commercial case for bundling optimisation within the service offer. Potential benefits included improved customer satisfaction and retention, more predictable financial performance, better financing terms, and measurable carbon savings that could be shared with stakeholders.

5.4 Barriers and challenges

The EaaS pilot introduced a range of technical and service innovations, but several barriers affected implementation, integration, and scalability. These challenges spanned integration complexity, commercial limitations, customer engagement, and operational constraints:

- **Integration complexity and manufacturer readiness** - Integrating disparate manufacturer platforms required bespoke technical workarounds and close collaboration. Each system had its own data formats, naming conventions, and communication protocols, making it resource-intensive to ensure consistent documentation and data standards. Gaining approval for remote control integration also required extensive testing and introduced delays.

These challenges had significant time and resource implications, particularly for innovators operating within fixed pilot timelines and limited development budgets. Even with Heatio's proprietary data extraction framework, inconsistent integration readiness across suppliers

limited scalability and highlighted the need for broader sector alignment on interoperability.

- **Incomplete optimisation service delivery** - Despite its technical readiness, the system optimisation service was not launched during the live pilot. The main barrier was the absence of a compliant mechanism for integrating the service into the customer finance agreement. Without this, Heatio would have been responsible for direct billing, a position that was not commercially or regulatorily viable at the time.

This represented a missed opportunity to validate the service in a live environment. However, a technical case study on a selected property showed that the platform delivered several benefits:

- Improved system responsiveness and energy efficiency.
- Real-time performance management across solar, battery and heating systems.
- Reduced energy waste and carbon emissions.
- Increased visibility into system performance and optimisation opportunities.

These results confirmed the potential value of the optimisation service and laid a foundation for future deployment, pending clearer financial and regulatory structures.

While early consumer interest in the bundled Energy as a Service offer was strong, commercial viability was challenged by:

- Energy price volatility.
- Policy uncertainty and regulatory gaps.
- Ineligibility of BUS for third-party-owned heat pumps.
- Thin margins, making the model vulnerable to minor financial fluctuations.

As a result, the pilot pivoted to a simplified solar and battery finance model, with upfront payment required for heat pumps. This was a necessary compromise to deliver a MVP, but reduced the innovative scope originally intended.

- **Platform onboarding and digital exclusion** - Onboarding through the Heatio platform proved to be a friction point. Manual customer registration, Meter Point Administration Number (MPAN) entry, smart meter compatibility issues, and privacy concerns led to customer drop-off and lower long-term engagement.

The digital-first customer journey improved efficiency but created access barriers for certain user groups. Older adults and customers with limited digital confidence, or poor connectivity, struggled with remote surveys and virtual consultations. While this approach streamlined delivery, it highlighted the need for inclusive support options.

- **Customer understanding of new performance metrics** - The Home Energy Score was developed as a personalised, transparent energy performance indicator. However, without a widely understood reference framework like EPC bands, many users found the score difficult to interpret. This limited its ability to support confident decision- making, despite generating strong initial engagement.
- **Technical and compliance challenges in the energy pod** - The prefabricated Heatio Energy Pod combined multiple technologies within a compact unit. Ensuring safety, thermal regulation, access, and warranty compliance across systems created engineering and installation challenges. For example, bespoke heat dissipation solutions had to be integrated into the battery housing to accommodate the inverter, while meeting manufacturer requirements and space constraints. These issues required intensive coordination and extended the development process, but they were critical to validating a modular, scalable retrofit approach.

5.5 Recommendations

Drawing on the lessons from the EaaS pilot, the following recommendations are intended to support the development of scalable, inclusive, and commercially viable service-led retrofit models. These focus on improving technical integration, enhancing customer engagement, strengthening policy alignment, and supporting long-term innovation.

- **Improve technology integration and interoperability** - To enable more efficient deployment of multi-vendor systems, a sector-wide shift toward shared standards is essential. Future projects should:
    - Develop a unified integration framework with standardised APIs and compliance protocols to reduce the need for bespoke engineering solutions
    - Invest in interoperable data infrastructure to support consistent documentation, performance monitoring, and maintenance tracking across technologies
    - Engage manufacturers earlier in the development process to align product roadmaps and reduce delays in approving remote access or control features.

These actions will lower integration costs, speed up deployment, and enable real- time optimisation at scale.

- **Strengthen financial models and policy alignment** - Unlocking the full potential of long-term EaaS models will require collaboration between innovators, policymakers, and lenders to reduce risk and improve investor confidence. Recommended actions include:
    - Co-developing shared risk frameworks, such as insurance-backed performance guarantees, energy price stabilisation mechanisms, or government-supported guarantees to de-risk private capital

    - Re-examining schemes like the Boiler Upgrade Scheme to allow inclusion of third-party ownership models, increasing access and affordability
    - Encouraging regulatory flexibility to accommodate service-based business models that combine financing, optimisation, and long-term maintenance

This would support innovation while ensuring regulatory protection and consumer benefit.

- **Support inclusive customer engagement** - While digital tools improved efficiency, the pilot revealed the need for hybrid approaches to maintain equity. Future delivery models should:
    - Maintain alternative customer journey pathways, such as in-home surveys, guided phone consultations, and printed materials for those with limited digital access or confidence
    - Simplify digital onboarding by automating MPAN lookups, improving smart meter compatibility support, and embedding transparent messaging about data privacy and consent.

These improvements will reduce drop-off rates and ensure all households can participate in the transition to low-carbon technologies.

- **Enhance communication of performance metrics** - To make tools like the Home Energy Score more actionable and widely understood, it is recommended to:
    - Align scoring outputs with familiar benchmarks, such as colour-coded bands or EPC-style grading
    - Include clear explanations, personalised recommendations, and visual guidance to help users interpret their results and understand potential improvements.

This will increase customer confidence and engagement in retrofit planning and decision-making.

- **Accelerate modular system design and prefabrication** - Prefabricated retrofit solutions like the Heatio Energy Pod offer significant potential to reduce on-site complexity and installation time. To support wider adoption, it is recommended to:
    - Fund the development of design toolkits for retrofit developers to create modular energy systems suited to diverse housing types
    - Encourage standardised component specifications and manufacturing processes to reduce cost and improve reliability
    - Prioritise suppliers who offer open data access, remote diagnostics, and integrated platforms as part of procurement criteria.

These steps will improve manufacturability, reduce risk during installation, and support performance validation across large-scale deployments.

- **Future opportunities using smart meter-enabled ratings** - Looking ahead, Heatio is exploring the integration of smart meter-enabled thermal efficiency ratings (SMETERs) into the customer journey. This would enable:
    - More accurate pre- and post-upgrade thermal assessments
    - Improved forecasting of savings using actual household energy data
    - Stronger validation of efficiency gains for both customers and lenders.

This approach could enhance the precision and transparency of retrofit assessments, strengthening the link between technology deployment, financial returns, and measurable carbon reductions.

6. Governance framework

The EaaS pilot required a robust governance framework to ensure all partners operated within defined regulatory, legal, and operational parameters. Governance responsibilities were shared across multiple organisations, primarily Heatio, E.ON, and the finance partner, with each playing a distinct role depending on their function in the pilot's delivery.

6.1 Heatio's governance responsibilities

Under the original EaaS model, Heatio acted as the installation provider and operational lead for delivering low-carbon technologies, including heat pumps, solar PV, and battery systems. Following the pivot in the pilot structure, Heatio became the customer-facing brand responsible for overseeing the full customer journey, from engagement through to installation and aftercare (see *Figure* 3).

To perform this role, Heatio was required to comply with a wide range of regulatory standards and governance mechanisms:

- **MCS (Microgeneration Certification Scheme)** - All installations of heat pumps, solar PV, and battery systems were carried out by MCS-accredited engineers to meet eligibility for government support schemes such as the Boiler Upgrade Scheme (BUS). MCS accreditation also ensures that installations meet technical, safety, and quality standards.
- **EPVS (Energy Performance Validation Scheme)** - All performance and financial projections included in customer proposals were independently verified under the EPVS framework to safeguard against exaggerated claims and to validate energy and cost-saving benefits.
- **HEIS (Home Energy Installer Scheme)** - Heatio was registered under HEIS to ensure that all customer interactions and installation practices met consumer protection standards, offering recourse in cases of dissatisfaction or complaint.
- **ICE (Installer Consumer Engagement Code of Practice)** - Heatio committed to providing clear, accessible, and honest information throughout the customer journey—setting expectations around system performance, finance terms, and installation timelines.
- **Smart Energy Code (SEC)** - Heatio ensured compliance with this code to support accurate smart metering and integration with flexible, time-of-use tariffs.
- **Marketing Governance & Financial Promotions** - Heatio was also responsible for developing marketing materials that complied with Financial Conduct Authority (FCA) rules. As an Introducer Appointed Representative (IAR) under the finance partner's license, all marketing content relating to finance had to be pre-approved by the finance partner. Messaging was carefully reviewed to ensure it avoided misleading claims and included the required disclaimers on savings, performance,

and financial risks.

- Customer T&Cs and Privacy Policy - Heatio developed the consumer-facing terms and privacy policies, clearly outlining customer rights, scope of services, liability, and data handling practices under General Data Protection Regulation (GDPR).

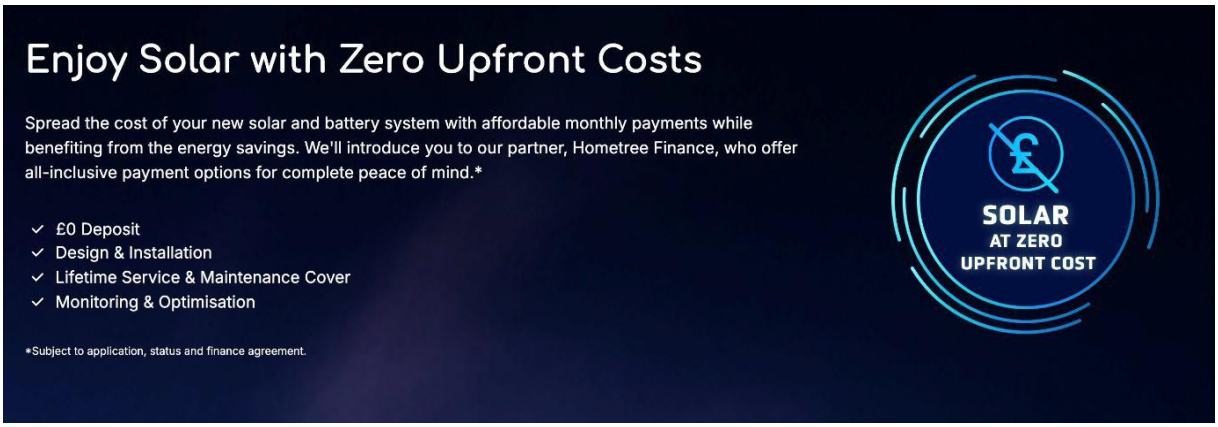

Figure 3. Example consumer messaging with finance regulated disclaimers and risk wording.

6.2 E.ON's governance responsibilities

As a licensed energy supplier and original consortium lead, E.ON played a critical governance role in ensuring the pilot met internal compliance, risk, and regulatory obligations. While its regulatory exposure was reduced following the pilot pivot, several governance responsibilities remained throughout:

- **Internal risk and legal review** - E.ON's legal team conducted detailed reviews of the service model to determine whether the proposition could fall within FCA scope. This was particularly important given concerns about how bundled service propositions might affect E.ON's existing regulatory status.
- **Brand oversight** - Although E.ON was not a referral partner in the final model, it retained brand and reputational oversight and reviewed customer-facing messaging relating to the E.ON tariff.
- **Tariff governance** - E.ON ensured that its energy tariff met Ofgem licensing conditions, particularly concerning clarity, fairness, and promotional accuracy. Because the tariff was a key component of the proposition, careful governance was required to avoid misleading implications about long-term savings.
- **Treasury and Commercial Review** - Any potential inclusion of the EaaS product into E.ON's wider portfolio would require financial scrutiny, including the implications for debt risk, balance sheet forecasting, and medium-term planning.

6.3 Finance partner's governance responsibilities

The FCA-authorised finance provider governed the financial elements of the proposition. Key areas of oversight included:

- **Finance agreements and regulatory compliance** - All aspects of the customer loan process, providing pre-approved finance documentation and carrying out credit and eligibility checks through their digital portal.
- **Pre-approved marketing and disclaimers** - All references to loans, monthly repayments, or finance-led savings needed to be FCA-compliant, pre-approved, and presented in a non-advisory format.
- **Data governance and legal frameworks** - Additional layers of governance were implemented to support secure and lawful data sharing and to manage consortium responsibilities.
- **Data sharing agreements (DSAs)** - Agreements between Heatio, E.ON, the finance partner, and other partners ensured GDPR compliance, secure handling of personal data, and alignment on data usage purposes (e.g. energy profiling, financial planning, service delivery).
- **Consortium contracts** - Contracts between partners defined the scope of work, responsibilities, liabilities, and the allocation of commercial and regulatory risks.
- **Customer contracts** - Multiple contracts were developed for different components of the service, particularly due to the separation of heat pump installations and solar/battery finance. These contracts were legally reviewed and designed to meet both consumer and regulatory standards.

6.4 Barriers and challenges

Several governance-related challenges emerged during the pilot:

- **Marketing constraints** - FCA rules significantly limited how customer savings and financial outcomes could be communicated. The need for pre-approved disclaimers and restrictions on comparative messaging hindered customer clarity and slowed down marketing rollout.
- **Disjointed contracts and customer experience** - customers received separate agreements for heat pumps and solar/battery systems. This fragmented view of the service made it difficult to communicate a unified value proposition and introduced legal complexity into the sales journey.
- **Unresolved regulatory ambiguity** - despite extensive legal review, questions remained about whether the service agreement (particularly the bundled energy + finance model) might fall within the FCA's regulatory perimeter in the future, raising long-term risk for both Heatio and E.ON.
- **Internal delays in legal and risk sign-off** - The complexity of the proposition and lack of regulatory precedent created delays in internal product sign-off, particularly where legal teams needed assurance that the model would not breach FCA rules.
- **Customer data access** - Although customers were asked to connect their smart meters, many were reluctant due to privacy concerns or experienced technical issues (e.g. incorrect MPAN numbers). This presented a barrier to unlocking the full

value of the digital proposition.

6.5 Recommendations

The following are recommended to address the governance-related challenges that emerged during the pilot:

- **Engage regulators early** - Future projects should establish early dialogue with the FCA, Ofgem, and DESNZ to clarify the regulatory treatment of hybrid service-finance models and agree on safe parameters for financial messaging.
- **Simplify customer contracts** - Where possible, future propositions should aim to consolidate contracts into a single agreement that covers the entire offering. This will reduce confusion and streamline governance checks.
- **Develop a marketing approval framework** - Co-develop a pre-approved set of financial messaging templates with legal and FCA-authorised partners. This would significantly accelerate campaign development while maintaining compliance.
- **Build an end-to-end data consent journey** - Improve onboarding user experience (UX) to build customer trust and support smoother data sharing. Interactive tooltips, privacy explainers, and live support can address consent hesitations early.
- **Clarify regulatory roles in consortiums** - Future pilots should define at the outset which party carries regulatory risk for each part of the customer proposition and ensure this is reflected in contracts and liability agreements.
- **Embed legal counsel in design phase** - Legal and compliance experts should be involved during early service design to anticipate friction points and avoid delays at sign-off.

7. Pilot Product Components

7.1 Advice, guidance and customer education

The final phase of the pilot aimed not only to streamline the retrofit process but also to equip customers with the knowledge and confidence to make informed decisions about financing and installing low-carbon home improvements. Central to this approach was the provision of tailored advice, guidance, and educational materials to address individual needs and demystify retrofit technologies.

The customer journey was specifically designed to overcome common adoption barriers, such as perceived complexity, uncertainty around costs, and limited understanding of energy efficiency and carbon savings. To address these, the pilot implemented a number of engagement strategies and tools.

Initial outreach focused on awareness-building through targeted marketing campaigns across digital and social media channels. These campaigns encouraged all homeowners in the North West of England to access their personalised Home Energy Score, explore energy-saving opportunities, and consider the benefits of low-carbon technologies. Messaging centred on energy cost control and environmental impact helped generate interest and encourage initial participation with social media campaigns generating 221,578 impressions and 3,769 clicks at a 1.7% click through rate. (See Section 7.2).

A core component of the journey was the Home Energy Score, which offered customers a personalised, data-driven overview of their home's energy performance. It served as an accessible entry point into the retrofit journey, highlighting potential savings and upgrade opportunities. Campaigns referencing the score consistently achieved higher engagement rates, suggesting it was effective in sparking interest. While qualitative customer feedback was limited, quantitative data indicated strong initial interest in receiving a score.

Customers typically received an estimated Home Energy Score within one to two working days of submitting their initial enquiry. A more refined version, based on additional property and behavioural data, was generally issued within five to ten working days. This timeline varied depending on data availability and the level of input required to verify household characteristics.

The HES was calculated on a scale from 0 (very efficient) to 999 (not at all efficient). During the refinement process, scores typically shifted by 50 to 150 points, largely influenced by how current or accurate the property's existing Energy Performance Certificate (EPC) was. However, these changes did not significantly impact the rest of the customer journey. The purpose of the refined score was to improve the accuracy of recommendations and financial modelling, rather than to qualify or disqualify customers from participating in the scheme.

To support deeper engagement, remote consultations were offered with Heatio Energy Specialists. These sessions guided customers through technical upgrade options, financing, and projected savings, helping them better understand what was possible for their property and budget. Following the consultations, customers received bespoke proposals tailored to their energy profile and retrofit potential.

Each proposal included a summary of current energy usage, recommended technologies (such as solar PV, battery storage and heat pumps), estimated solar generation, projected energy savings, and a breakdown of total costs. Visual aids and comparative charts were included to help customers clearly understand the projected benefits.

For customers exploring finance options, a separate proposal compliant with FCA regulations was presented by the financial partner. This outlined the total cost of the package, financing terms (ranging from 5 to 25 years), and estimated monthly repayments. Sample plans included:

- 5 years: £220 per month
- 10 years: £128 per month
- 15 years: £100 per month
- 20 years: £86 per month
- 25 years: £78 per month

For example, one customer who opted for the solar finance plan lived in a 3-bedroom, semi-detached home built between 1967 and 1975, located in the North West of England. The property had a Home Energy Score (HES) of 794, indicating moderate efficiency with clear potential for improvement through renewable technologies and storage solutions

Following the HES assessment, a comprehensive retrofit package was proposed and implemented. This included:

- **Heating & Hot Water:** Samsung 12kW R290 heat pump and a Sunamp thermal storage system
- **Solar & Battery Storage:** 24 x Trina Vertex S+ 440W solar PV panels, 2 x GivEnergy Hybrid inverters (5.0kW and 3.6kW), 2 x GivEnergy batteries (9.5kWh and 5.2kWh, LFP chemistry)
- **EV Infrastructure:** GivEnergy 7kW EV charger

A tailored finance plan was provided by Hometree under FCA-compliant terms. This enabled the customer to spread the cost of the full system over 25 years, structured with a 3.5% annual escalator to align with energy savings and inflation expectations. The finance plan comprised:

- Monthly Repayment: £191.15
- Term: 25 years
- Escalator: 3.5% annual increase

This financing structure allowed the customer to adopt a full decarbonisation solution with minimal upfront costs while enabling long-term affordability and access to future energy savings. The inclusion of high-efficiency solar PV, battery storage, and heat pump technology positioned the household to significantly reduce reliance on grid energy and improve overall carbon performance

The proposal also included an estimate of first-year energy savings, allowing customers to assess overall affordability and financial return. After installation, customers were provided with a handover pack containing warranties, technical manuals, and guidance on how to use their system effectively. Access to the Heatio platform allowed customers to monitor real-time energy usage and costs, view projected savings, and better understand how their system performed over time.

This combination of tailored communication, remote consultation, transparent proposals, and post-installation support helped reduce complexity and improve customer confidence. While certain elements, such as the interpretability of the Home Energy Score, require refinement, the pilot demonstrated that a personalised, data-led journey can help overcome adoption barriers and create a more informed, engaged user base.

7.2 Insights from the marketing, documentation and advice provided to customers

While the customer education strategy provided a strong foundation, the pilot generated several key insights into its effectiveness:

- **Home Energy Score as an engagement tool** - The Home Energy Score was effective in attracting interest. Its personalised and visual format resonated with homeowners, helping them to understand their home's energy performance and prompting enquiries about upgrade options. However, in the absence of a familiar reference scale, such as Energy Performance Certificate (EPC) bands or credit scores, many customers struggled to interpret what their score meant in practice. This limited its impact on decision-making and pointed to the need for clearer explanatory content and visual benchmarks.
- **Challenges in early-stage finance communication** - Efforts to simplify finance information were constrained by FCA regulations, which prevented early-stage affordability discussions. Customers typically had to wait 7 to 15 days—until the bespoke proposal stage—before receiving formal financial information from the partnering lender. While customers at this stage were generally highly engaged, this delay, along with a handover to a separate lender, sometimes disrupted momentum. Concerns were raised about inconsistent savings figures between

Heatio and the finance provider, as well as the complexity of the finance offer, particularly around interest costs and future resale implications.

Although this handover did not lead to significant early-stage drop-out, it introduced friction at a critical decision point. Of the 40 customers who received proposals, 13 ultimately chose not to proceed. These findings highlight the importance of integrating finance discussions more seamlessly and earlier in the journey to maintain trust and decision confidence.

- **Hesitancy around retrofit finance** - Some homeowners were hesitant to commit to financing retrofit upgrades, particularly those with lower incomes and limited access to liquid capital, citing concerns about long-term affordability and unclear return on investment. This reluctance contributed to drop-outs at multiple stages, including after receiving proposals. The absence of real-life case studies, due to the late start of installations, made it difficult to counter these concerns with evidence.

The compressed timeline of the pilot also limited the ability to collect and share post-installation performance data or customer satisfaction feedback. Future phases would benefit from the inclusion of case studies, testimonials, and actual savings data to support more confident decision-making.

7.3 Installer recruitment and onboarding

The success of the pilot relied not only on effective customer engagement and innovative financing but also on the integration of high-quality installation services. Ensuring technical competence and professionalism in the deployment of low-carbon technologies was essential to both customer satisfaction and system performance. To support this, Heatio developed a structured strategy for identifying, vetting, and managing installation partners. Key elements of this approach included:

- **Recruitment strategy** - Heatio adopted a dual recruitment approach to identify skilled and reliable installation partners. First, it worked directly with manufacturers to onboard their recommended installers, who were already trained in specific technologies such as heat pumps, solar PV, and battery storage. Second, Heatio leveraged existing professional networks to engage trusted installers with a strong track record in retrofit delivery. This ensured alignment with both project goals and recognised industry standards.
- **Vetting and onboarding process** - A structured two-stage process was used to assess installer suitability. The initial stage involved reviewing company credentials via Companies House, verifying active status and accreditations, and evaluating past delivery experience and digital reputation. Installers who passed this stage then completed a formal onboarding process, which required submission of qualifications, insurance documentation, case studies, technical references, and

evidence of manufacturer training.

- **Required standards** - All installers were required to meet current regulatory and industry standards. This included MCS accreditation, registration with National Association of Professional Inspectors and Testers (NAPIT) or National Inspection Council for Electrical Installation Contracting (NICEIC), Gas Safe (where applicable), and membership of schemes such as the Home Insulation and Energy Systems Contractors Scheme (HIES), Renewable Energy Consumer Code (RECC), TrustMark, and a Safety Schemes in Procurement (SSIP)-accredited body such as the Contractors Health and Safety Assessment Scheme (CHAS), Safety Management Advisory Services (SMAS) or SafeContractor. These criteria helped ensure compliance, quality, and consumer protection.
- **Regional implementation and scalability** - Installer recruitment focused initially on the Northwest of England, enabling close coordination and operational oversight within a manageable geographic area. This region was selected for its housing diversity and proximity to Heatio's headquarters, which supported efficient implementation. Operating within a defined footprint allowed the pilot to test the EaaS model across varied property types, refine logistical processes, and build trusted relationships with local installers.
  Insights gathered from this regional deployment are expected to inform future national scale-up. However, broader implementation will require sustained recruitment efforts, consistent training, and robust quality assurance frameworks to maintain high standards across an expanded installer network.
- **Managed customer-installer engagement** - To reduce friction in the retrofit journey, Heatio maintained responsibility for customer communication and installer coordination. Customers were not required to source or vet their own installers. Instead, Heatio matched projects to qualified installers based on availability and technical requirements. This managed service model was intended to simplify the customer experience and build confidence by maintaining quality control and consistency throughout the process.
- **Early-stage insights and limitations** - At the time of reporting, only three installations have been completed. As such, it remains too early to assess the overall effectiveness of the managed installer model, particularly in terms of customer satisfaction, dropout rates, and delivery timelines. To support future evaluation, it is recommended that a Net Promoter Score (NPS) or similar feedback mechanism be introduced. Capturing feedback after key milestones, such as receiving a quote, post- installation, or after installer interactions, will help identify areas for improvement and monitor customer experience as the pilot scales.
- **On-site technical surveys** - Joint technical surveys conducted by Heatio and the selected installer played a key role in assessing site suitability and system design. These assessments were especially important for projects involving multiple

technologies, where bespoke system configurations were often required. By confirming technical feasibility early, the surveys helped reduce the risk of complications during installation and contributed to a more integrated deployment process.

7.4 Verification and quality assurance

To support validation and testing of the Heatio platform, a suitable property from the BETA trials was selected as a detailed case study. This property was used to demonstrate Heatio's capacity to monitor real-time and historical energy use, carbon emissions, and energy expenditure, evaluating the impact of renewable energy installations.

A core innovation tested during this phase was post-installation monitoring. This enabled validation of assumptions made during the initial home energy assessment and allowed the platform to send live optimisation commands to technologies in the home to improve energy efficiency and carbon performance. The process focused on:

- **Energy monitoring and baseline assessment** - Using the Heatio platform, the selected property's daily gas and electricity consumption was monitored between February 2023 and February 2024. This baseline profile incorporated usage trends, carbon emissions, and weather data, allowing meaningful comparison with post-installation performance.
- **Home energy score and upgrade potential** - The property received an initial Home Energy Score of 867, calculated using digital twin modelling and building physics. This high score indicated significant potential for improvement. The model showed that the score could fall to 110 following installations of a heat pump, solar PV, and battery storage, representing a 57% projected reduction in annual energy bills.
- **Post-installation integration** - Once the systems were installed, they were successfully integrated into the Heatio platform. This marked the transition to a smart, low-carbon home energy system. The platform used artificial intelligence and machine learning to support whole-home optimisation, energy load forecasting, and grid-balancing functions. Drawing on historical and real-time data, the platform automatically adjusted system performance to optimise efficiency, considering weather, occupancy, and energy pricing. This contributed to both household and system-level decarbonisation.
- **Energy and cost outcomes** - post-installation (March 2024 – January 2025), total energy consumption fell by 53.4%. Gas use dropped by 96.5% following the removal of the gas boiler, while electricity consumption rose by 50.7% due to increased electric heating. Despite the higher electricity use, carbon emissions decreased by 45.8% due to reduced reliance on fossil fuels.

Switching to a flexible tariff led to a 43.4% overall drop in energy bills. Gas costs fell by 53.2%, while electricity costs decreased by 39.9%, even with higher consumption. This case study demonstrates how smart tariff selection and behavioural shifts can produce substantial financial and environmental benefits.

The case study property, initially equipped with a gas boiler for heating and hot water, had a baseline annual energy bill of approximately £2,800 under a standard tariff. Following the installation of the Energy Pod and a switch to a flexible tariff, total energy costs dropped by 43.4%, bringing the annual bill down to around £1,585. This represents a saving of over £1,200 per year, achieved through a combination of smart tariff selection, behavioural change, and integrated low-carbon technologies.

The verified reductions in energy use, emissions, and cost help build consumer confidence, reduce risk for lenders, and strengthen the commercial case for EaaS models. This process relies on two key elements:

- **Linking verification to finance innovation** - The ability to track verified savings creates new opportunities for green finance products. These may include mechanisms such as energy performance guarantees, monetisation of carbon savings, or repayment models tied to energy cost reductions. This creates value for both homeowners and investors, supporting the wider shift toward low-carbon housing finance.
- **Role of digitalisation and AI** - Digital twin and AI technologies offer substantial benefits in delivering faster, more accurate energy assessments and scalable personalised recommendations. Real-time data verification further links digital tools to financial innovation by improving trust and lowering perceived risk in retrofit investments.

However, these tools are reliant on data quality and ongoing calibration. Their effectiveness can vary depending on housing type, user behaviour, and engagement levels. Additionally, some customers may be hesitant to trust AI-generated recommendations, especially if they are less digitally confident. Ensuring transparency, explainability, and robust data governance will be essential for long-term adoption and user confidence.

7.5 Barriers and challenges

The project identified the following barriers and challenges during deployment of the pilot proposition:

- **Post-warranty service gaps** - A key operational issue was the lack of a long-term maintenance framework for systems no longer under manufacturer warranty. Solar PV and battery systems financed through the finance partner included servicing, but heat pumps, purchased outright due to Boiler Upgrade Scheme (BUS) ownership limitations, did not. This split created an uneven support model, leaving customers

exposed to unanticipated repair and maintenance costs. One customer noted, *"If something goes wrong after the warranty, who's responsible? I'd be worried about paying out of pocket for repairs I didn't expect."* Without a clear, bundled service offer, the EaaS proposition risks being seen as less reliable and financially secure compared to conventional systems.

- **Homes that are not heat pump ready** - Many homes require enabling works, such as radiator upgrades or improved insulation, before a heat pump could operate efficiently. These costs were not included in the proposition, often surprising customers and delaying installation. The need for preparatory upgrades added financial and logistical barriers that were not always well communicated.
- **Efficiency vs affordability trade-offs** - Customers were often unaware that system design choices impacted long-term costs. While high-temperature heat pumps are cheaper upfront and compatible with existing systems, they are less efficient and more expensive to run. In contrast, low-temperature systems offer greater long-term savings but require additional investment. As one customer explained, *"It would've been helpful to know that saving money later meant spending more now. I didn't realise the cheaper system would cost more to run."* Without simple tools or advice to highlight these trade-offs, customers tended to default to the lower-cost option, even when it was less efficient.
- **Fragmented finance journey** - The mid-project integration of the finance partner introduced confusion and inconsistency. FCA regulations prevented Heatio from discussing finance in detail until later in the journey, disrupting customer understanding and trust. One customer observed, *"I got all the way to getting a proposal with Heatio, then suddenly had to talk to someone else about the money. It felt disconnected."* Sales staff echoed these concerns, with one commenting, *"The process made it impossible to give a clear savings figure. Customers were asked to make big decisions without fully understanding the numbers, and that undermined confidence."* Others noted that long finance terms and escalating interest raised concerns about long-term value and property resale implications.
- **No mechanism for third-party asset registration** - There is currently no legal framework for registering third-party ownership of heat pumps with the Land Registry, unlike for solar PV systems. This creates ambiguity during property sales, with potential for disputes over ownership or liability. Service providers and lenders are also left unprotected if assets are removed or not recognised in legal documents. This regulatory gap poses a risk to the long-term scalability of financed heating technologies.

7.6 Recommendations

The following recommendations are suggested to address the identified deployment barriers and challenges:

- **Support home readiness through structured onboarding** - Service providers should offer a readiness assessment as part of early engagement, identifying required upgrades and offering affordable finance for enabling works. Educational materials should help customers understand these requirements and prepare accordingly.
- **Embed transparent cost-benefit tools** - Develop digital tools to show the trade-offs between system types, comparing upfront cost, efficiency, and lifetime savings. One customer commented, *"What I needed was a simple breakdown: here's what it costs now, here's what you'll save, and when."* Embedding such tools into proposals can help build trust and support informed decision-making.
- **Deliver a seamless financial journey** - Finance propositions should be clearly explained within a unified customer experience, covering capital costs, scheme support, expected savings, and repayment terms. Close integration between service providers and licensed finance partners is essential to avoid service handovers that undermine trust.
- **Create a legal mechanism to register heating assets** - Work with regulators to introduce a Land Registry framework for third-party ownership of heating systems. This would mirror existing solar PV practices, clarify ownership during property sales, and protect both customers and service providers.
- **Provide bundled service and maintenance** - Offer a single, subscription-based service plan that covers all installed technologies, regardless of ownership model. This simplifies the customer experience, supports aftercare, and reduces risk, especially beyond warranty periods.
- **Monitor contractor performance with NPS and SLAs** - Introduce customer feedback tools like Net Promoter Score (NPS) surveys after key interactions (e.g., installation). Pair this with performance standards based on Service Level Agreements (SLAs) covering quality, professionalism, and documentation. Tie contractor payments to performance benchmarks to improve accountability.
- **Use field management tools for scheduling** - Deploy digital platforms to match installer skills and availability to specific jobs. This improves operational efficiency, reduces delays, and helps scale service delivery.
- **Capture and use qualitative feedback in CRM** - Enhance Customer Relationship Management (CRM) systems to log detailed customer feedback throughout the journey. This creates a real-time insight loop to identify recurring issues, improve service design, and respond to customer concerns more effectively.

8. Product Marketing and Penetration

8.1 Market testing, deployment and distribution of products/service

Heatio's marketing strategy was designed to promote low-carbon technologies and energy efficiency by addressing consumer barriers, raising awareness, and encouraging adoption. Informed by insights from the Discovery Phase and Heatio's own psychological research, the strategy emphasised education, trust-building, and targeted messaging aligned with UK homeowners' motivations and concerns.

8.1.1 Strategic marketing objectives

The pilot's marketing objectives were to:

- Increase public awareness of low-carbon technologies by highlighting financial and environmental benefits.
- Address common concerns such as trust, complexity, and upfront cost through clear, accessible messaging.
- Foster engagement using varied content formats and communication channels.
- Leverage industry partnerships to amplify reach and enhance credibility.

8.1.2 Key messaging approach

Prior to the pilot, Heatio's messaging focused on the financial and energy-saving benefits of retrofitting, stressing simplicity, sustainability, and long-term value. This was shaped by research conducted with the Catapult, which identified key barriers such as perceived complexity and upfront cost. The research involved 4,107 respondents, primarily owner-occupiers.

Initial campaigns carried out pre-pilot phase revealed engagement gaps, leading Heatio to conduct additional psychological research to better understand consumer behaviour. This included thematic interviews with 14 demographically aligned homeowners, chosen to represent a more engaged market segment.

8.1.3 Insights from consumer psychology research

This research identified several emotional and psychological barriers:

- **Trust issues** - Participants questioned whether low-carbon solutions served their interests or were profit-driven.
- **Loss of control** - Many felt powerless in the face of rising energy costs and systemic complexity. While some took initiative (e.g. tracking bills), most lacked the confidence to act—highlighting the need for transparency, support, and

empowerment tools.

- **Financial concerns** - Upfront cost was the most cited barrier. Uncertainty around long-term savings deterred action, pointing to the need for clearer financial narratives.

8.1.4 Motivators identified for consumer action

The same research uncovered key motivators that informed subsequent marketing refinements. These themes reflect what pilot participants valued most and how they wanted to engage with energy solutions:

- **Simplicity** - Consumers consistently expressed a desire for tools and solutions that were intuitive, low-effort, and easy to navigate. Simplicity helped reduce anxiety around decision-making and increased confidence in taking action.

"I don't have time to research every option. I just want something that tells me what I need to do, and that it'll actually work."

- **Financial clarity** - Immediate cost savings, coupled with a clear sense of long-term return on investment, were especially compelling when framed in a personalised, transparent format.

"If I can see what I'll save month-to-month, I'm much more likely to go for it. It has to make sense on paper, not just in theory."

- **Empowerment and control** - Participants responded positively to solutions that made them feel more in control of their energy usage and financial decisions, particularly in a market often seen as opaque or disempowering.

"I want to feel like I'm making the smart choice, not just guessing or relying on someone else to tell me what's best."

"Right now, I feel like the energy system is something that happens to me. If this helps me take charge, I'm interested."

These motivators shaped the refinement of Heatio's proposition, helping shift the focus from abstract benefits to clear, relatable outcomes that resonated with everyday consumer priorities.

8.1.5 Messaging evolution: the Home Energy Score

In response to the consumer insights gathered through qualitative research, Heatio refined its messaging strategy ahead of the pilot launch. Central to this evolution was the introduction of the Home Energy Score, a personalised, accessible assessment tool that addressed key psychological and practical barriers while activating core motivators.

The Home Energy Score helped reposition the offer by focusing on clarity, control, and tangible value. It was especially effective at making energy upgrades feel relevant to a wider range of households, not just early adopters or sustainability-minded consumers. The repositioning translated into key areas of consumer impact, each helping to make energy upgrades more approachable, actionable and valuable:

- **Simplification and accessibility** - The score provided a straightforward, user-friendly way to assess household energy performance. It demystified the retrofit process by giving consumers a clear entry point.

"There's so much information out there, it's overwhelming. But this just broke it down for my home, it finally felt doable."

"I liked that it told me where I was at and what I could fix. No jargon, no pressure."

- **Empowerment through insight** - By offering tailored recommendations and clear performance indicators, the score gave consumers the confidence to act. It helped shift perceptions from passive energy users to informed decision-makers.

"Seeing my own data made it feel more real, like, okay, I know where I stand and what I can actually do."

"It gave me control. For once, I felt like I understood what was going on with my energy bills."

- **Tangible financial benefits** - The integration of projected cost savings and return on investment (ROI) into the score reframed the conversation—from abstract environmental benefits to real, personal value.

"It wasn't just 'good for the planet', it showed me how I could save money, which is what matters most right now."

"I need to see the pounds and pence. When I saw that score and the savings, it just made sense."

Following rollout of this refined messaging at pilot launch (October 2024) to pilot end (March 2025), engagement rose significantly. Website traffic increased by 16%, and 74% of users landed on the Home Energy Score page, surpassing lead generation targets. This also marked a strategic shift away from only targeting Early Adopters and Aspirational Households, expanding appeal to more mainstream, cost-conscious consumers who may have otherwise disengaged. By shifting the emphasis from technology to consumer empowerment, the Home Energy Score helped bridge the gap between awareness and action, making energy upgrades feel relevant, attainable, and worth pursuing.

8.2 Marketing execution

A multi-channel approach was used to build awareness, drive traffic, and increase engagement with refined messaging. Activity focused on digital advertising, content creation, social media, and PR, centred around the Home Energy Score as the primary engagement tool. A key pilot aim was to continuously monitor and refine marketing efforts, using lead generation, conversion rates, and website traffic KPIs to inform improvements. Quarterly reviews ensured alignment with consumer needs and behavioural insights.

8.2.1 Content marketing

At the heart of the content strategy was the Home Energy Score, which offered personalised, actionable insights into household energy performance. Content was crafted to address trust gaps, reduce complexity, and reinforce control. To reflect this, Heatio's website landing page was redesigned to feature the Home Energy Score as the primary call-to-action and first step in the customer journey.

8.2.2 Social media engagement

The early success of the Home Energy Score campaign led to further tests of alternative narratives, particularly those focused on consumer empowerment.

Figure 4. Examples of Heatio social media marketing campaigns offering free home energy scoring and adjusted social media messages focused on 'Take Control' and 'Save'.

Revised messaging adopted more directive language such as "Take Control" and "Save" (see *Figure 4*), and the original campaign was paused to isolate performance impacts. This shift produced immediate improvements, with all major metrics increasing by over 100% (see *Table 5*).

Table 5. Weekly performance improvement after empowerment-led messaging.

Social Media Metric	Energy Score Campaign	Control Campaign	Improvement (%)
Reach	1489	5976	**+301%**
Impressions	4218	12813	**+204%**
Clicks	64	141	**+119%**
Leads	**4.5**	**5**	**+11%**

Building on this momentum, Heatio refined its strategy further by pairing empowerment messaging with references to specific low-carbon technologies, such as solar panels and heat pumps. This blend of control-oriented language and tangible technology references yielded another strong uplift in engagement (see *Table 6*).

Table 6. Performance of Take Control vs. Take Control + Technology-specific messaging.

Metric	Take Control Campaign	Take Control & Low-carbon Technologies Campaign	Improvement (%)
Reach	5976	12441	+108%
Impressions	12813	22180	+73.2%
Clicks	141	184	+30.5%
Leads	5	12	+140%

These results provide strong evidence that empowerment-led narratives remain compelling, but their impact is significantly enhanced when paired with concrete, recognisable solutions. The refined approach made the offer more actionable and persuasive, increasing both short-term engagement and also long-term resonance and trust with a broader consumer base.

8.2.3 Digital advertising

Initial Google Ads campaigns built around the Home Energy Score and linked to low-carbon technologies like solar and heat pumps achieved strong impressions but low conversions.

Performance analysis revealed a misalignment between ad messaging and user search intent. To address this, Heatio pivoted toward boiler replacement messaging, which had broader consumer appeal and delivered a 9% increase in click-through rates. However, due to high competition from larger industry players with higher advertising budgets, paid search was deprioritised. Instead, resources were redirected to social media channels, which proved more effective within the pilot's time and budget constraints.

8.2.4 Public relations and media outreach

PR efforts supported brand positioning through national and local media. Outreach focused on thought leadership that highlighted consumer insights and the benefits of the Home Energy Score. Core messaging emphasised how the tool enabled homeowners to better understand their energy profile, make informed technology decisions, and regain a sense of control in the energy transition. Ongoing insight gathering will be essential to refine messaging and ensure its continued relevance as the market evolves.

8.3 Marketing optimisation and learnings

8.3.1 A/B Testing of landing page messaging

Insights from digital campaigns informed a key A/B test comparing the original Home Energy Score–focused landing page with a revised version combining savings and technology messaging (see *Figure 5*). Google Ads and social media traffic were evenly split between the two variants.

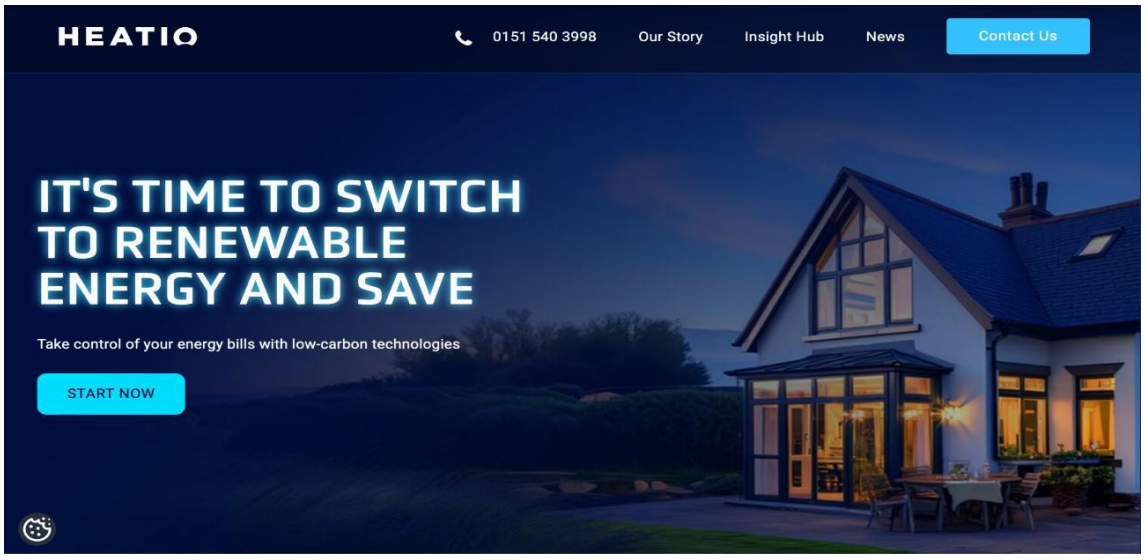

Figure 5. New headline copy tested against original Home Energy Score message.

The test produced comparable conversion rates, confirming the effectiveness of a dual-narrative approach: one that appeals both to financially motivated users and those driven by technology or innovation.

8.3.2 Iterative refinement and results

The pilot confirmed the value of continuous iteration. While the Home Energy Score generated early engagement, the strongest performance gains came from messaging that emphasised control, savings, and simplicity. Enhancing these themes through strategic visuals and content resulted in a 700% increase in audience reach over the campaign cycle.

The data demonstrated that a blended emotional, financial, and practical marketing approach resonated most powerfully. It enabled engagement of both early adopters and a broader, cost-conscious audience. These findings validate the Home Energy Score as a scalable engagement mechanism and offer a robust foundation for wider market deployment.

8.4 Marketing insights

8.4.1 Key insights from the pilot (December 2024 to March 2025)

Between December 2024 and March 2025, Heatio's marketing efforts and platform trial generated important insights into customer engagement, sales performance, and adoption patterns for low-carbon home technologies. The pilot served as a live testing ground to refine customer acquisition strategies, evaluate digital marketing effectiveness, and assess the impact of financing solutions, all of which influenced adoption outcomes.

Consumer behaviour across the pilot suggested that familiarity, simplicity, and trust remained central to decision-making. Technologies perceived as visible and widely adopted—particularly solar panels, garnered higher initial interest, even where costs were comparable to newer or more complex options like heat pumps or battery storage.

As one participant noted:

"You know what solar is, you see it on your neighbour's roof. The others, I'm not even sure how they work or where they go."

This echoed broader findings from qualitative research, where simplicity and perceived control were key motivators:

"I want something I can understand and feel in control of. I don't have the time to figure out how everything connects together."

8.4.2 Marketing performance and conversion rates

The initial goal was to generate approximately 1,000 leads to gauge market appetite for Heatio's piloted 'Energy Saving Solution'. A multi-channel marketing approach resulted in 6,757 unique website visits and 246 marketing-qualified leads (MQLs), equating to a 3.6% visit-to- lead conversion rate.

While the total number of leads fell short of the original target, the quality of leads and

depth of customer engagement provided valuable insight into early market demand. The outcome also highlighted challenges in converting broad interest into high-intent leads, underscoring the need for further refinement in targeting, messaging, and qualification criteria.

Social media was the most effective lead generation channel, responsible for 34% of total leads. Campaigns included still images, carousels, and video content, refined continuously based on engagement data and targeted to the Northwest region. These efforts delivered 221,578 impressions and 3,769 clicks, with a click-through rate (CTR) of 1.7%. The most effective creative focused on messages of control and financial savings, reinforcing earlier findings that empowerment-driven messaging resonated with consumers.

"I liked that the message was about me taking control—not just about saving the planet. It made it feel more personal and doable."

Google Ads delivered 115,917 impressions and 2,796 clicks, accounting for 36% of website traffic to the Home Energy Score landing page. However, conversion performance was lower, likely due to a disconnect between search expectations and the proposition on arrival. This pointed to the need for more trust-building content—such as case studies, customer testimonials, and clearer financial narratives.

"I clicked the ad, but when I got there, I still didn't feel confident. I needed to see someone like me who's already done it."

Content that referenced solar panels tended to outperform messaging that featured less familiar technologies. This aligned with behavioural findings that consumers often engaged more with recognisable, low-risk solutions, particularly in the early stages of interest.

8.4.3 Sales performance and conversion rates

Marketing activities generated 112 sales-qualified leads (SQLs), equating to a 46% MQL-to-SQL conversion rate. This strong conversion indicated that the messaging and targeting strategy were effective in identifying and capturing qualified interest.

However, analysis of customer journeys revealed significant drop-off after the Indicative Proposal stage, particularly among those who had received their Home Energy Score and initial recommendations. Of 112 SQLs, 43 disengaged at this point. Feedback suggested that these customers faced lingering concerns about cost, long-term value, and trust in unfamiliar technologies.

"It's not that I'm not interested I just don't know if it's worth it. It still feels like a bit of a gamble.

These insights suggest opportunities to present financial benefits more clearly, introduce financing earlier, and use personalised storytelling to reduce decision friction. While the proposition was compelling, customer inertia remained a significant barrier with many

respondents expressing interest but hesitating to proceed due to uncertainty, limited understanding, or the perceived complexity of the retrofit process.

Nonetheless, deeper engagement metrics were promising. By the end of the pilot, three customers had signed full contracts, and 29 had progressed to the Bespoke Proposal stage, having completed remote surveys, received a Home Energy Score, and reviewed personalised recommendations. This level of consideration indicated a strong progression beyond awareness, even among those who had not yet converted.

8.4.4 Customer contracts and installations booked

The pilot aimed to complete 15 installations, including post-installation monitoring. Due to delays in the go-live phase, only three installations were booked within the pilot period, with 24 additional customers remaining active in the pipeline.

Confirmed installations included:

- Two customers receiving a heat pump funded through the Boiler Upgrade Scheme (BUS), supplemented by a cash contribution, with solar and battery systems financed.
- One customer receiving a BUS-funded heat pump with a cash contribution and paying upfront for a solar and battery system.

The remaining 24 live customers represented a wide range of configurations:

- Six interested in the full solution (solar, battery, heat pump, and EV charger).
- Four exploring solar, battery, and heat pump systems.
- Four focusing on solar and battery.
- Eight pursuing heat pumps alone.
- Two considering solar and battery options.

This distribution reflected how financial constraints, property suitability, and personal priorities shaped decision-making. A phased approach to adoption was common, particularly among customers starting with solar.

Notably, solar emerged as the most consistent entry point, even though it is not always the least expensive component. This preference was underpinned by several behavioural drivers identified through qualitative research:

- **Familiarity** - *“Solar just feels safer. I’ve seen it before, and I get how it works.”*
- **Clarity and independence** - *“I like the idea of making my own energy. It feels like I’m not at the mercy of price hikes.”*
- **Simplicity** - *“With solar, it’s kind of plug-and-play. Heat pumps and batteries feel more complicated.”*

For many customers, solar represented a low-friction, high-trust gateway into the low-carbon journey. The combination of visibility, financial return, and perceived simplicity gave them the confidence to engage. Customers with solar—either installed or planned—were more likely to consider expanding their system with a heat pump, driven by the appeal of self-powered heating.

These findings suggest that solar often plays a foundational role, serving as a behavioural "first step" toward broader home energy transformation. By enabling early, visible impact and reinforcing a sense of control, solar appears to build the confidence needed to consider more complex or integrated technologies over time.

8.5 Analysis and insights

8.5.1 Implications for future strategy

The pilot reinforced the importance of flexible financing models and transparent communication about the cost-benefit structure of low-carbon technologies. Customers seeking individual measures such as heat pumps or solar panels often required reassurance on return on investment before considering further upgrades. Introducing modular adoption pathways, while maintaining a clear narrative toward whole-home retrofit, may help sustain long-term engagement and retention.

Varying levels of consumer readiness, from those pursuing full installations to those preferring phased upgrades, emphasised the need for tailored messaging. Financing options that support staged adoption, coupled with messaging focused on empowerment, savings, and ease of implementation, are likely to increase uptake and customer satisfaction.

While the pilot demonstrated strong engagement, the next phase will require more focused testing of lead nurturing strategies, clearer communication of costs and savings, and greater integration of financing options across customer touchpoints. Heatio has gained substantial insights that will inform the scaling of its platform and the development of future customer acquisition strategies.

The pilot also provided a more detailed understanding of customer motivations and challenges. Engagement data and qualitative feedback helped identify homeowner segments most receptive to low carbon upgrades, and highlighted both the drivers and barriers to adoption.

8.5.2 Customer segment trends

The majority of customers engaged during the pilot were homeowners without existing low-carbon technologies, representing 69% of the 112 recorded enquiries. This group was typically at the beginning of their retrofit journey and was motivated primarily by cost savings and a desire to understand their home's energy performance.

Homeowners with existing systems, including heat pumps or solar panels, also showed

interest, primarily in complementary upgrades. Additionally, a subset of prospects engaged with the Home Energy Score and assessment process despite lacking a clear intent to purchase. This suggests an opportunity to build long-term relationships through educational content and nurturing pathways.

Demographically, most respondents were aged 35–55, with a strong geographic concentration in the Northwest of England, consistent with the pilot's regional targeting. This reflected the effect of localised marketing and regionally focused PR.

Survey data collected at the bespoke proposal stage (n=39) revealed the following participant characteristics:

- 44% were aged 45–54
- 75% lived in detached or semi-detached homes
- 95% planned to remain in their property for more than five years
- 85% used gas boilers as their primary heating source
- 90% were in full-time employment
- 80% lived in homes built before 2000
- 77% did not have children living at home

In terms of attitudes and motivations:

- 54% identified as financially savvy and value-driven
- 28% were tech-enabled and curious
- 13% prioritised comfort and security
- 5% were primarily motivated by environmental concerns
- 64% were motivated by financial savings and return on investment
- 31% were motivated by energy independence
- Only 5% identified environmental impact as their primary driver

These findings suggest that the most engaged segment tends to live in larger, older homes with higher energy demands - making them more responsive to solutions that promise measurable efficiency improvements and cost savings. Their continued reliance on gas boilers also points to a clear opportunity for conversion to low-carbon heating technologies.

The audience profile aligns more closely with the early majority than with early adopters (see *Figure 6*). Many participants were already aware of low-carbon technologies and open to learning more, but widespread market appeal remains constrained by low awareness, industry complexity, and lingering trust barriers.

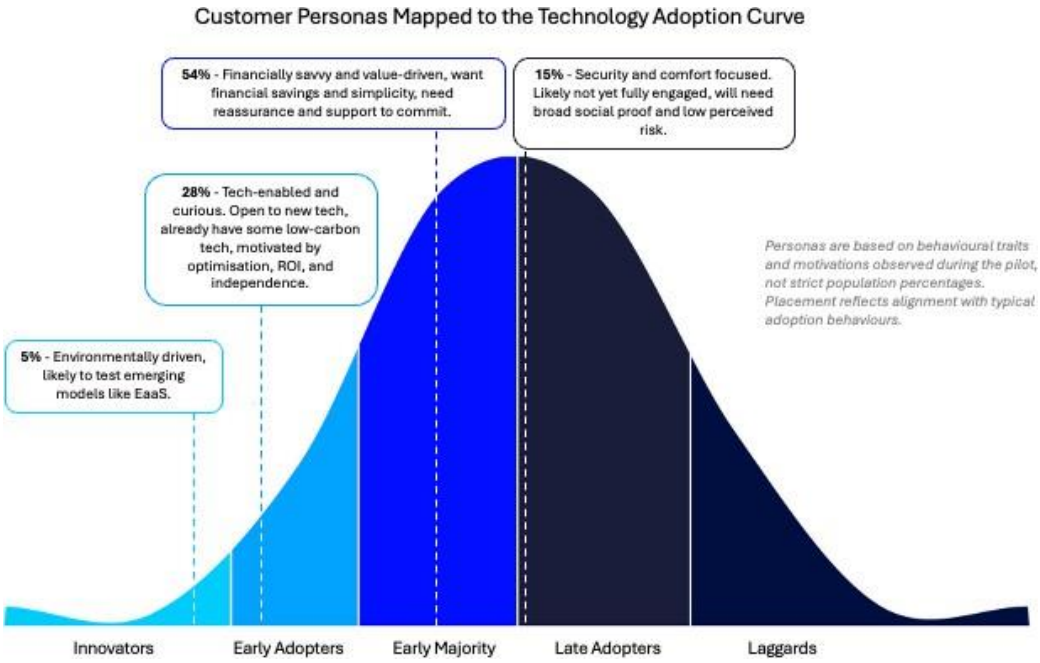

Figure 6. Chart illustrating the types of consumers engaged and their alignment with typical innovation adoption behaviours.

The data also raises important implications for green finance product design. While affordability barriers have been widely documented, the pilot indicates that financing alone is not enough to stimulate demand. Many of the engaged customers were financially capable of investing in low-carbon technologies without assistance, while those who would most benefit from financing were often the least engaged. This points to a need for stronger awareness-building, trust development, and more proactive support before financing solutions can drive widespread adoption.

8.5.3 Factors driving adoption

Marketing testing revealed that messages centred on “Take Control” and “Savings” were the most effective in prompting consumer enquiries. After introducing this refined messaging, combined with clearer calls to action for heat pumps and solar, Heatio recorded 12 enquiries in the first week alone, compared to a prior average of five per week.

This result confirmed that messaging which foregrounds financial impact and transparency helps overcome common concerns about complexity, cost, and trust.

Energy Specialists played an important role in guiding customers through the decision-making process. Through one-to-one video consultations and tailored financial explanations, they helped demystify the cost structure of retrofitting options. Customers who received this support reported greater confidence and understanding and were significantly more likely to advance to the bespoke proposal stage.

“I felt better about moving forward after the call. It wasn’t just about selling—it helped me see what was possible and what I could actually afford.”

8.5.4 Impact of financing on sales and adoption

While the pilot did not secure a customer agreement under the original EaaS financing model, the introduction of more flexible solar financing (with terms from 5 to 25 years) and the use of Boiler Upgrade Scheme (BUS) enabled more customers to consider retrofitting.

The transition from the EaaS model to the Energy Saving Solution allowed greater modularity and flexibility. Customers could adopt one or more technologies based on their preferences, budgets, and property constraints, rather than committing to a full system.

This approach reduced friction and aligned more closely with how households typically make incremental investment decisions.

For many, this modular approach provided a more accessible entry point:

"I didn't want to jump into everything at once. Starting with solar felt manageable, and I can add more later when I'm ready."

Flexible term financing also proved essential. Customers appreciated being able to tailor repayment terms to their circumstances. One participant, for example, declined finance because the repayments wouldn't begin reducing in principle for eight years and would not deliver immediate savings. They were also concerned that selling their home during the contract term would require full early settlement, creating perceived risk.

"I had the money for the heat pump, so I paid that upfront. The finance deal didn't work for me, I didn't want to be locked in for years if I moved."

Others were more comfortable with longer-term financing:

"I know I'm staying here for the long haul, so a 25-year plan made sense. It spreads the cost and the savings add up."

These insights underline the importance of not only offering finance, but designing flexible, intuitive, and transparent solutions that align with real consumer expectations regarding payback, mobility, and perceived value.

While further data is needed to assess the long-term impact of financing on uptake, early evidence suggests that flexible, modular solutions coupled with personalised advice can help reduce friction and expand market participation.

8.6 Barriers and challenges

The project encountered the following barriers and challenges in marketing the pilot proposition:

- **Delayed launch and limited time for trust-building** - Delays to the pilot launch, coupled with a longer-than-anticipated customer decision-making cycle, limited the number of completed installations during the live phase. This reduced opportunities

to collect real-world performance data and generate customer testimonials - both of which are essential for validating a service-led, low-carbon proposition. These forms of evidence are particularly important for risk-averse consumers or those unfamiliar with emerging energy technologies, as they provide tangible reassurance to support decision-making.

- **Limited brand visibility and constraints on strategic communication** - Establishing trust in a new, service-led home energy model is especially challenging for emerging providers without strong national brand recognition. While the pilot included a strategic partnership with E.ON, a trusted energy supplier, the full benefits of this association, such as co-branding, access to customer channels, and integrated tariff promotion, were not fully leveraged. The inability to present a bundled offer combining technology, finance, and energy tariffs limited the proposition's reach and clarity. Consequently, the offer was not consistently presented to a pre-qualified or pre-engaged customer base, reducing its overall market traction.
- **Regulatory restrictions on finance messaging** - Regulatory constraints under FCA rules restricted how financing options could be communicated, particularly in relation to indicative monthly costs, payback periods, and long-term savings. These limitations affected the clarity of the proposition at early engagement stages, making it harder for consumers to compare offers or understand the financial implications. While the offer may have represented strong long-term value, the inability to communicate this transparently and consistently posed a significant challenge to uptake.
- **Complexity of the Boiler Upgrade Scheme (BUS)** - The BUS, while financially beneficial, introduced additional complexity when paired with third-party finance. Eligibility requirements, fragmented cost presentations, and the need to explain heat pump and solar components separately made the proposition harder to understand. For customers unfamiliar with retrofit schemes, this increased cognitive load at a point where simplicity and clarity were critical.
- **Perceptions of finance affordability -** Some customers perceived the financing structure as poor value during the early repayment period. Monthly payments initially covered mostly interest and service fees, with little capital repayment, financially literate consumers compared it unfavourably to alternative financing or outright purchase. In the absence of clearly presented lifecycle cost benefits or flexible repayment breakdowns (limited by regulatory constraints), this perception of poor early value may have reduced uptake.

"It felt like I'd be paying for years without really owning anything. I needed to see how the savings balanced out over time."

This suggests that while flexible finance is essential for broadening access, its design must closely align with consumer expectations on value, repayment transparency, and contract

flexibility. Without this, even customers willing and able to invest may seek alternatives.

8.7 Recommendations

The pilot confirmed growing interest in low-carbon home upgrades, but also highlighted persistent barriers related to cost, trust, and perceived complexity. While early adopters are already engaging, broader market participation will require targeted interventions to simplify messaging, tailor finance, and build consumer confidence. The following recommendations draw directly from the pilot's evidence base:

- **Introduce a pre-enquiry savings estimation tool** - A simple online tool providing high-level estimates of potential savings and upfront costs could support early-stage engagement. This would:
    - Empower customers to explore the value of upgrades independently.
    - Help prioritise and qualify leads entering the sales journey.
    - Support customers who prefer to self-educate before engaging with a sales advisor.
    - Include financial data such as monthly payments or ROI. To do so, the provider must hold FCA authorisation to issue regulated financial promotions. Without this, early communication on affordability will remain constrained at a critical stage of the journey.
- **Simplify messaging and focus on consumer impact** - Pilot insights confirmed that cost-saving and value-driven language, emphasising control, lower bills, and affordability was most effective. Future messaging should:
    - Be concise and tailored to household financial priorities.
    - Highlight tangible benefits such as comfort, convenience, and savings.
    - Use real-world testimonials and case studies to build credibility.
    - Communications should shift from technical or environmental framing toward personal relevance and everyday value.
- **Adopt a tiered, modular retrofit model** - A phased approach to adoption could better support households at different readiness levels. This includes:
    - Offering entry-level upgrades (e.g. solar or battery) as a first step.
    - Providing clear upgrade pathways to full system integration.
    - Aligning finance offers with customer needs and affordability over time.
    - Allowing for flexible entry points and scalable engagement to increase the likelihood of long-term uptake.
- **Strengthen brand partnerships to enhance trust** - Greater visibility of trusted brand partners in the customer journey would support trust-building and wider reach. A co-branded approach, using shared marketing assets and integrated messaging, could:
    - Reduce perceived risk through brand recognition.
    - Improve access to pre-engaged customer bases.

    - Reinforce the credibility of bundled propositions (technology + finance + tariff).
    - Fram energy tariffs (where relevant) as part of the value proposition, demonstrating the benefits of smart consumption and time-of-use pricing.
- **Develop competitive, transparent finance models** - To scale EaaS offers, finance must be both attractive to consumers and viable for providers. Key recommended improvements include:
    - Linking finance terms to post-installation performance using real-time monitoring and analytics.
    - Using performance data to offer more competitive rates and flexible repayment plans.
    - Providing clearer, more transparent repayment information to support decision-making.
    - Increasing consumer confidence by making financing more aligned with real household energy outcomes.
- **Improve coordination across the green finance ecosystem** - Fragmentation across local authorities, financial institutions, and retrofit providers creates complexity for consumers. The pilot suggests that:
    - Higher-income households are more likely to navigate existing offers.
    - Lower-income or underserved groups face barriers related to awareness, trust, and access.
    - Greater involvement from local councils, community organisations, and trusted intermediaries is needed.
    - Central coordination, backed by government-supported guarantees or low-interest loan schemes, could reduce lender risk and broaden access.

Improved collaboration across the ecosystem would support a more inclusive and scalable retrofit finance market—critical to meeting national decarbonisation targets.

9. The Customer Experiences

9.1 Customer experience and behavioural insights

9.1.1. Evolution of the customer journey

The original pilot design positioned E.ON Energy Solutions as the lead customer-facing provider, offering a trusted end-to-end experience. Under this model, E.ON would manage everything from initial engagement through to installation, billing, and ongoing service, leveraging its brand recognition, regulatory oversight, and existing customer base.

Following the insolvency of the original finance partner, the pilot pivoted to a new delivery model. Heatio Ltd became the lead customer interface, enabling a digital-first, supplier-agnostic journey. This shift allowed any eligible household to participate, regardless of their energy supplier. Heatio designed and delivered the entire experience via its platform, with E.ON supporting tariff alignment and brand oversight. This repositioning enabled deeper insights into the behaviours and motivations of diverse customer segments, particularly those engaging with low-carbon technologies for the first time.

9.1.2 Behavioural insights from the Heatio customer journey

A detailed analysis of the Heatio Energy Savings Solution funnel tracked 246 digital leads across key journey milestones - including enquiry, proposal, remote survey, home assessment, and contract sign-off. Insights were derived from both digital analytics and qualitative observations by Heatio Energy Specialists.

9.1.3 Motivations for progressing

Three key motivations emerged among customers who progressed:

- **Reducing energy bills** - Many households were driven by the desire to reduce bills and gain energy independence. While some sought long-term financial stability, others expected more immediate savings. One customer disengaged after learning that projected savings from a heat pump would be just £150 annually, underscoring the need for clearer short- and long-term benefit communication.
- **Understanding energy usage** - Customers were interested in assessing and improving home energy performance. Some were exploring low-carbon upgrades for the first time; others aimed to optimise existing solar or EV systems. The Home Energy Score helped visualise opportunities, often serving as a research tool rather than an immediate trigger for purchase. Even for those not yet ready to commit, providing insight-built trust and long-term engagement potential.
- **Interest in sustainability** - Customers with solar or EVs were generally more inclined

to continue their decarbonisation journey. Others were drawn by the availability of government grant schemes providing upfront cost support. However, there was confusion around tariffs, such as Smart Export Guarantee (SEG), and uncertainty around financial returns, especially for battery storage, limited confidence. The lack of standardised performance data also made it difficult to evaluate value. This highlights the importance of clearly bundled propositions that show how integrated technologies can deliver compounded benefits.

9.2 Customer research – qualitative and quantitative

9.2.1 Overview and methodology

A mixed-methods research programme was used to evaluate customer sentiment and experiences.

Two main methods were applied:

1. An early-stage sentiment survey sent to 78 customers at the Initial Proposal stage.
2. In-depth interviews with four customers who progressed to the Bespoke Proposal stage, conducted by trained E.ON Energy staff, and analysed using structured storytelling techniques.

9.2.2 Key findings

Although the response rate was modest (9 out of 78), feedback was consistently positive:

- All respondents found the Heatio website clear and helpful.
- 89% rated the team as extremely professional and responsive.
- 89% found the proposals relevant to their needs.
- 89% said they would recommend Heatio to others.

While limited in scale, these responses suggested that the early customer journey was accessible and trustworthy.

Qualitative interviews identified several recurring issues and improvement opportunities:

- **Lack of clarity on costs and savings** - Customers found energy savings estimates vague. It was unclear whether quotes included SEG income, energy bill reductions, or subscription costs, making it hard to assess overall value.

*"*I do not know how Smart Export Guarantee Tariff works but was very impressed with the feed in tariff being 10 times higher than the current tariff.*"*
"Where does the 40p tariff came from for the Smart Export Guarantee and why are other suppliers paying 10 times less than EON?*"*
*"*Initially I was wondering if I was reading it right because that would mean that you're not paying any electricity? Are you not paying any energy bill on top of that then?*"*

- **Lease terms felt opaque** - Participants expressed concern over long-term contract terms, especially relating to moving home, exiting agreements, or switching packages. Greater transparency and flexibility are essential to reassure consumers considering 10 to 25-year commitments.

"Imagine you're stuck in a contract for 20 years and EON keeps putting the price up. That is just a nightmare, so I'd need to know, in what cases can EON put the price up or is it going to go up by 5% every year?"

"If I have to break out of the lease before the 20 years is over, would I have a penalty?"

Suggestions for improvement include:

- Clearly communicated break clauses and settlement terms.
- Portable finance models that transfer with the property.
- Modular upgrade pathways to support flexible adoption.
- Standardised legal documentation for use in conveyancing.
- Increase tariff understanding. There was a limited understanding of SEG tariffs and their impact post-contract. Customers requested clarity on future tariff changes and their effect on household bills.
- Enhance system-level clarity. While individual technologies were familiar, customers lacked an understanding of how the full system worked together or delivered optimised outcomes.
- Ensure savings seem less abstract. Long-term projections (over 20 years) felt too hypothetical. Customers preferred clearer year-by-year or monthly breakdowns to support affordability and ROI decisions.

9.3 Enhancing market adoption by refining consumer insights

The Heatio Home Energy Score emerged as a key engagement tool during the pilot. It offered a simplified view of home energy performance and highlighted potential improvements. Feedback indicated that it helped customers feel more informed and empowered, especially those in early research phases.

Participants valued the visual energy usage breakdowns and personalised recommendations. However, further refinement is needed to ensure it resonates with a wide range of consumers, including financially cautious or hesitant adopters.

Future research should focus on:

- How different demographics interpret and act on energy insights.
- What builds trust in retrofit advice and financing options.
- How the Home Energy Score could better support financial decision-making.

Heatio is seeking government support to extend this work through:

- Thematic interviews exploring perceptions of trust, control, and financial confidence.
- Quantitative tests of different Score versions to assess their influence on behaviour.

This research would support development in areas such as:

- **Refined messaging** - Communications will place more emphasis on immediate value and relatable case studies to build trust and overcome uncertainty.
- **User experience enhancements** - Platform improvements will focus on simplification and automation. Features that support low-effort, high-impact decision-making will be prioritised to appeal to time-poor or cautious consumers.

9.4 Advancing the Heatio platform for long-term growth

Ongoing development of the Heatio Platform will underpin future customer engagement. Key focus areas include:

- **Smart data integration** - Real-time energy data and smart meter connectivity will allow dynamic performance tracking. This will enhance engagement and provide the transparency needed to build consumer and lender confidence.
- **Predictive modelling** - Machine learning will be used to forecast household energy needs and automate personalised retrofit recommendations. This will improve the relevance and responsiveness of advice.
- **Finance and tariff integration** - Heatio aims to work with finance partners to offer dynamic repayment options. These may be linked to actual energy savings rather than fixed schedules, aligning repayment with household benefit.
- **Third-party platform integration** - The platform will explore integration with energy management services and local authority schemes to scale reach and impact.

9.5 Barriers and challenges

The pilot revealed a range of factors that limited customer progression from interest to contract sign-off:

- **Decision-making delays** - Customers postponed decisions due to financial uncertainty, competing household priorities, or a wait-and-see approach regarding future incentives or improved finance terms.
- **Upfront cost and financing complexity** - Even with finance options, many customers found the perceived commitment too high. The separation of Heatio's system proposal and the lender's finance proposal made it difficult to present a unified affordability picture.
- **Property limitations** - Renters and flat owners faced structural or legal barriers that

prevented them from installing technologies such as solar PV or heat pumps.

- **Information-only engagement** - Some leads were motivated by curiosity or a desire to benchmark existing systems, rather than a readiness to adopt new technologies.
- **Low engagement with research** - The early-stage survey had only a 10% response rate, limiting the robustness of quantitative analysis.
- **Novelty of the EaaS proposition** - Many customers lacked a clear understanding of what the service entailed, including ownership, subscription models, and value calculations.
- **Fragmented cost and service structure** - Customers had to navigate separate financial agreements, which created confusion over total cost, savings, ownership, and support responsibilities.
- **Disjointed customer journey** - Multiple brands, platforms, and hand-offs contributed to drop-off, particularly during the proposal and financing phases.
- **Digital and accessibility barriers** - Some customers struggled with smart meter onboarding, online survey tools, or digital navigation - particularly those less confident with technology.
- **Proposal delays** - Gaps between assessments and proposal delivery, often over a week, disrupted momentum and undermined confidence.
- **Perception of limited value from heat pumps** - Where forecasted savings were modest, customers questioned the value proposition. Messaging failed to convey non-financial benefits such as comfort or energy independence.
- **High reliance on sales teams** - The journey depended heavily on Energy Specialists to guide customers, reducing scalability and limiting the potential for self-directed engagement.
- **Limited pathways for non-owner occupiers** - Renters and flat owners were effectively excluded, despite their interest in lowering energy bills and improving home efficiency.

9.6 Recommendations

To address the challenges above and strengthen future delivery, the following actions are recommended:

- **Improve financial communication**
  - Consolidate proposals to include system performance, financing options, and net savings projections in one document.
  - Offer interactive financial planning tools to help customers visualise savings over monthly, annual, and lifetime periods.
  - Use real-life case studies to demonstrate affordability and payback timelines.
- **Establish follow-up pathways for undecided customers**
  - Implement nurture campaigns for customers who defer decisions.

- Use seasonal touchpoints, personalised emails, and targeted content to re-engage.

- **Develop solutions for renters and flat owners**
  - Provide tools that allow renters to monitor and improve energy efficiency.
  - Offer negotiation guides for landlord engagement.
  - Promote low-barrier entry products or monitoring options that build toward future upgrades.

- **Enhance education and long-term engagement**
  - Expand the knowledge hub with webinars, explainer content, and energy-saving guidance.
  - Support customers in the early discovery phase with resources that enable self-education without sales pressure.

- **Strengthen cost transparency**
  - Clearly state whether projected savings include SEG income, energy bills, or service fees.
  - Use side-by-side comparisons of lease vs purchase options.
  - Provide monthly, yearly, and lifetime views of financial performance.

- **Clarify lease terms and customer protections**
  - Explain early exit clauses, transfer options, and what happens during home moves using clear FAQs and scenario examples.
  - Collaborate with conveyancers to develop standardised documents that support asset portability.

- **Make system benefits more tangible**
  - Use diagrams, tooltips, and customer stories to show how integrated systems work.
  - Break down how solar, heat pumps, and batteries contribute to savings and comfort.

- **Boost research participation**
  - Incentivise survey completion and embed research steps into the customer journey.
  - Use automation to improve response rates and data quality.

- **Reframe heat pump messaging**
    - Emphasise comfort, control, energy security, and environmental benefits—not just financial savings.
    - Include peer testimonials to create emotional relevance.
- **Streamline digital onboarding**
    - Provide live support during onboarding or offer offline alternatives like paper-based proposals and in-home assessments.
- **Enable self-service journeys**
    - Build guided tools for customers to compare options, explore packages, and assess eligibility without needing manual support.
- **Advance segmentation and behavioural research**
    - Continue exploring how customers interpret the Home Energy Score and what motivates or deters action.
    - Use insights to shape communications and product design across different readiness levels.

10. Integration of Government grants

As part of the pilot, the Boiler Upgrade Scheme (BUS) was positioned as a core mechanism for improving the affordability and accessibility of the Heatio Energy Saving Solution offer. Providing up to £7,500 toward the installation of an Air Source Heat Pump (ASHP), the BUS played a critical role in lowering upfront costs and was integrated into the overall solution.

Customers were informed of the scheme opportunity at multiple points in their journey:

- **Marketing campaigns** - BUS information was included in digital ads, social media content, and across the Heatio website.
- **Home Energy Score reports** - Personalised assessments highlighted scheme eligibility and estimated cost savings.
- **Consultation sessions** - Energy Specialists explained how the scheme worked and its financial impact during remote design sessions.
- **Proposal documentation** - Proposals included itemised breakdowns of the BUS, solar financing, and projected cost reductions.

10.1 Barriers and challenges

By embedding the BUS throughout the customer journey, the pilot aimed to support decision-making and build trust in low-carbon technologies. However, several challenges emerged in integrating the BUS effectively:

- **Ownership restrictions** - The BUS required the Air Source Heap Pump (ASHP) to be owned outright by the homeowner, conflicting with the pilot's original subscription-based financing model. This necessitated separate agreements for the heat pump and other technologies, adding complexity to the offer.
- **Residual upfront costs** - Despite the scheme, many households still faced out-of-pocket expenses, particularly for complementary upgrades such as radiator replacements needed for optimal heat pump performance. This resulted in an average residual cost of between £2,000 and £12000 for the homeowner.

"Even with the grant, it was more than I'd planned for. I thought it would cover everything."

- **Complexity in communication** - Clear and compliant messaging around BUS eligibility, conditions, and benefits was essential but difficult to deliver succinctly. Careful scripting and customer education were required to avoid confusion or misinterpretation.

“I needed to see what I’d pay now, what I’d save each month, and what’s left after the grant, on one page.”

“I wasn’t sure what I’d actually save, or how the grant changed the monthly cost. It wasn’t clear.”

These factors introduced structural and financial friction into the customer experience and placed additional pressure on support teams to clarify propositions and respond to concerns. As a result, several aspects of the original offer had to be restructured:

- The initial marketing promise of an all-in-one, zero-upfront subscription model had to be adjusted to reflect the separation of ownership and financing.
- Messaging was revised to ensure transparency, but this made the offer appear more fragmented and harder to communicate persuasively.
- Compliance requirements added further constraints, mandating clear disclosures about contract terms and eligibility to avoid the risk of mis-selling.

10.1 Recommendations

While the pilot successfully navigated these challenges, the experience highlighted the importance of aligning product design with policy frameworks. To deliver a coherent and customer-friendly proposition, financial models must be designed with BUS criteria, regulatory obligations, and user experience in mind:

- **Integrate Proposals** - Present a single, consolidated offer covering system design, scheme support, and financing, with a clear net cost summary.
- **Clarify Financial Storytelling** - Use simple visuals and real customer scenarios to explain total costs, scheme impacts, and repayment options.
- **Accelerate Turnaround Times** - Introduce SLAs to ensure proposals are issued within 5–7 days post-assessment, supported by regular updates.
- **Frame the BUS as a Value Signal** - Position the BUS as a government endorsement of energy independence—not just a discount—building trust and motivation.
- **Simplify the Journey** - Reduce touchpoints and ensure one point of contact guides the customer through the scheme, tech, and finance landscape.

11. Commercial modelling and business model innovation

11.1 Long term vision for EaaS

The long-term ambition of the EaaS model is to establish a scalable, data-driven, zero-upfront-cost solution that enables widespread adoption of low-carbon home technologies. The model aims to balance commercial viability for providers with affordability, trust, and ease of installation for consumers.

To support this vision, the Catapult led the commercial modelling and business model development through two phases of the EaaS pilot.

11.1.1 Phase 3: Business model innovation – original EaaS model

In Phase 3, the Catapult focused on the original EaaS concept and validated its commercial model through:

- Financial testing to benchmark the EaaS proposition against a business-as-usual scenario over a 25-year contract.
- Scenario analysis to evaluate the impact of changes such as BUS removal, tariff shifts, and cost-of-capital variations.

Across 160 queries raised by the Catapult, 21 led to clarifications or minor corrections, but none significantly changed the model's outputs. The model was deemed to accurately represent expected customer costs, assuming key conditions held.

11.1.2 Key findings from scenario analysis

The scenario analysis (see *Table 7, Table 8* and *Table 9*) identified the following key findings:

- The removal of the Boiler Upgrade Scheme (BUS) rendered the proposition financially unviable, particularly due to the scheme prohibiting third-party ownership, a key requirement for finance providers who rely on asset ownership as collateral to secure lending.
- Policy shifts beyond BUS had limited impact relative to customer/property characteristics and cost-of-capital.
- Moderate to high savings could be unlocked by reducing margins, lowering tariffs, or improving cost-to-serve.
    - Property and consumption profiles significantly influenced lifetime cost-effectiveness.
    - High-consumption, solar-optimised homes in the south showed a 35% cost reduction vs business as usual (BAU).
    - Low-consumption homes with poor solar conditions in the north showed a

>20% increase vs BAU.

This led to the recommendation that EaaS offers may need to be selectively targeted to maximise commercial viability and consumer benefit.

Table 7. Summary of 'best case' (i.e. 'golden') scenario analysis.

Category	Details
Golden Policy	• Carbon tax is shifted from electricity to gas • Battery costs are reduced
Golden Team	• Tariff is improved • Local partner reduces their margin • Capital cost of heat pump decreases • Increased panel size • Financer reduces their margin • Cost of customer acquisition is reduced • SEG length is increased • Higher SEG rate
Golden Customer	• More solar panels (larger roof) • Located in the South • High electricity demand • Occupancy type is 'in all day' (e.g. works from home) • Higher roof tilt • High gas demand before install • Higher Seasonal Coefficient of Performance (SCOP) values for heat pump

Table 8. Summary of 'worst case' (i.e. 'wooden') scenario analysis.

Category	Details
Wooden Policy	• Battery costs increase • Electricity prices rise • Gas prices reduce
Wooden Team	• E.On tariff becomes more expensive to customer • Capital cost of heat pump increases • Local partner takes larger margin • Financer takes larger margin • Cost of customer acquisition goes up • SEG rate is reduced
Wooden Customer	• Electricity demand is low before install • Occupancy type is 'out all day' (e.g. all occupants go out to work Monday-Friday during the day) • Location is Northern • Fewer solar panels (smaller roof) • Has a low roof tilt • Orientation of home is East West • Property has increased shading • Lower SCOP values for heat pump

Table 9. Summary of 'best case' (i.e. 'golden') and 'worst case' (i.e. 'wooden') savings.

Scenario	Yr 1 saving or cost (%)	Lifetime saving or cost (%)	Yr 1 saving or cost % - scenario difference (with service) vs baseline (with service)	Lifetime saving or cost % - scenario difference (with service) vs baseline (with service)
Golden Policy	-12.0%	-27.2%	-11.5%	-18.8%
Golden Team	-10.9%	-19.0%	-10.4%	-10.6%
Golden Customer	-35.9%	-34.7%	-35.4%	-26.3%
Wooden Policy	0.8%	3.5%	1.3%	11.9%
Wooden Team	32.5%	19.6%	33.0%	-28.0%
Wooden Customer	34.8%	21.9%	35.3%	30.3%
No BUS	29.8%	18.1%	30.3%	26.5%
Note: A negative figure indicates a cost saving for the customer, while a positive figure indicates a higher cost for the customer.				

11.1.3 Phase 4: Business model innovation – Heatio & lender MVP

After the withdrawal of the original finance partner, Phase 4 examined a pivoted model involving two separate financial components:

- The Heatio model, used for pre-installation assessments and savings estimation, with some limitations around cost breakdown transparency.
- The Lender model, used to generate lease costs for solar and battery installations based on asset inputs from Heatio.

Customers were required to navigate two separate offers:

- Upfront payment for heat pumps (via Heatio).
- Lease finance for solar and batteries (via Lender).

This fragmentation reduced visibility of total savings and undermined the simplicity of the original EaaS proposition. Additionally, customer quotes were reportedly adjusted outside the model, introducing inconsistencies and weakening trust in the pricing framework.

The Catapult found that while each model was functional, the combined proposition lacked integration, standardisation, and scalability.

11.5 Barriers and challenges

The commercial modelling revealed several cross-cutting barriers and challenges:

- **Fragmented cost structures** - The pilot's final model required customers to engage with separate financial arrangements for different elements of the system, one contract with Heatio for the heat pump, and another with the lender for solar PV and battery leasing. This dual-model structure created confusion, diminished the sense of a coherent offer, and weakened the integrated value proposition central to EaaS.
- **Loss of the original EaaS vision** - Due to the pivot away from a single-finance partner and the need to adapt to funding constraints, the original all-in-one, zero-upfront-cost EaaS model was never tested at scale. Instead, the proposition became a patchwork of existing finance mechanisms, reducing innovation and limiting opportunities to test the full customer and operational model envisioned during the Discovery Phase.
- **Dependency on the BUS** - Scenario modelling confirmed that without the Boiler Upgrade Scheme (BUS), the EaaS proposition would become unviable. This dependency on a single government subsidy introduces strategic risk and raises concerns about long-term scalability and resilience in the absence of consistent policy support.
- **Non-standardised modelling and assumptions** - Elements of both the Heatio and lender models used high-level or bespoke calculations for key inputs like heating demand and system performance. While functionally adequate for a pilot, this lack of standardisation made the outputs less credible to external stakeholders and harder to validate for financial partners.
- **Lack of pricing transparency** - In some cases, customer-facing prices were derived or modified outside the formal modelling process, reducing clarity and weakening trust in the underlying calculations. This inconsistency created challenges for both customer engagement and internal quality control.
- **Inflexible eligibility and value variation** - The modelling showed a high degree of variability in customer value depending on property characteristics and location. Some homes saw lifetime savings of over 30%, while others would pay significantly more than under a non-EaaS approach. This raises challenges for universal roll-out and requires more sophisticated segmentation to target viable markets.

11.6 Recommendations

The following are recommended to address the identified commercial barriers:

- **Develop a unified financial proposition** - Future iterations of EaaS should prioritise delivering a single, coherent offer to customers, one contract that bundles all

technologies, services, and finance into a transparent, end-to-end solution. This will reduce customer confusion, increase perceived value, and support clearer regulatory and financial oversight.

- **Target the most viable customer segments first** - Focus initial scaling efforts on customer profiles and property types where the model performs strongest, for example, high-energy-using households with good solar potential. These early adopters can help prove the value proposition and generate positive case studies, while surplus margins from these installations can be used to support broader inclusion strategies over time.
- **Standardise modelling methodologies** – Adopt widely recognised, industry-standard frameworks for estimating heating loads, solar generation, and system-level savings. This will increase model credibility with lenders, regulators, and consumers, and support future integration into financial underwriting and risk assessment.
- **Improve pricing transparency and governance** - Ensure that customer quotes directly reflect the underlying model logic and inputs. Establish internal checks to prevent ad-hoc pricing adjustments and create clear documentation explaining how each figure is derived. This is essential for building long-term customer trust and enabling scalable delivery.
- **Reinforce the EaaS service concept** - While modular financing is a useful interim solution, the goal should remain a fully integrated service model that removes complexity for the consumer. Future pilots should revisit this ambition and work with partners capable of supporting the risk, compliance, and operational requirements of a bundled service.
- **Secure long-term policy and scheme alignment** - Continue working with government stakeholders to advocate for consistent, performance-linked scheme structures such as the BUS. Explore mechanisms such as insurance-backed guarantees or tax incentives that reduce dependency on short-term schemes and provide a stable foundation for investment.

12. Final Reflections

12.1 Overall reflections from the project consortium partners

The EaaS pilot project marked a significant collaborative effort between E.ON, Heatio Ltd, and the Catapult, each bringing distinct capabilities and perspectives to the delivery of whole-home retrofit solutions. While the pilot did not result in a fully integrated EaaS model with zero upfront cost and bundled energy services, it yielded valuable insights into the practical challenges, consumer behaviours, and system conditions required to make such a proposition viable at scale.

From Heatio's perspective, the pilot validated the role of digital tools such as the Home Energy Score and digital twin in building consumer trust and enabling data-led personalisation. It also revealed the operational and regulatory complexity of combining technologies, funding schemes, and finance into a single proposition. Heatio emphasises that future scalability depends on simplifying journeys, enhancing lender trust through verifiable performance data, and creating finance-ready propositions with clearer ownership and repayment structures.

E.ON reaffirmed the critical role of energy suppliers in delivering trusted, bundled propositions. It acknowledged that while consumer appetite and technical solutions exist, the lack of a finance partner able to share long-term risk was the major barrier to full EaaS implementation. E.ON highlighted the importance of smart tariffs, grid flexibility services, and fair use policies as complementary revenue mechanisms, and sees future potential in offering fully integrated propositions with finance, installation, and energy optimisation under one roof.

The Catapult offered systems-level insights, noting that while the pilot fell short of realising the initial ambition, it substantially advanced understanding of what is required to commercialise EaaS. The Catapult's modelling confirmed the long-term viability of such propositions under the right policy, risk, and tariff conditions. It also recognised the importance of innovation in areas such as insurance-backed risk-sharing, performance-linked finance, and improved building performance modelling (e.g. digital twins, SMETERS).

Together, the partners recognised that:

- Consumer interest is strong, particularly where cost savings and ease of understanding are prioritised.
- Financing complexity and regulatory restrictions remain significant blockers.
- A data-driven, modular approach can build confidence and support progressive

customer adoption.

12.2 Conclusion

The EaaS pilot has laid essential groundwork for the future of whole-home decarbonisation. While it did not achieve the fully formed, zero-upfront-cost EaaS model envisioned at the outset, it delivered critical advancements in customer experience design, digital engagement, marketing personalisation, and system integration.

The pilot surfaced important barriers, including fragmented financing, complex messaging, and inconsistent regulatory alignment, but also confirmed that with the right mix of data, trust-building, and product design, consumer demand for affordable and understandable retrofit solutions can be unlocked.

Key enablers for future success include:

- Cross-sector strategic partnerships with shared commercial and policy goals.
- Standardised, post-installation data to support finance confidence.
- Clearer consumer journeys with integrated proposals and tailored support.
- Policy and regulatory reform to enable fair, transparent, and early-stage financial communication.

Above all, the pilot demonstrated that consumer-centric, data-enabled retrofit propositions are achievable and desirable. Realising their potential will now depend on joined-up innovation between technology providers, financial institutions, policymakers, and delivery organisations. With continued collaboration and investment, a scalable, trusted EaaS model can still be delivered—bringing the UK closer to its net-zero housing goals.

13. Glossary

Subject	Detail
EAAS	Energy as a Service - A business model where customers pay for energy services (like heating) rather than investing in the equipment or infrastructure upfront.
Heatio Platform	A home energy data and analytics platform that optimises decision-making for companies engaged in installing, maintaining, and promoting low-carbon technologies.
Building Physics Model	A data-driven simulation tool used to predict a building's energy performance by analysing heat loss, thermal dynamics, and retrofit impacts.
The energy score	A personalised energy performance metric that provided homeowners with clear insights into their energy usage and retrofit opportunities.
Energy Pod	A prefabricated unit integrating hot water storage and battery technology, which reduced on-site installation time and complexity.
The Catapult / ESC	Energy Systems Catapult
Discovery Phase	The initial stage of the Green Home Finance Accelerator (GHFA) programme focused on exploring, testing, and validating the feasibility of innovative green finance propositions before scaling to full delivery.
EPVS	Energy Performance Validation Scheme - a certification and validation service designed to protect consumers by ensuring that energy-saving claims made by installers and finance providers are accurate and verifiable.
FCA	Financial Conduct Authority – the UK regulatory body that oversees financial markets and firms to ensure consumer protection and market integrity.
IAR	Introducer Appointed Representative - a firm or individual that is appointed by a directly authorised firm (known as the Principal firm) to introduce customers to financial products or services.
Customer journey	The series of stages a customer goes through from initial awareness and engagement with the solution through to proposal, decision-making, and installation.
Conversion rates	The percentage of individuals who take a desired action, such as moving from an initial enquiry to receiving a proposal, or from a proposal to making a purchase. Used to measure the effectiveness of sales and marketing efforts.
ROI	Return on Investment
Time-of-Use Tariff	A type of energy tariff where electricity prices vary depending on the time of day, encouraging consumers to use energy during off-peak hours for cost savings.
Battery Storage	A system that stores energy, often from solar generation, for use at a later time, helping to increase energy independence and reduce reliance on the grid.

ASHP	Air Source Heat Pump – A low-carbon heating technology that extracts heat from the outside air to warm a home and provide hot water.
Solar PV	Solar photovoltaic panels that convert sunlight into electricity for household or commercial use.
Green Finance	Financial products and services designed to fund sustainable, energy-efficient, or low-carbon home upgrades.
Loan Guarantee	A form of government or institutional backing that reduces risk for lenders by ensuring they are repaid even if the borrower defaults.
Risk-Sharing Mechanism	A financial structure where multiple stakeholders share potential losses from a loan or investment to reduce individual exposure.
GHFA	Green Home Finance Accelerator – A UK Government-funded programme designed to support innovative finance solutions that help homeowners retrofit and decarbonise their homes.
Pilot Phase	A controlled test phase used to evaluate the feasibility, impact, and performance of a solution before wider rollout.
BUS Scheme	The Boiler Upgrade Scheme is a government grant for ground and air source heat pump and biomass boilers. It is administered by Ofgem and provides funding for homeowners and businesses to install heating measures in their homes at a discounted price.