

Overcoming cost barriers to green home retrofit through innovative finance

Green Home Finance Accelerator
Stakeholder Webinar



Department for
Energy Security
& Net Zero



Green Home
Finance
Accelerator

Part of the Net Zero Innovation Portfolio



Agenda

	Agenda	Speakers
10:30	Welcome	Will Rivers, Carbon Trust
10:35	The objectives and background of the Green Homes Finance Accelerator	Tim Cook & Stephen Ryman, Department for Energy Security and Net Zero
10:45	Overview of the GHFA Discovery Phase Projects	Will Rivers, Carbon Trust
10:50	Short presentations from 7 x GHFA projects	Project speakers (details in subsequent slide)
11:40	Q&A	All
12:00	Close	

GHFA Background and Objectives

Introducing the Green Home Finance Accelerator programme

Background

Up to **£20m grant funding** to support the development and piloting of innovative green finance products and services for homeowners and private landlords.

Aims

Accelerate activity in the green finance market

Support the establishment of a diverse range of green finance products and services

Enable an increase in uptake of home retrofit measures

Policy Context

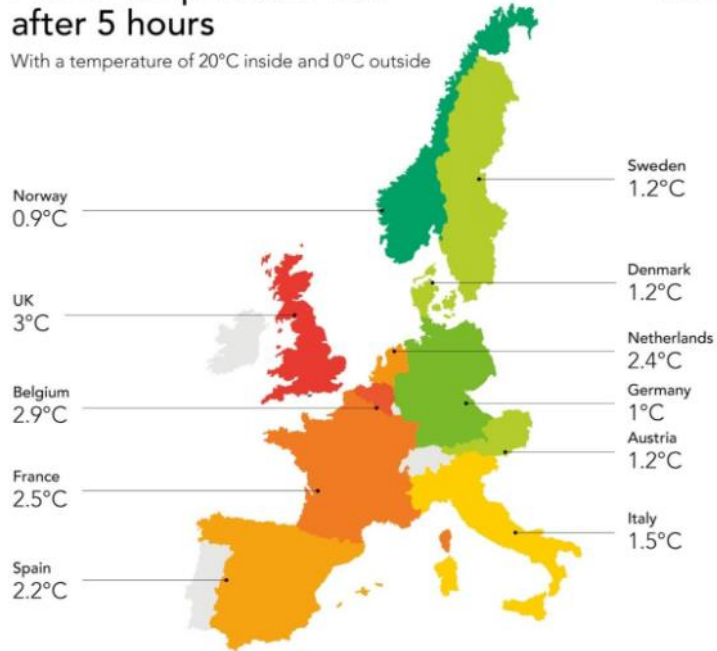
- Government committed to meeting net zero targets, and continuing leading role internationally on climate action.
- 30 million buildings in the UK – responsible for ~17% of our total carbon emissions.
- Government ambition for as many homes as possible to be EPC band C by 2035 where practicable and affordable; all will need to be fully decarbonised to reach net zero by 2050.
- £6.6 billion commitment over the course of this Parliament – but estimates suggest £65 billion required for EPC C by 2035.
- Current grant funding focused low-income households in the least energy efficient homes:
 - [Help-to-Heat](#) schemes (ECO, LAD HUG);
 - New consumer advice and information services, including gov.uk digital and phone services and forthcoming regional advice hubs.
- 15.3m owner-occupied homes in England : 65% of the housing stock;
- Catalysing market for Green Finance is a priority to help support homeowners not eligible for grants with improvement costs.

The UK has the least energy efficient housing stock in Europe

Home temperature loss after 5 hours

With a temperature of 20°C inside and 0°C outside

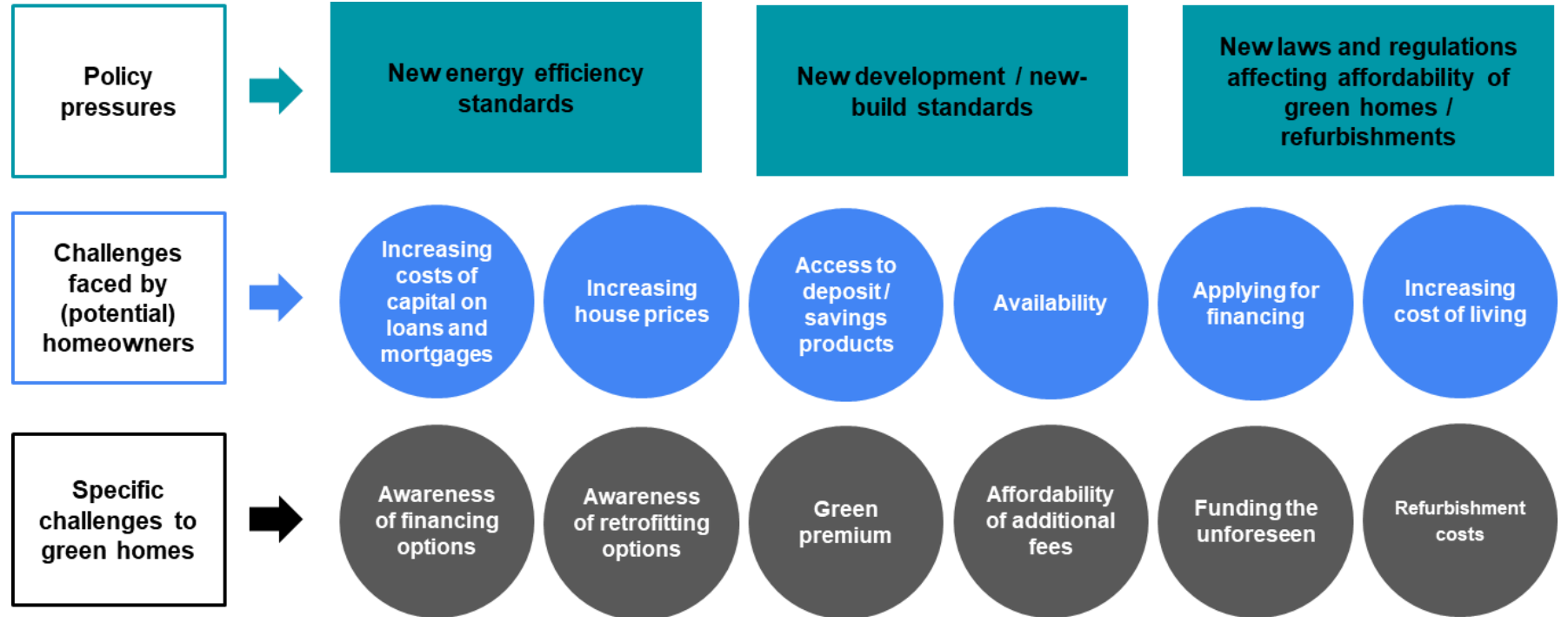
tado°



- Approximately 20% of homes constructed pre-1919
- Approximately 75% built before building regulations required insulation
- Approximately 60% of homes have an EPC of D or below
- >98% of homes will require some form of retrofit pre 2050



Pressure points and challenges faced by potential buyers and homeowners





Why is innovation critical for Net Zero?

- Meeting Net Zero will require a transformation of all sectors of the economy.
- 10 Point Plan and Net Zero Strategy set out how innovation is needed to drive down the costs of technologies, processes and systems; and explore new business models, financing, regulatory frameworks and the role of consumers.
- Enhance mature technology, more rapidly develop emerging technologies and discover and invent new technologies.
- Technologies needed to deliver almost half of the CO₂ reductions required to reach net zero by 2050 are still in prototype phases.
- Working back from 2050, major research and innovation challenges must be tackled this decade.

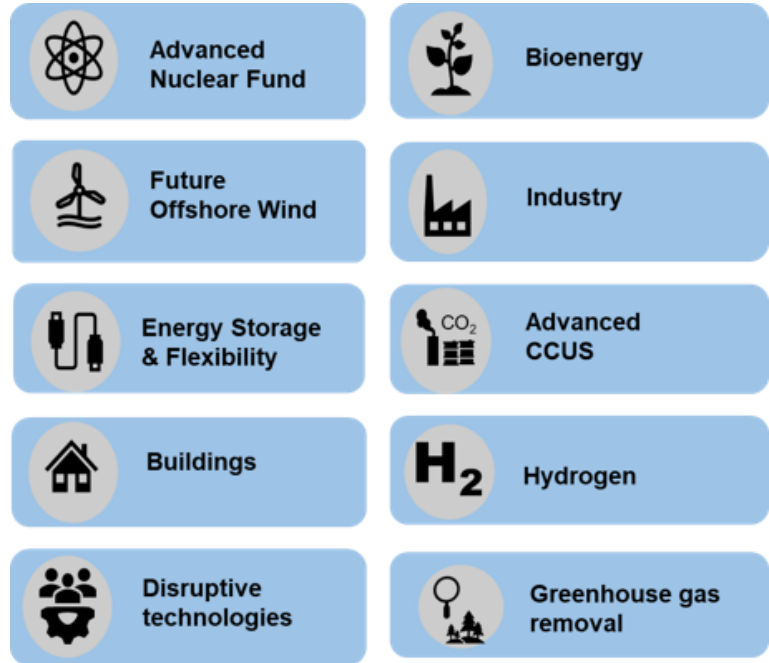


Net Zero
Strategy: Build
Back Greener



How is HMG supporting Net Zero innovation?

- 10 Point Plan and Net Zero Strategy announced a broad set of policy measures to drive the UK to net zero, including a BEIS £1bn Net Zero Innovation Portfolio.
- Aims to accelerate the commercialisation of innovative low-carbon technologies, systems and business models in power, buildings and industry and decrease the costs of decarbonisation.
- Builds on previous £505m Energy Innovation Programme (2016-21).
- Potential to unlock 300,000 jobs by 2030 in exports and domestic industry; enables savings across low carbon sectors; will have a strong regional impact.
- Aims to leverage industry investment.



NZIP Built Innovation Programme

NZIP Heat Pump Ready (HPR)

- The Heat Pump Ready Programme is a £60m NZIP innovation programme which aims to help facilitate large-scale, high-density heat pump deployment across the UK.
- Projects awarded funding have been announced.
- Further details available at: <https://www.gov.uk/government/publications/heat-pump-ready-programme>



NZIP Green Home Finance Accelerator (GHFA)

- The Green Home Finance Accelerator is a £20m innovation programme to support the development of innovative green finance products and services for homeowners.



Wider alignment

The Net Zero Innovation Portfolio Built Environment programmes are aligned with other activity such as Ofgem's Network Innovation Fund (NIC); the Strategic Innovation Fund (SIF) and the Innovate UK 'Net Zero Heat' programme: www.tinyurl.com/IUKNZHeat

GHFA objectives to tackle the problem

1

Support lenders and other providers to develop and pilot a range of innovative green finance products that enable home energy efficiency/low carbon heating improvements.

2

Develop capability among finance providers in the design, development, and commercialisation of green finance products.

3

Develop partnerships between lenders, investors, energy efficiency, low carbon heating and property value supply chains.

4

Support lenders and other providers to investigate and understand the consumer barriers and motivators for energy efficiency and low carbon heating investment.

5

Help to reduce consumer barriers to finance domestic low carbon heating and energy efficiency measures.

6

To establish an evidence base to enable effective design and development of future green finance propositions and inform future policy development.

Summary of Discovery Phase Projects

Discovery Phase Projects

The Green Home Finance Accelerator – Discovery Phase has awarded a total of £4,169,227 grant funding to 26 projects across Great Britain. All Discovery Phase projects will have the opportunity in October 2023 to apply to progress to a 15-month Pilot Phase. Full details can be found on the Green Homes Finance Accelerator Website:

<https://programmes.carbontrust.com/ghfa/discovery-phase-projects>

[Aceleron Limited](#)

[Arctica Partners Limited](#)

[Arniston Ltd \(trading as Snugg\)](#)

[Ashman Bank Limited](#)

[Aviva Equity Release UK Limited](#)

[Bankers without Boundaries](#)

[Chameleon Technology \(UK\) Limited](#)

[City Science Corporation Limited](#)

[City Science Corporation Limited](#)

[Clydesdale Bank PLC \(trading as Virgin Money\)\)](#)

[Cybermoor Services Ltd](#)

[E.ON Energy Solutions Ltd](#)

[ELPS Energy Ltd](#)

[Energy Saving Trust Enterprises Limited](#)

[Escrow-Tech Limited](#)

[Heat Scheme Limited](#)

[Kamma Limited](#)

[Landslide Energy Ltd](#)

[Leeds City Council](#)

[Parity Projects Limited](#)

[People Powered Retrofit Limited](#)

[Perenna Bank PLC](#)

[Phoenix Group Management Services Limited](#)

[Scroll Finance Limited](#)

[Scroll Finance Limited](#)

[Sunsave Group Ltd](#)

Discovery Phase Projects

Retrofit credits securitisation & carbon offset adjusted loans



Energy or heat as a service



Retrofit & finance one stop shops



Employee benefit & salary sacrifice



Green mortgages



Community energy financing



Green lifetime mortgages



Private landlord & buy-to-let green finance options



Advanced property assessments for financial products



Advanced customer targeting



Blended loans and grants



Project Summaries

We are delighted to have a selection of projects to present a short summary of their discovery phase activities, representing a cross section of the varied themes explored through the GHFA:



Energy Storage as a Service, **Michael Downey** (Aceleron Ltd)



Decarbonising homes with lifetime mortgages, **Colin Bell** (Phoenix Group)



Carbon offset adjusted loan rates, **Chukwuka Monyei** (Escrow Ltd)



Buy-to-let green finance journeys, **Inga Jirgensone** (Energy Saving Trust)

Project Summaries

We are delighted to have a selection of projects to present a short summary of their discovery phase activities, representing a cross section of the varied themes explored through the GHFA:



Snugg Green Home Hubb, **Robin Peters** (Snugg)



Retrofit one-stop-shop and advice platform, **Russell Smith** (Parity Projects) & **Christopher Hall** (Santander)



Leeds Low Carbon Accelerator, **Meryem Brassington** (Lloyds Bank) & **Stephen Cook** (Arup)



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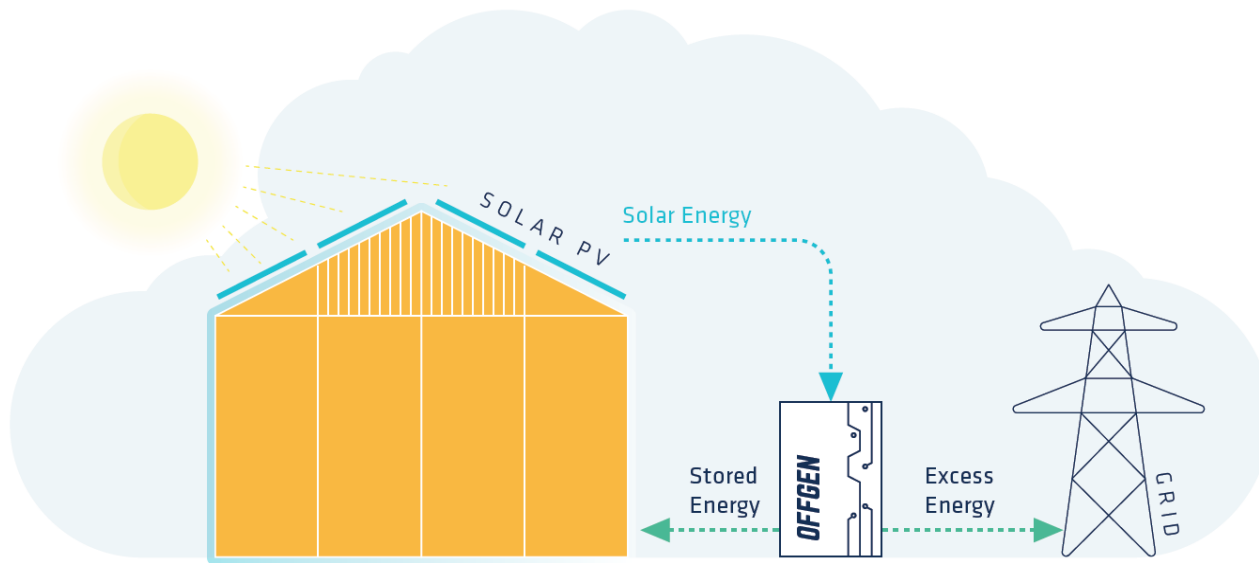
ACELERON:

Energy-Storage-as-a-Service (ESaaS) product for the UK

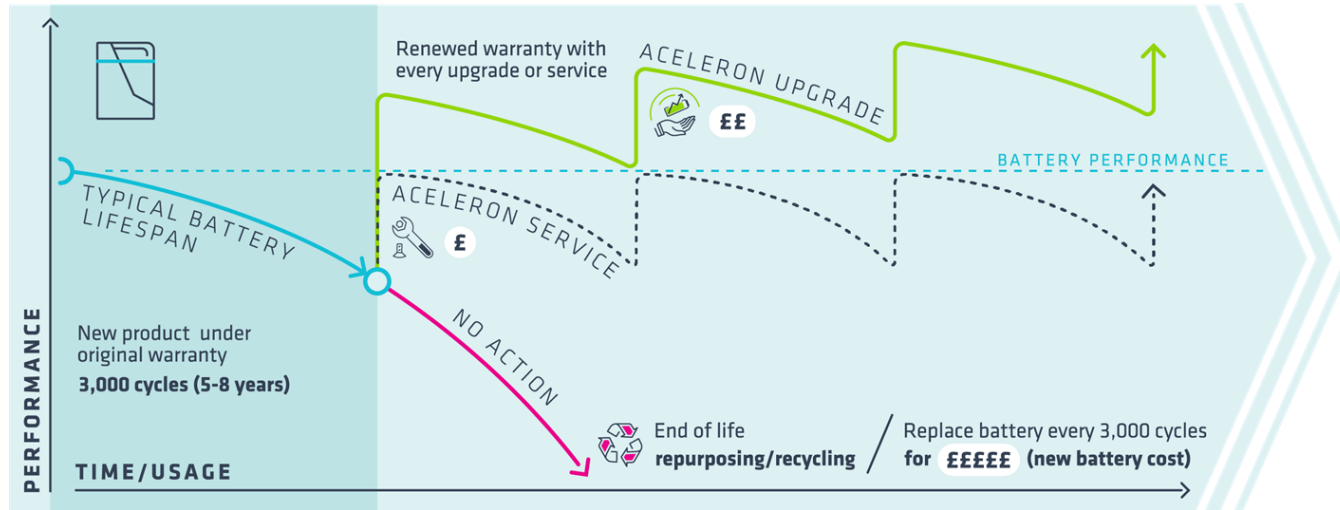
July 2023
Michael Downey

ESaaS USE CASE

With a monthly payment end-users save by off-setting their bills with:
Free solar energy
AND
Cheap, off-peak electricity



Advantage over other technology



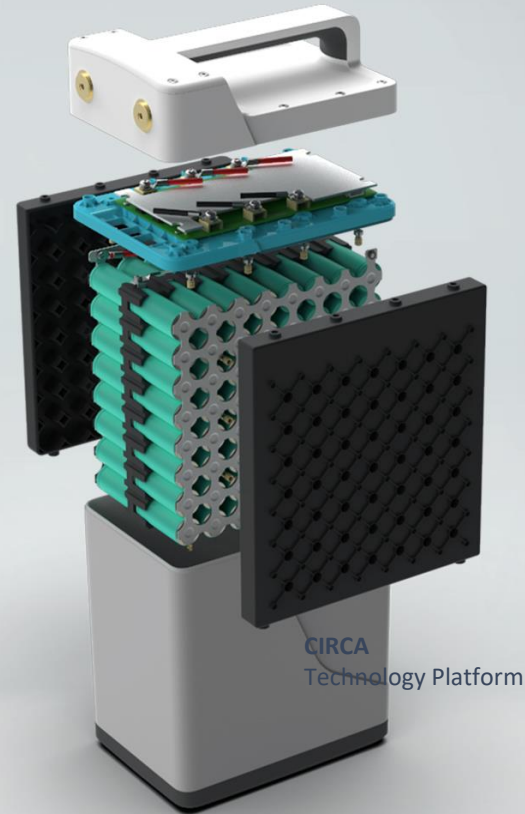
Where other batteries fail and need to be replaced the Aceleron battery system can be repaired and even upgraded to maintain maximum capacity and therefore maximum savings

OUR PATENTED TECHNOLOGY PLATFORM: Hardware

Aceleron invented **compression technology** as a **cost-effective alternative** to traditional welding methods.

Our hardware enables:

1. Cell **maintenance** and **replacement**.
2. **Prolongs lifetime utilization**.
3. Facilitates **battery repurposing** at end of life.
4. **Upgradable system** as our technology is battery cell chemistry agnostic.



What's inside

OFFGEN

5kW max solar input
5kW inverter system

- Service cabinet approach
- Industrial grade steel
 - Outdoor rated

5-11kWh of removable battery
modules
(module weight can be handled
by 1 technician)



Built-in isolators to reduce
wall clutter

WHAT IS IT?

OFFGEN

Energy storage system for the future



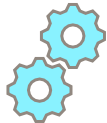
All-in-one solution

A single modular unit compact energy storage system



Focused on longevity

Designed to be easily serviced & upgraded



Modular battery design

Within the OFFGEN allows for Energy storage upgrade



The SOLUTION

1

Serviceable
Batteries



2

Data Communications
And Support Software

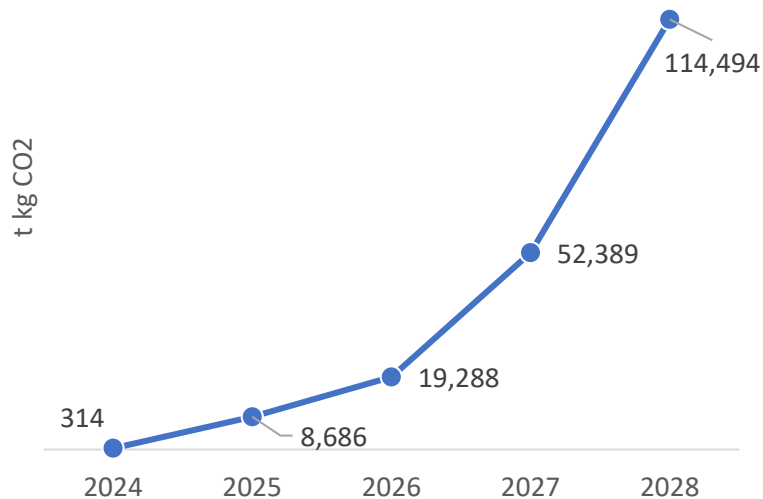


3

Service Hubs



TRUE POSITIVE IMPACT: Targeting >114,000 tCO₂ per annum by 2028



Aceleron business model is set up to not just create strong financial return to shareholders, but also to generate and return to the local people who use the technology and to do no harm to the local environment. An independent study commissioned by Shell Foundation shows Aceleron can have up to 33% more carbon reduction compared with spotwelding assembly technology.

Aceleron helps to offset Carbon in two ways:

1. Each Aceleron compression battery that displaces a spot-welded battery offsets 190 kgCO₂e* vs spot welding.
2. The ESaaS units will be owned by Aceleron and directly displacing 0.182 kgCO₂/kWh through Grid use**

*based on independent study commissioned by Shell Foundation through avoided spot welding and avoided manufacturing of 'extra' packs.

**based on UK average grid mix for 2022



May your batteries always be maintained!

Decarbonising Homes with Lifetime Mortgages

Discovery Phase Update
Colin Bell

The Challenge

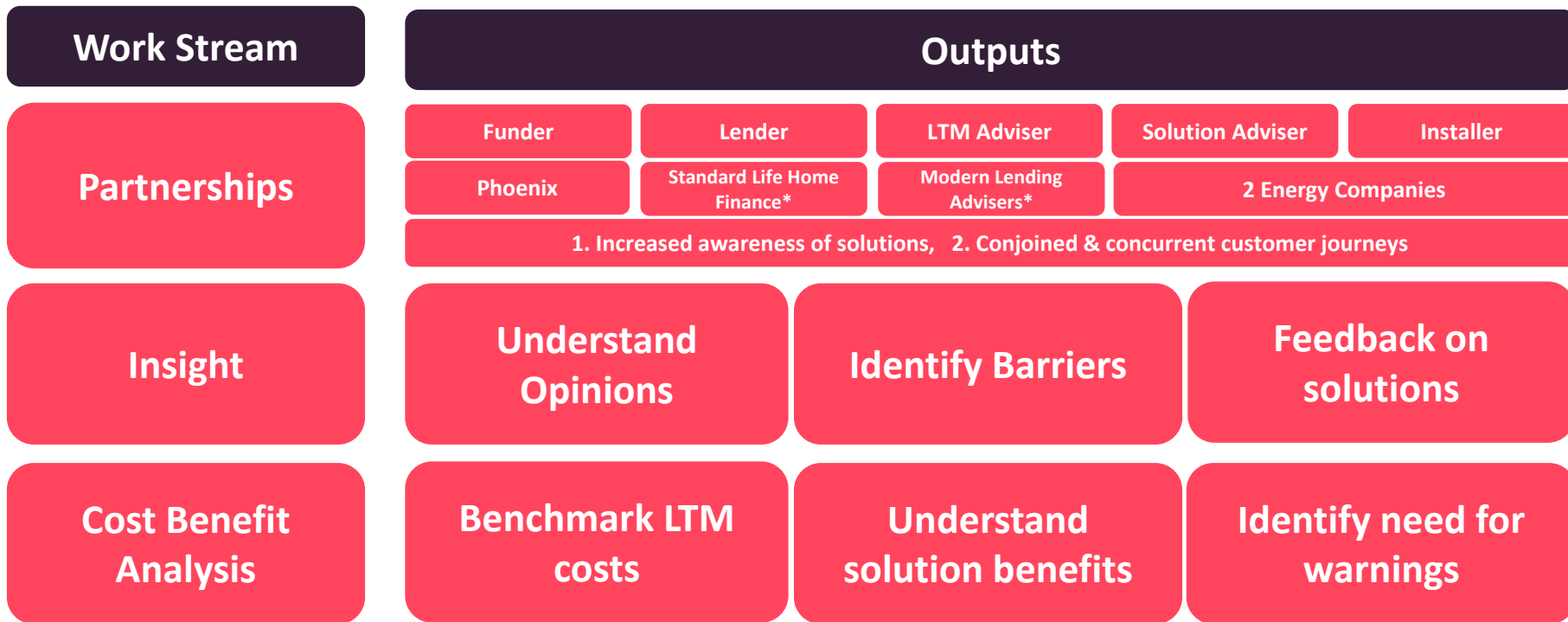
Older homeowners are not making decarbonising home improvements at the rate hoped

The Project

Phoenix Group fund lifetime mortgages.

Is there more we can do to help overcome the barriers faced by less affluent, older homeowners?

Discovery Phase Part 1



LTM: Lifetime Mortgage (a type of equity release mortgage available to over 55s)

Insight into Decarbonising Home Improvements



16 homeowners were interviewed

- Aged 60-80
- Owned houses or bungalows
- Interest in reducing carbon emissions
- Mid-to-lower income/affluence

Drivers & Triggers

1. Financial

- Control energy bills
- Protect disposable income
- Heat without cost worry

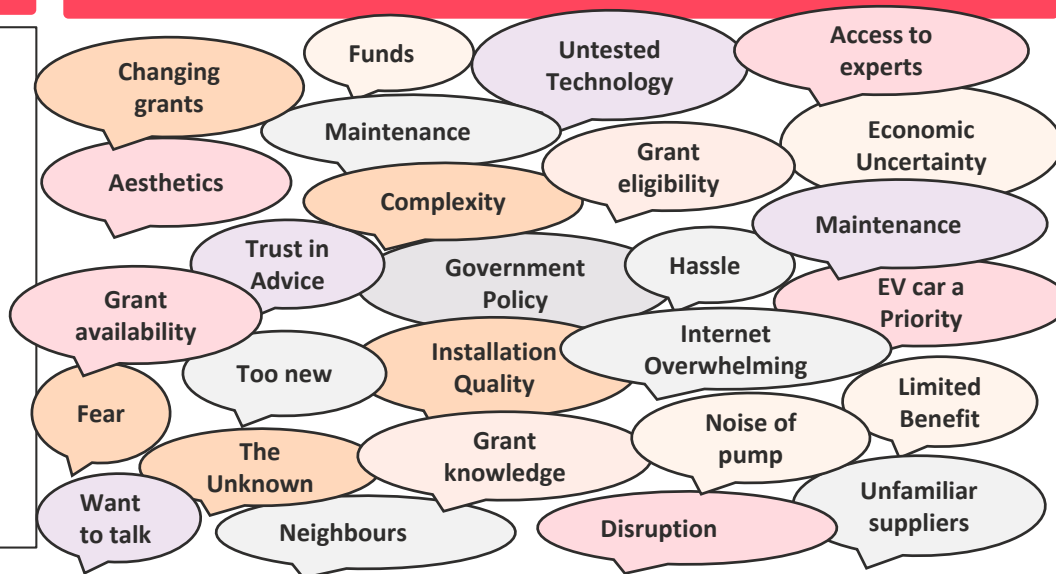
2. Environmental

- Reduce burden
- Climate change news
- Good legacy

3. Other Drivers

- Long term planning
- Friends & family
- Grants, schemes, adverts
- Renovation work

Barriers



Recommendations

Advice via Phone/F2F

Advice and installation from recognised brands

Simple & Concurrent Customer Journey

Finance Solutions (Debt has limited appeal)

Discovery Phase Part 2 - The Proposition

- 1. Investigate the features Phoenix can support.
Including changes to the Lender's;**
 - **Product parameters**
 - **Lending Criteria**
 - **Offer periods**
 - **Additional Incentives**
- 2. Workshops with partners**
- 3. Confirm the proposition our partners can deliver and Phoenix can fund**



**CARBON
ADJUST**



GHFA PUBLIC
PRESENTATIO
N

Chukwuka Monyei, Ph.D.
CEO, Escrow-Tech Limited



Introduction to Carbon-Adjust



On the horizon

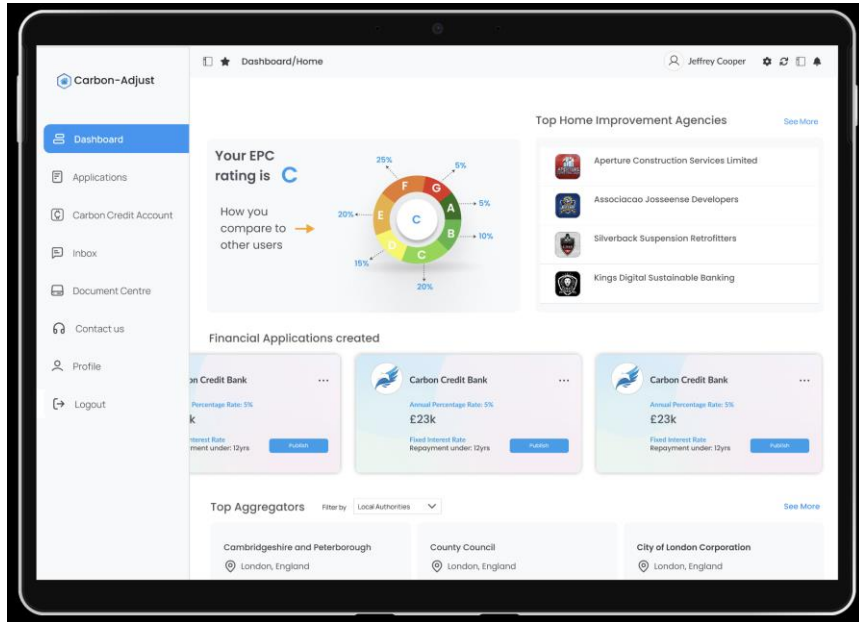
- Carbon credits have an upward price trajectory (necessary to curb emissions).
- End users cannot currently own carbon credits and lose the benefits from investments in retrofitting (*information asymmetry*).
- Flexible demand offers opportunity for both price and carbon offset arbitrage.
- Ofgem's Market-wide Half-Hourly Settlement (MHHS) will generate massive financial returns for the domestic sector.

Introduction to Carbon-Adjust



Carbon-Adjust

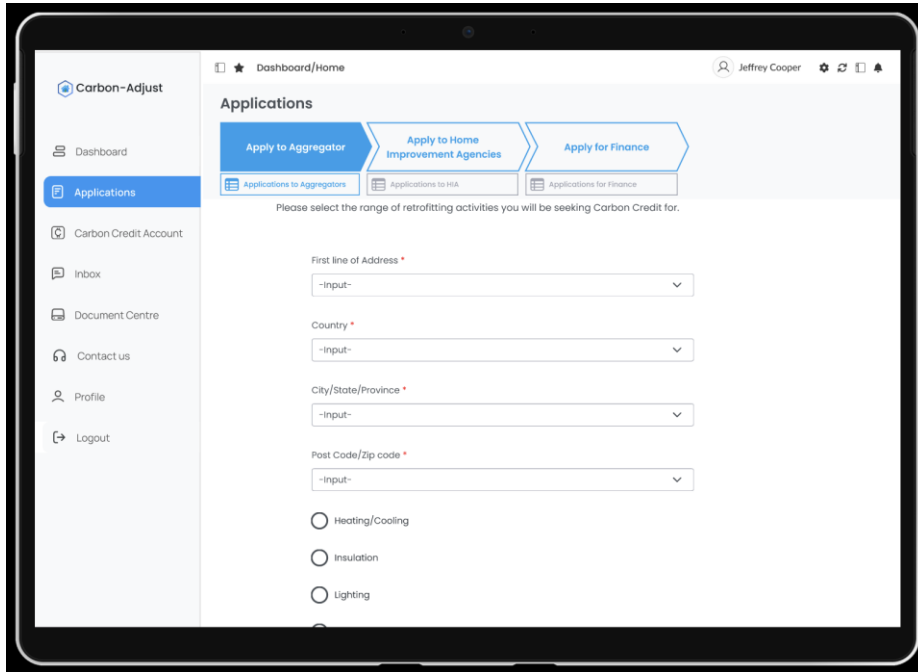
- Software platform with aggregators, HIAs, FIs, and admin for managing the entire process from project registration, to validation, verification, and registration.
- Enables home residents exploit any investments in decarbonization and participation in flexible demand (e.g., Ofgem's MHHS) .
- Links with *Carbonible* – another offering of Escrow-Tech Limited to allow aggregators trade and manage earned carbon credits.
- Creates transparency and incentivizes competition among players.



HOME RESIDENT DASHBOARD



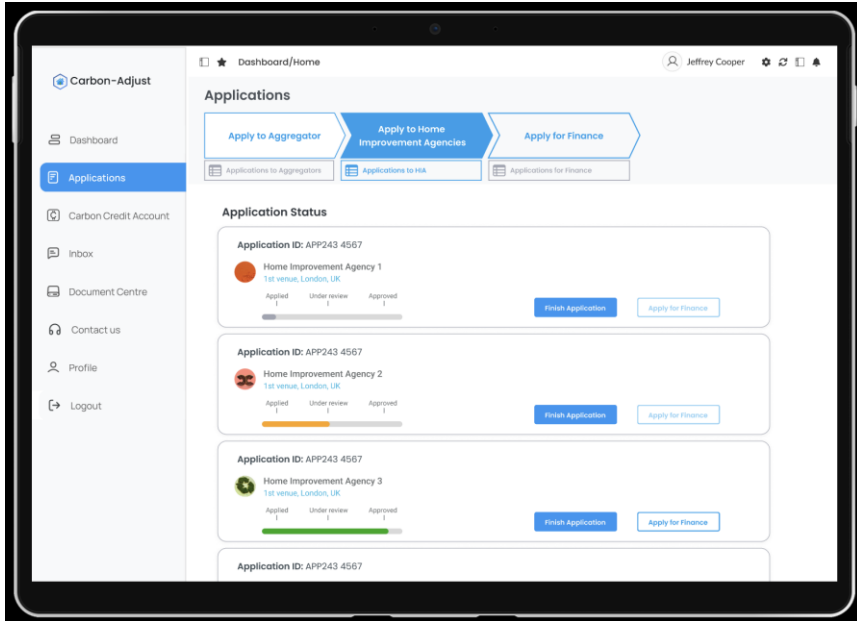
Home resident



APPLICATION PROCESS



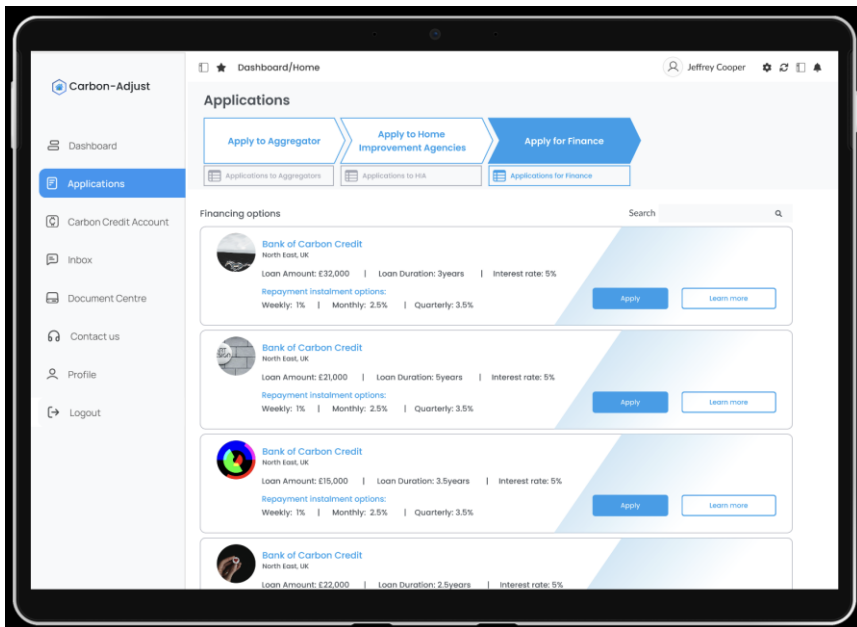
Home resident



APPLICATION PROCESS



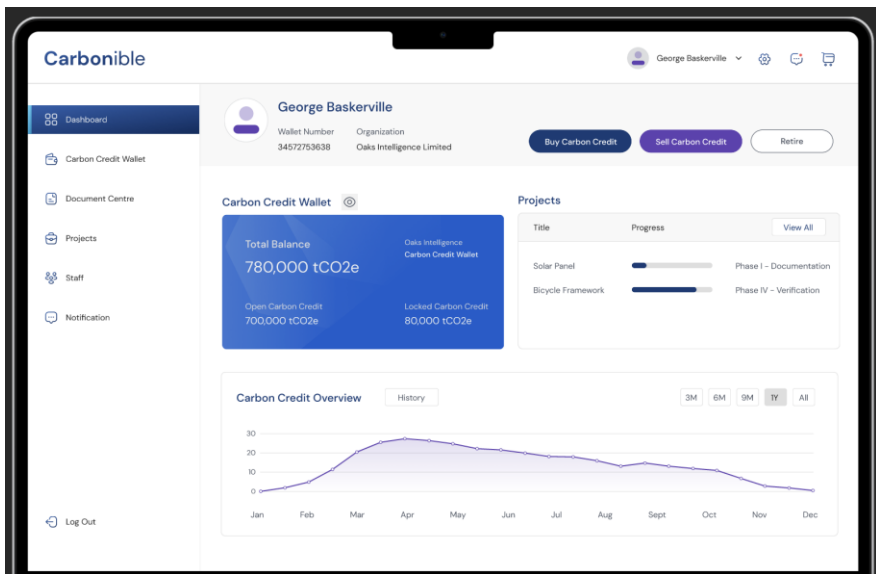
Home resident



APPLICATION PROCESS



Home resident



TRADING PLATFORM

Aggregator



Timeline



August 31, 2023

- MVP for **Carbon-Adjust** at TRL 3
- Trading platform for aggregators on **Carbonible** at TRL 3

September 30, 2023

- Focus group trials of both platforms with up to 100 home residents completed.
- Co-production exercises and stakeholder engagement activities.
- Phase 2 funding application.

Interested?



CARBON
ADJUST

info@escrow-tech.co.uk



Thank You!



Questions?

energy
saving
trust

Buy To Let Finance Journeys

Energy Saving Trust
Trustmark
Residential Logbook Association

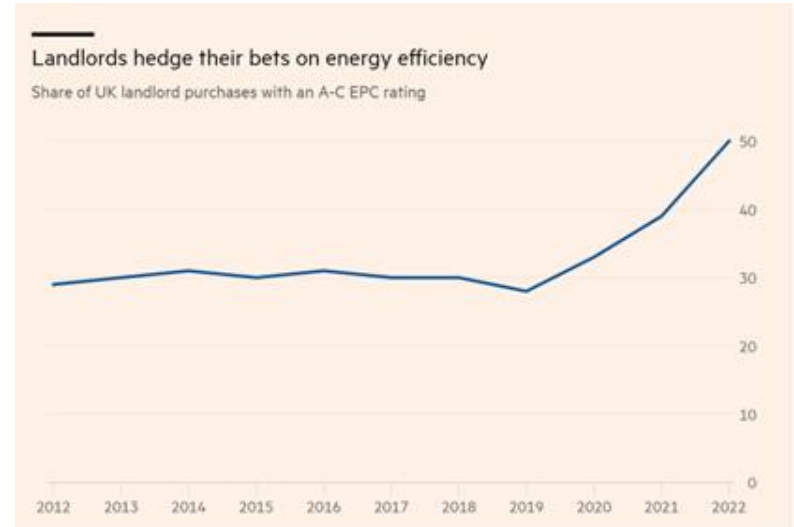
25.07.23



Project Overview

The private landlord opportunity

- Government target of EPC "C" for homes in the rented sector by 2030 with strong evidence that this target is already driving the market.
- The government's planned extension of the Decent Homes Standard to the private rented sector may also drive significant retrofit action.
- Two thirds of the PRS housing stock (2.4m homes) have an EPC rating of D or below with over one million homes in the sector costing between £5 and £10,000 to reach EPC "C".



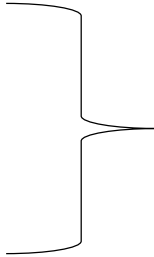
Source: Financial Times, 2022

What we're working towards

A Retrofit 'Journeys Service' - a comprehensive toolkit of joined-up services making it easy for lenders to deliver effective green finance offers for private landlords.

Covering

- Information, advice and support
- Access to installers
- Assurance
- Data handling



Enabling product innovation in lending for private landlords' retrofit.

Who is involved?

Energy Saving Trust, Trustmark, Residential Logbook Association – supported by Coventry Building Society, Solstice Associates, RePowering London.

Enabling Green Finance Innovation



- Information, engagement and advice
- Online retrofit planning tools
- Data on homes and households



- Advisors and installers who meet required quality standards
- Systems to log and record measures installed



- Logbooks that can provide landlords with a record of measures installed in properties, alongside wider information about the home.

By integrating these offers we are **enabling lenders to develop financial and non-financial incentives for landlords to undertake retrofit projects - alongside or as part of secured or unsecured lending**, by:

- Giving access to digital-first services of up-to-date advice and property-specific information on retrofit that can integrate with lenders' systems.
- Minimising risk of dedicated retrofit lending, by providing assurance around installers and measures installed and by enabling cost-effective data handling.
- Our toolkit approach is designed to enable innovation – unlocking lenders' ideas for new services in this space.

Lenders will ultimately benefit from:

- A mortgage book with a higher proportion of PRS homes that are "C" and above (noting possible government obligations in this area)
- Being able to report a positive carbon impact across this area of their operations.

energy
saving
trust

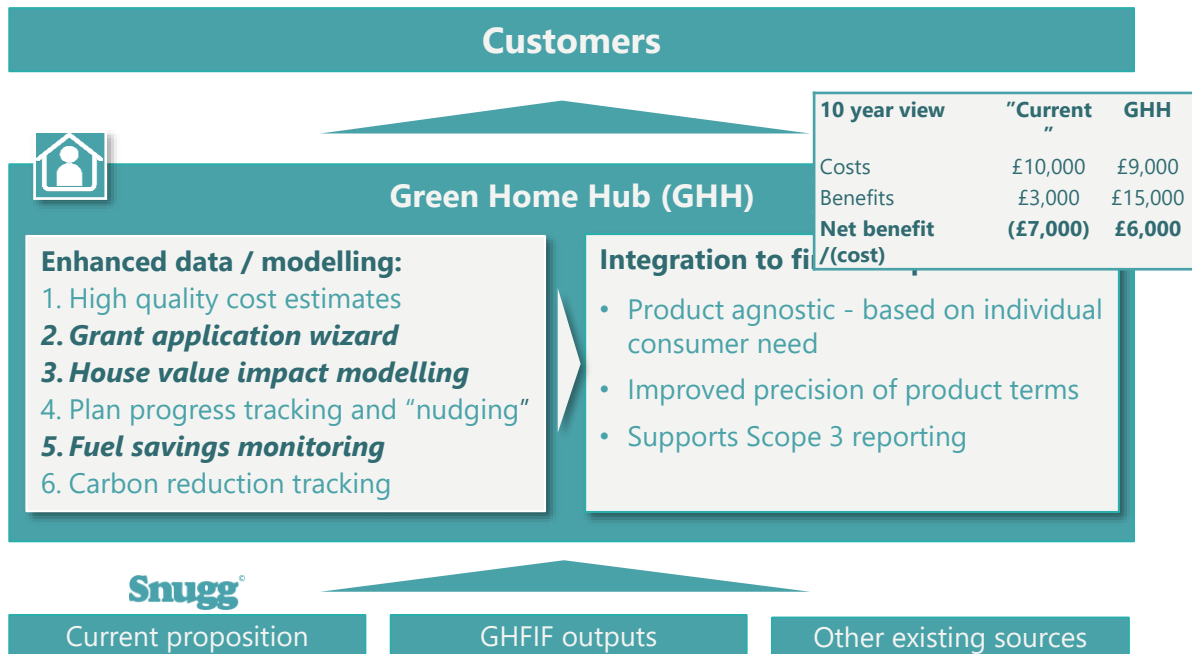


Thank you

Turning investment in home energy efficiency from a “no-hoper” to a “no-brainer”

Assumptions:

- Home-owners, and their homes, are individuals
- Data insight is key
- Existing financial products can be leveraged





Project Empower



IECOFURB

The Low Carbon Home Service

Problems



Low customer awareness, but no national brand that links to installers



Customers want free advice, but question referral payments



Supply chain is scaling up, but largely focused on Government-funded schemes



Upfront cost is a barrier, but consumers are reluctant to borrow.

Solutions



SINGLE BRAND

Free online advice
Available now



EFFICIENCY

Every component has multiple
revenue streams
Sustainable over time



SUPPLY CHAIN

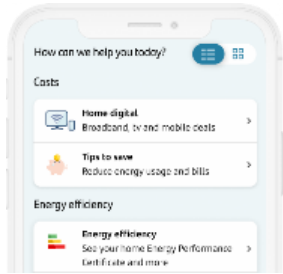
Aligning processes
with support services that
empower homeowners to go
beyond single measures



ENABLE FINANCE

Independent advice
+
A tool for lenders

Santander Customer Journey

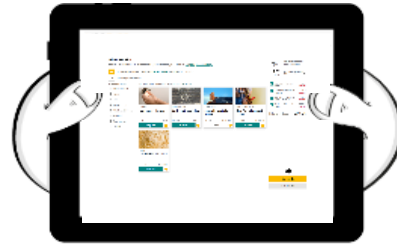


Customer starts within Santander's digital services:

Website

or

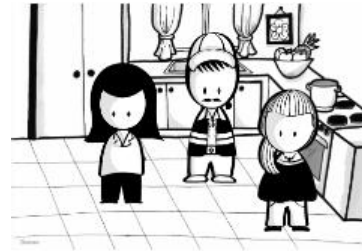
My Home Manager app



Signposted to Ecofurb

Independent

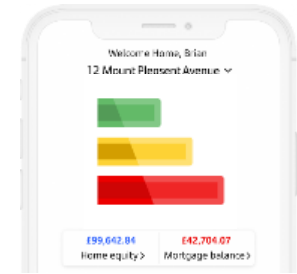
Experts



Customer chooses advice service

Proceeds to installation, using one of Ecofurb's trusted suppliers.

Ecofurb verifies completion.



Customer rewarded

Incentives under development

IECOFURB

The Low Carbon Home Service

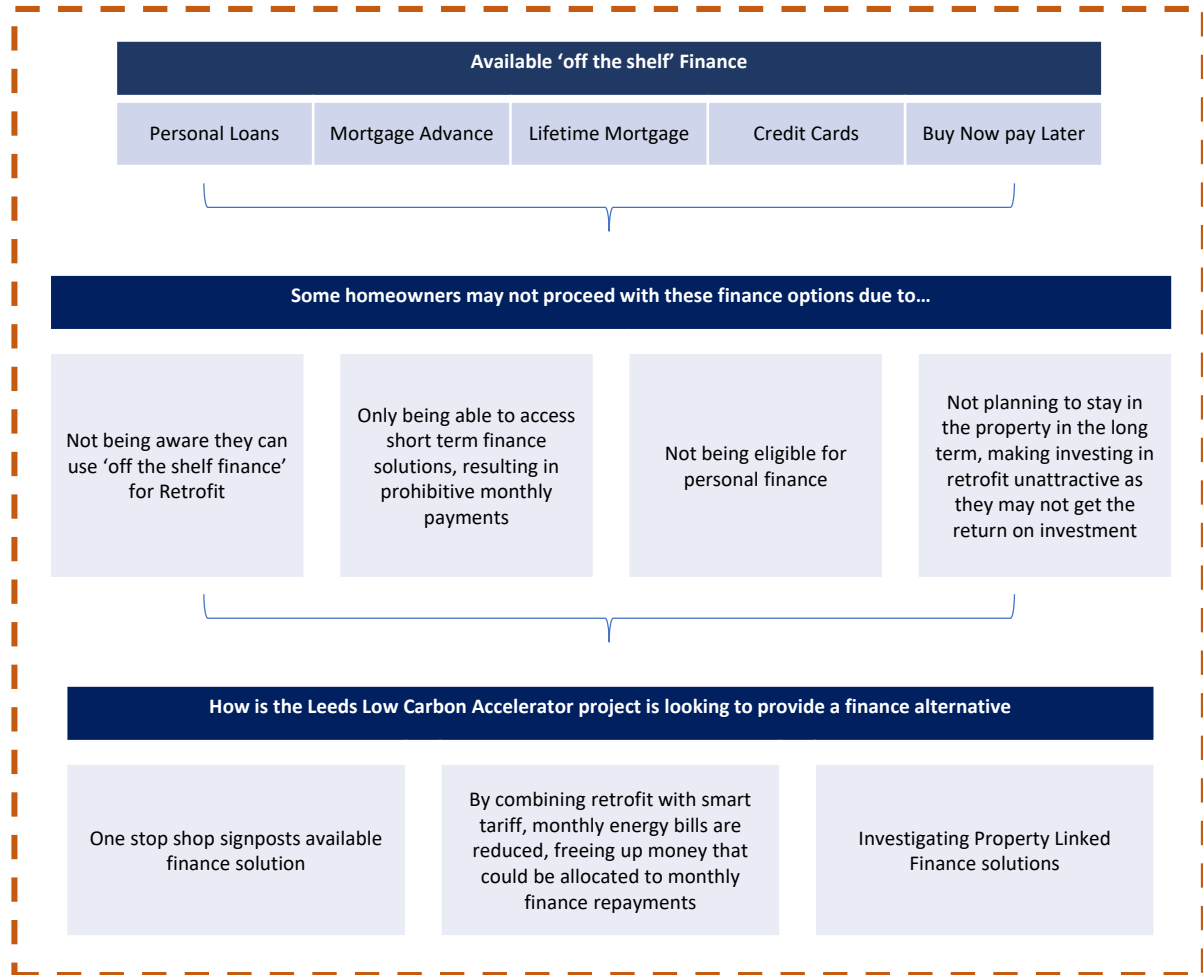


Leeds Low Carbon Accelerator

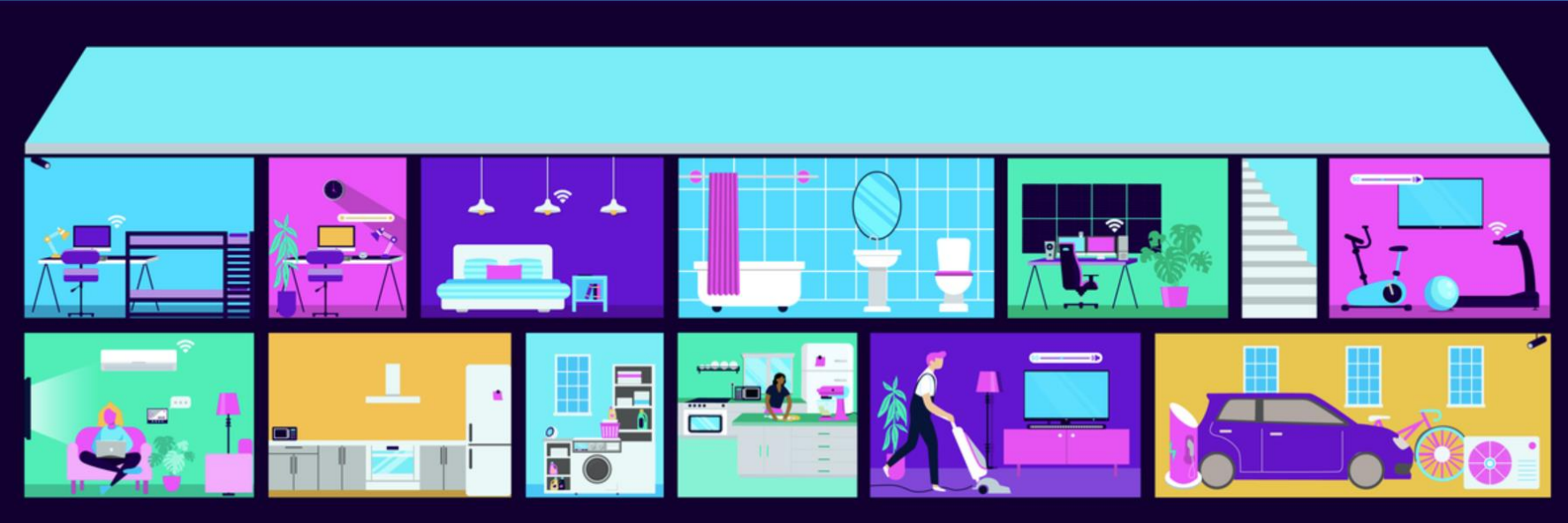
Leeds City Council

Problems that the Leeds low carbon accelerator project is looking to solve, around uptake and scalability of retrofit

- Low levels of engagement, awareness of the changes needed to improve home energy efficiency and low motivation / priority for many
- Not clear how to find and identify trusted suppliers and installers.
- Homeowners unable to finance retrofit as they don't know/want to use 'off the shelf' finance or 'off the shelf' finance doesn't meet their needs e.g., greater upfront costs



Smart tariff



Retrofit package and smart tariff modelling

#	Archetype Description
1	Cavity wall semi-detached, gas boiler
3	Solid brick terrace, gas boiler not in CA
4	Late 20 th c. house, gas boiler

Tariff option	Electricity	Gas
Traditional	Single standing charge and variable rate	Single standing charge and variable rate
Smart	Fixed standing charge and half-hourly variable rate	Single standing charge and variable rate

Package Name	Intervention(s)
A Fabric	+ Insulation
B Fabric + PV + BESS	+ Insulation + Solar + Battery
C Fabric + PV + BESS + ASHP + EV	+ Insulation + Solar + Battery + Air Source Heat Pump + EV Home Charging

Q&A

Q&A



Useful Links

- A full overview of GHFA projects can be found on:
<https://www.gov.uk/government/publications/green-home-finance-accelerator-discovery-phase-projects/green-home-finance-accelerator-details-of-discovery-phase-projectsd>
- There is a matchmaking platform available for those who think they can offer additional skills to complement any of the projects from the GHFA programme:
<https://programmes.carbontrust.com/ghfa/matchmaking>

Thank you