



THE
RETROFIT
ACADEMY

The Retrofit Toolkit

Helping Local Authorities to Kickstart Deep Retrofit

Partners:

 Department for Business, Energy & Industrial Strategy



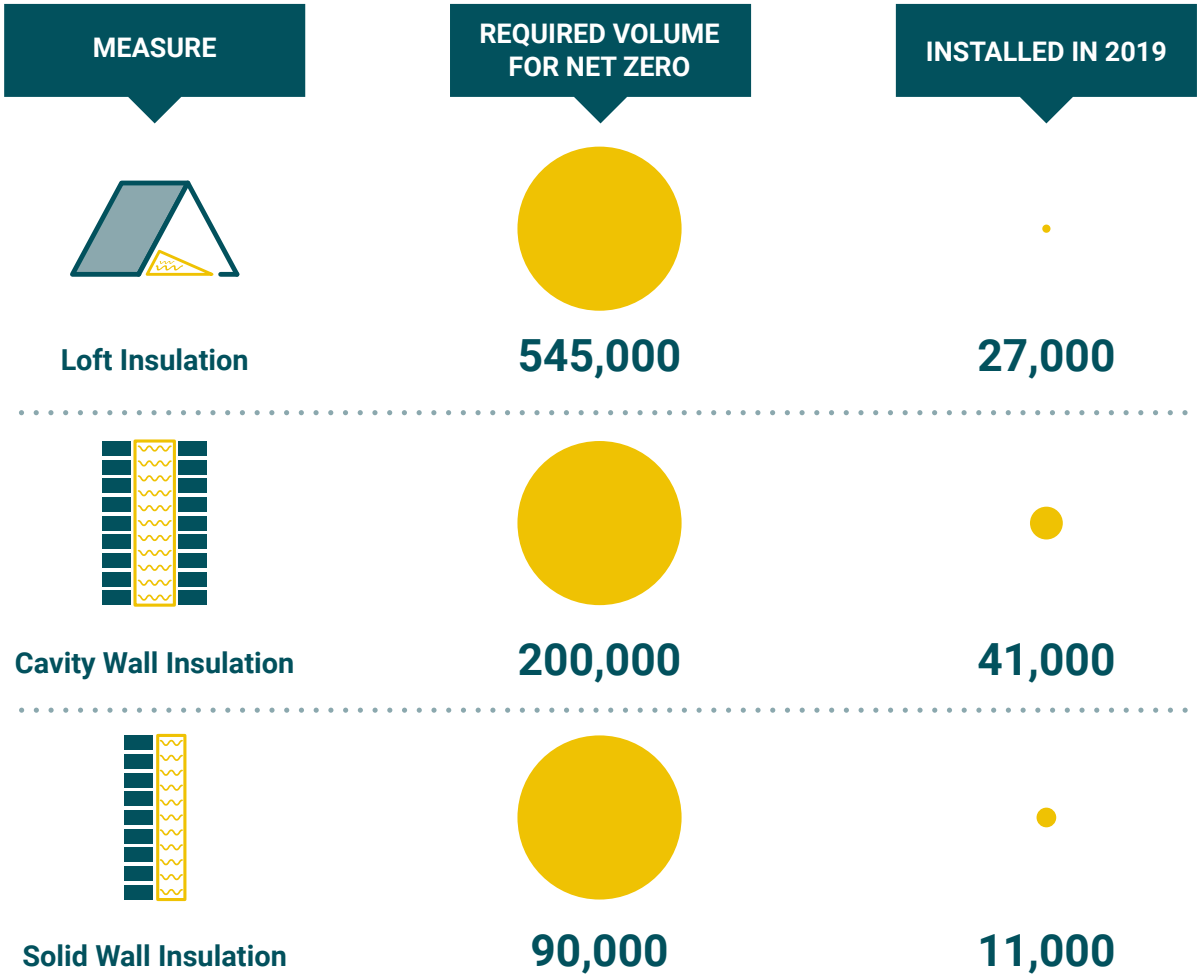
INTRODUCTION

The government has pledged to invest £3bn into energy efficiency upgrades (retrofit) by March 2021 through The Green Homes Grant (GHG) scheme. This is the first large-scale public investment into retrofitting the fabric of domestic property in almost a decade. Through the Local Authority Delivery Scheme (LADS), the Department for Business, Energy, and Industrial Strategy (BEIS) are challenging local government to drive the agenda.

This is merely the prelude to decades of mass-scale retrofitting in the UK and indeed globally. The UK is committed to achieving net zero carbon by 2050 – something which is patently impossible without addressing the existing housing stock. With an estimated 27 million homes to decarbonise in less than thirty years, there is no time to waste.

- 27 million homes in the UK need retrofitting
- 30 years to 2050
- That’s 900,000 homes per year
- Or 2466 homes per day
- Or 102 homes per hour or
- 1.7 homes per minute, every minute for the next 30 years

It is already clear that we are not on this trajectory, and therefore the volumes required will increase exponentially. The Committee of Climate Change reported to parliament that in 2019 barely 20% of the improvements necessary to achieve the net zero target were installed:



Source: <https://www.theccc.org.uk/publication/reducing-uk-emissions-2020-progress-report-to-parliament/>

To compound matters, the existing energy efficiency sector has not delivered the desired outcomes to date. Defect rates have been high, and the media has widely reported on the unintended consequences of retrofit measures – especially relating to cavity wall and solid wall insulation. Continuing to deliver sub-standard retrofit pushes the goal further away, not closer. However, the cost of delivering quality, deep retrofit is proving to be high in terms of materials and labour and we lack the workforce required both in terms of proficiency and volume.

Yet there are reasons to be optimistic. New British Standards PAS 2030 (2019) and PAS 2035 are driving unprecedented change in the supply chain. Large-scale pilot projects are beginning to deliver results. Regional and local government have declared climate emergencies and set even more ambitious targets to decarbonise. The Green Home Grant has demonstrated the government's willingness to invest, whilst private investors are keeping a watching brief. The Conservative Party's manifesto promised a £9.2 billion investment into energy efficiency in this Parliament.

This paper outlines some of the potential solutions to these challenges. It focuses on what local authorities can practically do to kick-start retrofit projects that will support sustainable jobs and economic growth.



The National Retrofit Programme (2020-2050)

The vision for the National Retrofit Programme (NRP) outlined here draws heavily from a proposal developed by the Whole House Retrofit Implementation Group. This consists of representatives from The Retrofit Academy, BSI, BEIS, TrustMark and other key stakeholders. The NRP has been led by Russell Smith of Parity Projects and Retrofit Works, drawing on research from Leeds Beckett University and the New Economics Foundation.

The NRP calls for the Green Home Grant to be the launchpad for a sustained period of investment into high quality retrofitting, rather than simply a short-term economic stimulus package. It is an opportunity not to be wasted, but the investment should be channelled to enable future success. It should be addressed as a matter of national infrastructure – in fact, the greatest engineering challenge in our history.



The NRP lays out the following short-term priorities:

- Establishing a National Retrofit Agency to coordinate the delivery of the thirty-year NRP, including full responsibility for the effective marketing of retrofit to consumers
- Extensive support to the energy efficiency industry to get the whole sector operating to the new PAS standards
- An intensive period of recruitment and training to create jobs and develop supply side capability and capacity
- The fully funded, comprehensive assessment of hundreds of thousands of homes to gather the data required to make informed decisions about the right strategy for that property, landlord, tenant, or owner
- The creation of Medium Term Retrofit Plans for those properties to get them to Net Zero, or as close as practicable, by 2050, developed by qualified professionals
- The quality-assured installation of measures as per those plans, not at the discretion of homeowners or installers



The NRP outlines a series of benefits quantified in additional income or avoided expenditure that are eye-watering:

ECONOMIC

- Increase government tax revenues by £163 billion by 2030
- Net government surplus of £60 billion by 2030
- £63.8 billion in energy bill savings, leaving more money in the pockets of residents

ENVIRONMENTAL

- £15.3 billion in avoided CO₂
- £6 billion resulting from improved air quality

SOCIAL

- £6.6 billion through improved health and a reduced burden on NHS and social care
- £6.6 billion through improved comfort and quality of life, enabling an aging population to live at home for longer

In total, the NRP identifies:

- a combined £254 billion of undiscounted benefits by 2040.
- A cumulative ~298MtCO₂e, or 36% of the savings required for the 4th and 5th carbon budgets.



EXISTING INITIATIVES

Since the death of The Green Deal, government initiatives in retrofit have been modest in scale.

The largest of these is The Energy Company Obligation (ECO). This is largely a fuel-poverty alleviation scheme through which energy efficiency measures are part-funded through a levy on electricity bills. The energy company is then obligated to spend this money on energy efficiency measures for those classed as being in fuel poverty. It is estimated that the ECO market is worth £1bn a year and delivers in the region of 180,000 – 200,000 measures per year. The ECO has been around since 2012 and has been delivered in ‘rounds’ lasting three to four years each. We are currently in ECO 3, with ECO 4 due to start in 2022. ECO 3 is still a measures-based scheme by design, but it is widely expected that ECO 4 will support the whole house retrofit approach called for under the NRP.

NEW INITIATIVES

The Conservative government was elected on a manifesto which included significant new investment in retrofit. Some of these programmes have been brought forward as part of the Covid-19 recovery plan, whilst others have been created quickly as a means of economic stimulus.

Home Upgrade Grant (HUG)

A £2.5 billion grant funding scheme targeted at fuel poverty alleviation, potentially shifting the focus away from the ECO. Plans are expected to be announced in the next 12 months but it is likely that private tenure households will be able to replace boilers, provide insulation and wholly replace energy systems providing an average annual saving of £750 a year.

Social Housing Decarbonisation Fund (SHDF):

a £3.8 billion Social Housing Decarbonisation Scheme focusing on improving insulation and introducing low carbon heat in 2 million social homes, reducing energy bills by an average of £160 a year. This investment is expected over the next two Parliaments and has a target of

achieving Energy Performance Certificate (EPC) Band C. Approaches are to be informed through a £50m innovation competition open to local authorities, that will run across 2021.

The Green Home Grant (GHG)

A £2 billion investment to be spent in theory before the 31st March 2020, as part of the economic stimulus package. The Green Home Grant is additional funding outside of the manifesto commitments. The GHG is split in to three elements:

1. £1 billion of vouchers worth up to £5,000 are available to homeowners primarily to upgrade insulation and introduce low carbon heat. These vouchers can be used to cover 75% of the total costs of the measure(s) introduced. Also available to social landlords.
2. £500 million of vouchers worth up to £10,000 available to those on low incomes or in fuel poverty. These vouchers can cover 100% of the cost of the measure(s).
3. £500 million in funding for local authorities through the Local Authority Delivery Scheme (LAD).



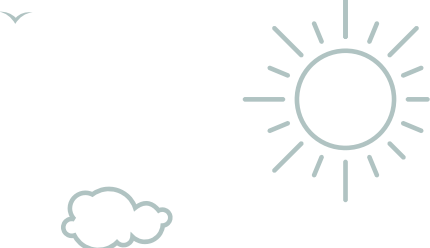
The Local Authority Delivery (LAD) Scheme

The Scheme aims to raise the energy efficiency of low-income and low EPC rated homes (those with Band E, F or G).

This includes those living in the worst quality off-gas grid homes, delivering progress towards reducing fuel poverty, the phasing out the installation of high carbon fossil fuel heating and the UK's commitment to net zero by 2050.


Local authorities in England (individually or as part of a consortium bid with other local authorities/partners) can submit bids for funding to improve the energy efficiency of the homes of low-income households in their areas.

- Households should have a combined income of no more than £30,000
- Homes to be improved should be currently rated as EPC E, F or G
- 100% subsidy for owner-occupiers (up to £10,000)
- Two third subsidy for social and private landlords (up to £5,000)



A further £300m for 2022 will be made available via the Local Energy Hubs later in 2020/21. Allocations to Local Authorities for future years under LAD will be determined at the forthcoming Autumn Spending Review (2020).

In the first round of funding, compliance with PAS 2035 and delivery under the TrustMark are preferred but not mandatory. Projects under the next LAD delivery phase (£300m) for 2021/22 will be required to have Trustmark registered status and, where applicable, PAS 2035:2019 standards.



SEEDS OF CHANGE

For decades, attempts to stimulate the energy efficiency market have failed. Most recently, The Green Deal (2012-2015) was an effort to stimulate the market by offering loans repaid through energy bill savings; an initiative holed below the waterline by high interest rates. The remnants of the energy efficiency industry has coalesced around the Energy Company Obligation (ECO), which enables energy companies to use a levy on bill payers that must in turn be invested into retrofitting properties occupied by those in fuel poverty.

In common with many similar funding schemes over time, the ECO has often resulted in a race to the bottom, with the focus on delivering individual measures rather than addressing the specific needs of the resident or property in question. Poor practices and inappropriate specification led to a high level of defective work, including very high-profile catastrophic failures in Preston, South Wales and elsewhere.

The government-sponsored Each Home Counts (EHC) Review was published in 2017 in response to these disasters, calling for root-and-branch reform of the industry and the way it is funded. To avoid repeating mistakes of the past, EHC called for new approaches to ensure the public are not put at risk and that projects deliver value for money without unintended consequences.

The Each Home Counts Review concluded that the following should be introduced to drive root and branch reform of the energy efficiency sector:

- The introduction of the TrustMark as the recognised quality mark for the energy efficiency sector. All those engaged in design and installation of energy efficiency measures will be assessed and certified under it.
- A code of Practice for the installation of home renewable energy and energy efficiency measures so that the risk of poor-quality installation is minimised. The most high profile of these are PAS 2030 (2019), the installer Standard, and PAS2035, the overarching Standard for energy efficiency.
- Development of a Data Warehouse to store information about all projects delivered under the TrustMark.



UNDERPINNING PRINCIPLES

Whole House Retrofit – the recognition that every home is different and that the retrofit of that property must address all aspects of it holistically – the fabric, the services, renewables and the people who live in it. The opposite of ‘measures’-based retrofit which could, for example, see external wall insulation installed without ensuring adequate ventilation.

Fabric First – an approach to retrofitting homes that aims to reduce demand for heat and power as far as possible, through insulation combined with adequate ventilation, before specifying services and renewables. Improving the building fabric to minimise heat losses and maximise air tightness is sensible because insulation has a relatively low cost, a long-life and should only be required once before 2050 for most properties. Building services, by contrast, have a short life and will almost certainly need to be replaced every 10-15 years.



Projects that successfully apply the Fabric First approach are characterised by:

- An even all-round insulation around an entire property without gaps including insulating exposed floors, walls and roofs
- An airtight building envelope that is also appropriately ventilated
- A reduction in air infiltration and leakage, especially in older buildings
- Vapour permeable construction to promote the safe passage of moisture
- Retaining thermal capacity inside the insulated envelope and with the aim of moderating internal temperatures. This ensures warmth in cold periods but also avoids overheating in summer.



Design Input – acknowledging that retrofit projects have often not involved professional designers, EHC called for design to become as much an aspect of retrofit as it is in newbuild. With retrofit often failing at corners, junctions and edges between systems and trades, robust construction details are required to ensure flaws are not built in.

Consumer Protection – recognising that homeowners, residents and landlords have not always been well served by the energy efficiency market, Each Home counts called for a robust regime of consumer protection.

Each Home Counts called for an industry-wide Quality Mark for the sector, that the public would recognise as the accreditation they can put their trust in. TrustMark, a government-sponsored construction quality scheme, was recognised as this Quality Mark. TrustMark is run

through Scheme Providers, which must conform with TrustMark requirements.

Government schemes such as the ECO and the Green Homes Grant Voucher Scheme, are now only open to TrustMark accredited companies and individuals. For example, energy efficiency installers must be a member of one of the TrustMark approved schemes run by the Insulation Assurance Authority (IAA), Ocean, NAPIT or NICEIC. Whilst Retrofit Coordinators and Retrofit Assessors must, as individuals, be registered with Stroma, Elmhurst, ECMK, Quidos, Retrofit Works or the IAA.

TrustMark have created a Data Warehouse, where details about all energy efficiency projects delivered by TrustMark members must be lodged. TrustMark also require all projects to comply with British Standards PAS 2030 and PAS 2035.

Competent and Qualified Workforce – EHC

concluded that the energy efficiency sector had skills and knowledge gaps from top to bottom. It concluded that experience had for too long been taken as evidence of competence and called instead for nationally recognised qualifications to be the benchmark underpinned by robust national occupational standards. In other words, there needs to be round pegs in round holes and increased professional accountability.

Examples of people in the energy efficiency industry undertaking roles for which they are not qualified include:

- ▶ Domestic Energy Assessors (DEAs) being asked to specify measures to be installed, although often lacking in the required expertise to do so. Many DEA have only had basic training.
- ▶ Design work undertaken by people without any formal design qualifications, or missing altogether
- ▶ Installation work undertaken by people without any trade qualifications, although approved by various competent person schemes.

This has led to PAS 2035 introducing a series of new roles, which can only be filled by people both qualified and TrustMark accredited. For example, the vital role of the Retrofit Coordinator can only be undertaken by a holder of the Level 5 Diploma in Retrofit Coordination and Risk Management, whilst the TrustMark schemes can only accept applications from holders of this qualification.



PAS in Practice

Two new British Standards were published in May 2019 which fundamentally change the way in which the energy efficiency industry must approach retrofit projects. Many people criticise these Standards for being overly complex and expensive. But at the heart of them is a very simple retrofit process that can enable the delivery of good outcomes that are both compliant and good practice.

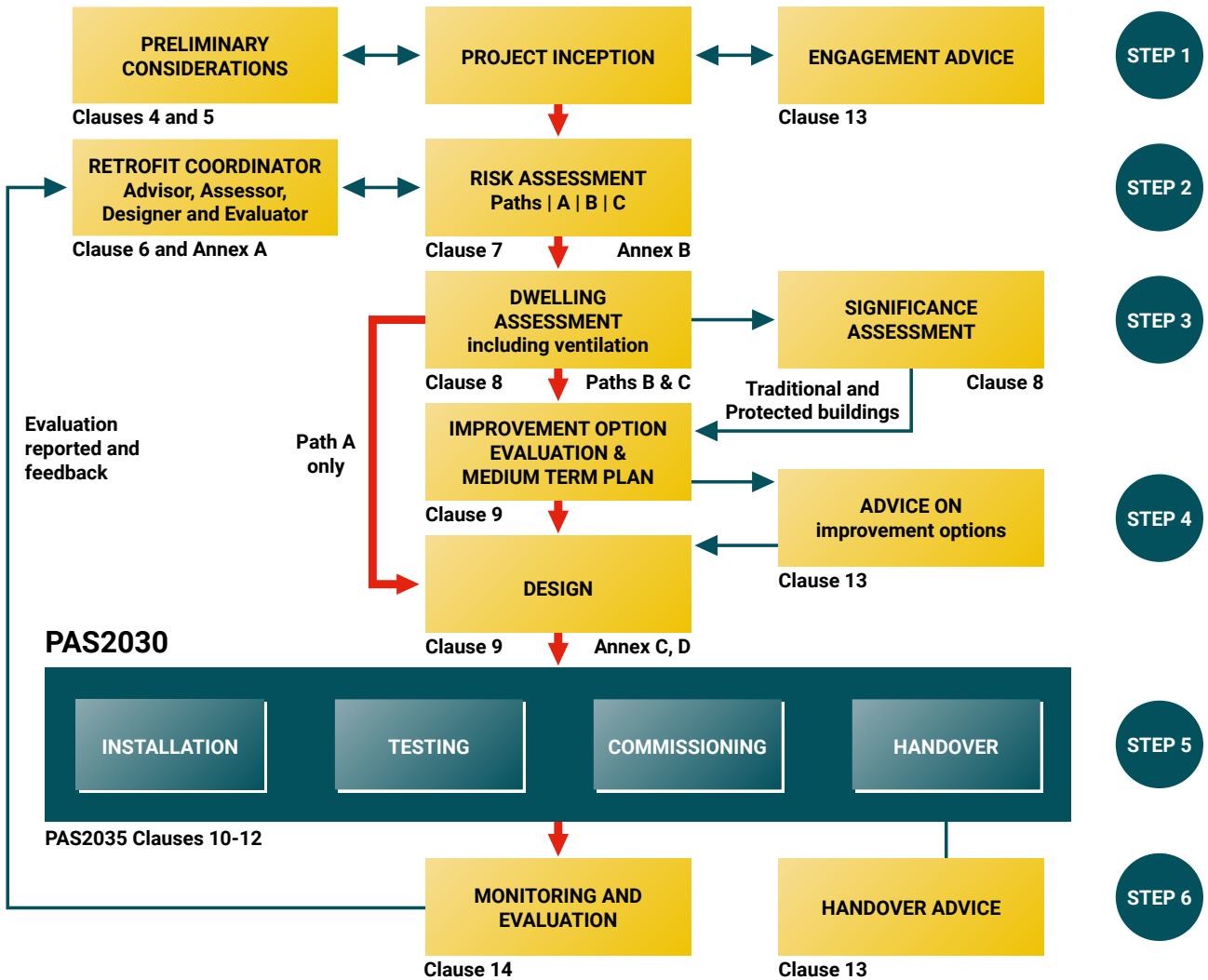
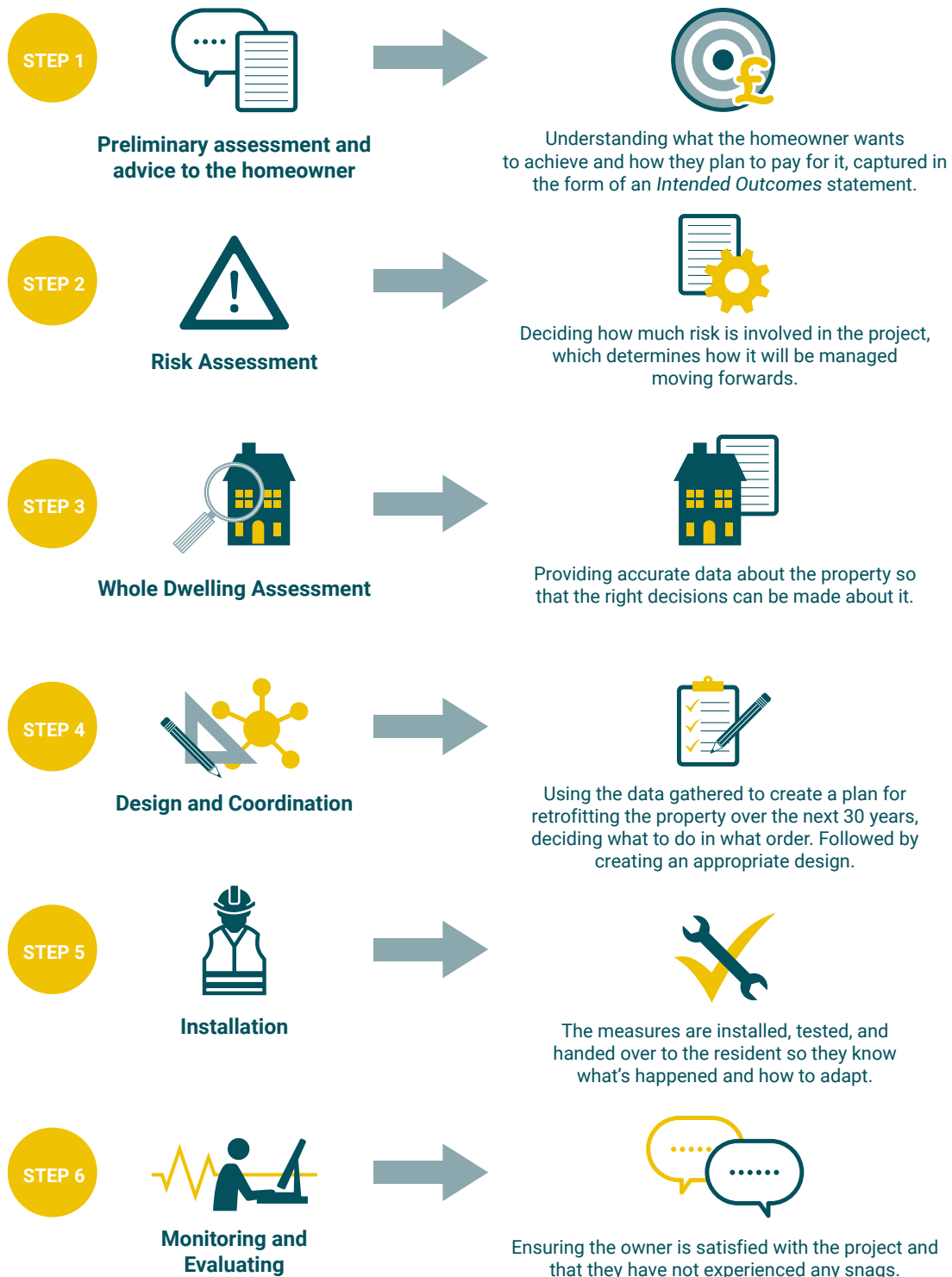


Figure 1 The PAS 2035 Retrofit Process showing the installation phase in the context of the wider project (courtesy of BSI)

BSI PAS 2030 (2019) is superficially an update of the PAS 2030 (2017) Standard for installers. However, it is far more substantial than this because for an installer to comply with the 2019 Standard, they must also comply with the entirely new PAS 2035 Standard. In other words, the installation phase of a project is seen in the context of a wider project, not something that happens in isolation.

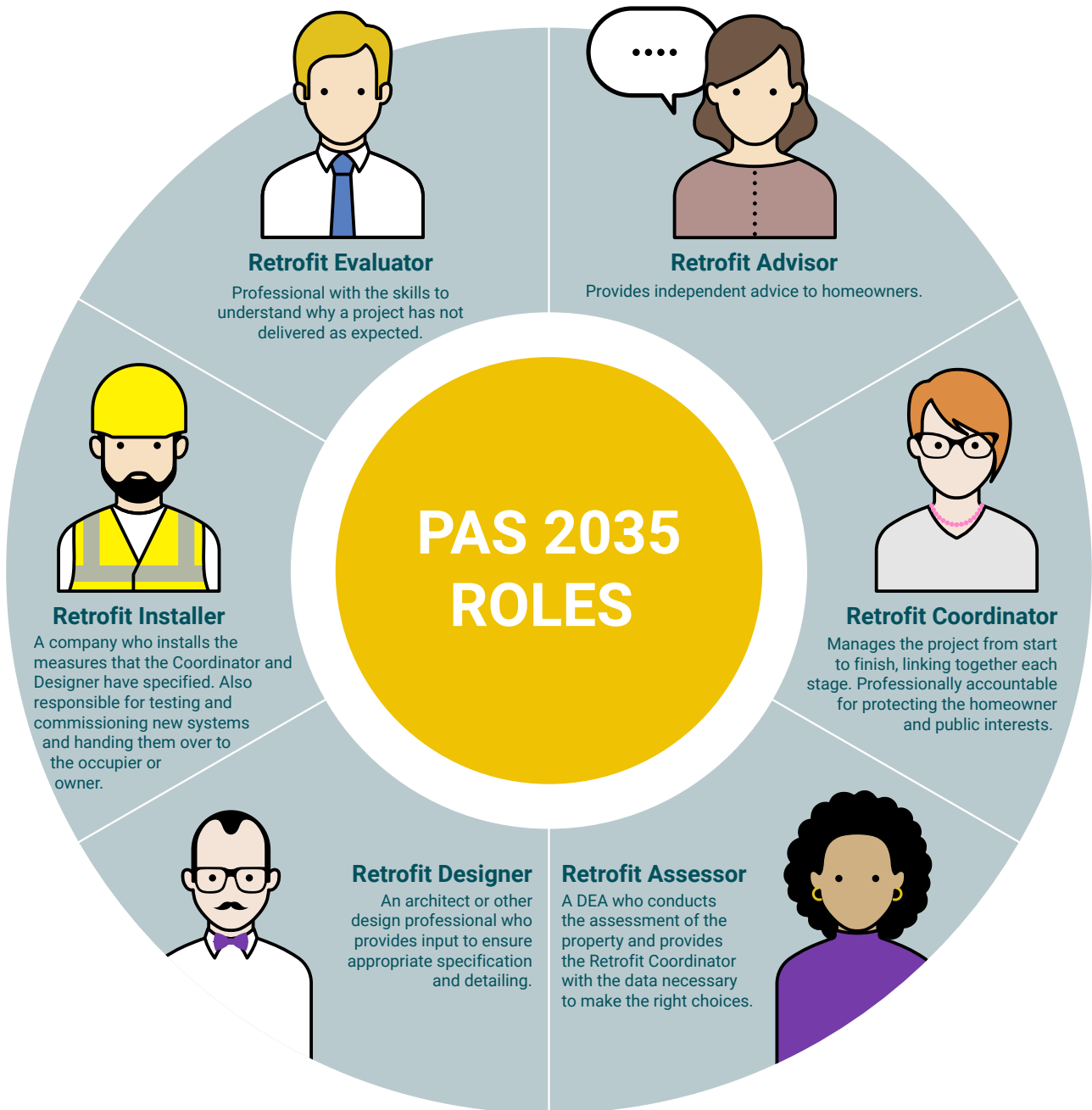
BSI PAS 2035 takes a little time to get your head around, but its well worth the time and effort. Boiling it down to the fundamentals, there are six key stages to a PAS 2035 retrofit project, each of which have a clear outcome:



PAS Retrofit Roles































PAS 2035 also introduces a series of defined roles to ensure it is clear who is responsible for what at each stage of the project. It further defines what qualifications and accreditations they must hold, but we can leave that for another time.

The roles are:



Who does what in the new process?

PAS 2030 (2019)

Assessed Project Risk	Assessment	Strategy	Design and Specification	Installation	Handover	Monitoring/Evaluation
A (Low)	  Assessor Coordinator	 Coordinator	  Coordinator Designer	 Installer 	 Installer 	  Coordinator Evaluator
B (Medium)	 Assessor	 Coordinator	  Coordinator Designer	 Installer 	 Installer 	  Coordinator Evaluator
C (High)	 Assessor	 Coordinator	 Designer	 Installer 	 Installer 	  Coordinator Evaluator



Coordinator

Temporary whilst Evaluators are trained and accredited.

Advanced Evaluation can not be performed by the same Coordinator leading on the wider project.



Indicates "oversight"

TIMELINES FOR IMPLEMENTATION

PAS 2035 was published in spring 2019 and represents a fundamental change in approach and culture. Consequently, it is being introduced gradually. It is mandatory in certain sectors, preferred in others and entirely voluntary elsewhere. Understandably this causes some confusion.



Green Home Grant

The Voucher Scheme elements of The Green Home Grant can be delivered under either the 2017 or 2019 versions of the PAS 2030 standard. The exceptions being high-risk properties, defined as those which are protected, high-rise or Park Homes, which must be delivered under the 2019 Standards in full. Should the Voucher Scheme be extended beyond March 2021, it is likely to be under the 2019 Standards.

The government have issued guidance to local authorities that they would prefer all projects funded through the LADs scheme to be PAS 2035 compliant.

The SHDF competition requires all projects to be PAS 2035 compliant, which is a clear signpost that funding in this sector downstream will also require full compliance.

Energy Company Obligation

PAS 2035 will be mandatory on all ECO projects from 1st July 2021. From November 2020, however, installers operating under the ECO must comply with the Standard as soon as they are certificated to it.



JARGON BUSTER

For those new to the world of energy efficiency, the jargon can be overwhelming. Here's a short Jargon Buster to help you get to grips with it.

AIRTIGHTNESS

Airtightness is the fundamental building property that impacts infiltration (the uncontrolled inward leakage of outdoor air through cracks, interstices, or other unintentional openings of a building, caused by pressure effects of the wind and/or stack effect).

ASHP

Air source heat pump – air source heat pumps (ASHPs) takes low-grade heat from the outside air and convert it into heat for use in providing central heating and hot water. They are best suited to “off-gas” properties.

BIOMASS BOILER

Biomass boilers take solid fuel such as logs, wood chip, or pellets and burn them to provide central heating and hot water. Their main advantage is in their use of renewable fuel, which results in lower CO2 emissions. They are best suited to “off-gas” properties.

CAVITY WALL INSULATION

From around 1920, houses in the UK were typically built with a cavity in between two layers of brick wall. Heat loss through this type of wall can therefore be reduced using cavity wall insulation, which is installed by blowing insulating material into the gap. Where applicable, it is often one of most cost-effective energy saving measures.

COMBI BOILER

A combi boiler is both a water heater and a central heating boiler, combined (hence the name) within one compact unit. Therefore, no separate hot water cylinder is required.

CONDENSING BOILER

Condensing boilers use heat from exhaust gases that would normally be released into the atmosphere through the flue. As a result, they tend to be more efficient than noncondensing boilers.

ECO

The Energy Company Obligation (ECO) is a Government subsidy scheme paid for through a levy on UK households' energy bills. It provides grants towards in the installation of energy efficiency measures, such as solid wall, loft and cavity insulation, with a focus on fuel poor and “hard to treat” homes.

ENERPHIT

The Passivhaus retrofit energy and comfort standard. More flexible than the Passivhaus standard for newbuild, this is nonetheless very stretching. To achieve it, the property must achieve a residual demand for space heating of less than 20 kWh/m²/annum.

Energy Performance Certificate.

A certificate issued by a Domestic Energy Assessor demonstrating the current and potential energy rating of a dwelling. These are useful guides, but the data on which they are built and the superficial nature of most assessments means they should not be form the basis of retrofit assessment alone. PAS 2035 recommends the use of PHPP or full SAP rather than the Reduced Data SAP method.

EWI

External wall insulation (EWI) is another solution for solid walls or hard to treat cavities. Although room sizes aren't affected, the outside appearance of the building will be affected and roof eaves may need to be extended. The insulation is applied to the walls and then covered in a suitable material – usually render but brick slips, pebbledash or cladding is also available.

ENERGIESPRONG

An initiative in social housing designed to popularise the use of offsite methods of construction to achieve deep retrofit, originating in the Netherlands. The Energiesprong (“Energy Leap”) model shifts the risk of projects from the social landlord to contractor, who is required to guarantee performance and comfort over an extended period. Approaches are currently being piloted in Nottingham, Exeter, Maldon and Sutton.

FORM FACTOR

Ratio of the treated floor areas to the heat loss area. The higher the form factor the higher the heat loss per m² floor area.

GSHP

Ground source heat pump (GSHPs) takes heat from the ground and uses this to provide central heating and hot water. As, below a certain level, the ground stays at a fairly constant temperature all year round, these can achieve a higher Coefficient of Performance (COP) than air source heat pumps (which work better in milder temperatures).

HEAT LOSS

Loss of heat via the fabric of the property usually resulting from air infiltration and ventilation.

HEAT GAIN

Additional heat in a property resulting from metabolic (people and animals), hot water, lights and appliances, solar and heating systems.

IAQ

Indoor Air Quality. Good retrofit should improve IAQ, but all too often a lack of suitable ventilation results in it worsening, especially during hot periods.

IWI

Internal wall insulation – older walls, especially solid walls, have relatively low insulation values. As there is no cavity to fill, one option is to apply internal wall insulation (IWI), which is then covered by plasterboard. A variety of materials can be used and therefore the thicknesses required to reach Building Regulations varies, but will usually be between 40mm and 100mm. Although internal wall insulation will reduce the room size it is worth remembering that it is only applied to external walls. IWI can be expensive, but can often attract a grant/subsidy.

MCS

The Microgeneration Certification Scheme, It is required in order to claim the Renewable Heat Incentive and Feed In Tariff, and is also now required under the GHG for all renewable technologies.

PHPP

Passivhaus Planning Package – A modelling and accreditation software tool developed and updated by the Passivhaus Institut. This software is used by many practitioners at the best practice end of the market and is considered to be the optimum tool for retrofit modelling by The Retrofit Academy.

RDSAP

RdSAP is the method used to produce Energy Performance Certificates (EPCs). Although useful, we would not encourage decisions to be based on the outputs from this software alone.

RH

Relative Humidity – The percentage of the total amount of water that the air can hold. This changes with temperature.

RHI

Renewable Heat Incentive (RHI) – The Renewable Heat Incentive is a Government subsidy scheme that is designed to incentivise the installation of renewable heating measures, such as biomass boilers and ground source heat pumps. Under this scheme, households are paid for each unit of renewable heat that they generate. This significantly increases the payback of renewable heating measures.

SAP

Standard Assessment Process is a method for assessing the energy performance of houses using a standard methodology specified by the UK government. The current version of SAP is SAP 2012, and it calculates a 'SAP rating' as well as an estimate of energy bills and CO₂ emissions associated with the estimated energy use. The SAP calculations are based on building dimensions, construction (and therefore energy performance) of building elements such as walls and windows, details of the heating and hot water systems and controls, and any installed renewable technologies including solar PV panels.

Sd VALUE

The Sd value is a measure of a material's resistance to water vapour, but is dependent on the thickness of the material. It has units of metres of air layer thickness (m).

SOLAR THERMAL PANELS

Solar water heating systems use solar panels, called collectors, fitted to your roof to convert heat from the sun into hot water. A boiler or immersion heater is often used as a back-up to heat the water further when the sunshine is insufficient to reach the temperature required. They are eligible for the renewable heat incentive (RHI, see above).

SMART METER

As the next generation of gas and electricity meters, smart meters have an accompanying in-home display to help residents keep track of the energy used in their homes, cutting out the need for meter readings.

THERMAL BRIDGE

A thermal bridge, also called a cold bridge or heat bridge, is an area of an object (frequently

a building) which has a significantly higher heat transfer than the surrounding materials resulting in an overall reduction in thermal insulation of the object or building.

THERMAL ENVELOPE

The insulated external fabric of the building. Useful space heating energy the amount of heat actually put into the heated space.

U-VALUES

U-values measure how effective a material is as an insulator. The lower the U-value is, the better the material is as a heat insulator. U Values are expressed in Units of W/m²K (W(atts) / m² per K(elvin)).

WUFI

A complex modelling software for modelling moisture movement in building construction. Suitable for moisture open or moisture closed designs.

Y-VALUE

A measure of all of the thermal bridges in a dwelling as used in SAP calculations.

Ψ (PSI) VALUE

The heat loss per unit length of thermal bridge.





Case Studies



The Retrofit Academy CIC

- Retrofit Coordinator Qualification
- PAS into Practice
- National Centre of Excellence

The Retrofit Academy is a not-for-profit training provider and membership body that is dedicated to helping organisations to put the “PAS (2035) into Practice”. It is the home of Retrofit Coordinator training and the national centre of excellence for domestic retrofit.

Retrofit Coordinator Training

The Academy developed and deliver the Open College Network West Midlands Level 5 Diploma in Retrofit Coordination and Risk Management. It is an intensive and in-depth course that equips experienced construction professionals with the skills and knowledge to lead retrofit projects. BSI PAS 2035 requires Retrofit Coordinators to be used on all projects. It also requires Retrofit Coordinator to hold the Level 5 Diploma.

Origins

The Academy team was responsible for identifying the need for Retrofit Coordinators a decade ago. They then defined the role and built the training course around it long before PAS 2035 was on the agenda. In 2017-2018, The Academy worked with CITB and other partners to turn the course into a nationally-recognised qualification, and developed eLearning, classroom and blended teaching formats. It was ready in time for the publication of the PAS in May 2019 and since then over 600 candidates have commenced their studies.

The Course

Candidates work their way through twelve modules covering all the key aspects of domestic retrofit. They learn about how to:

- apply the PAS 2035 process as a Retrofit Coordinator
- a whole dwelling assessment should be carried out
- use The Retrofit Academy PAS 2035 Templates to plan and manage projects
- to recognise good design and detailing so that they can challenge poor design
- to improve the building fabric whilst ensuring adequate ventilation
- to upgrade building services and renewables to achieve high performance
- to oversee the installation of energy efficiency measures
- to monitor and evaluate the success of projects and to remediate defects
- to act as the customer champion and ensure that they get what they are paying for

The course takes roughly 150 hours to complete and is assessed via written assignments and a case study.



Mission

As a social enterprise, the Academy's mission is to upscale the delivery of retrofit education, raising levels of energy literacy and raising standards. Upskilling 600 Retrofit Coordinators, more than half of which are now qualified and available to serve the industry, is a considerable contribution.

Working with The Retrofit Academy

The Academy now wants to work with higher and further education establishments to help build these knowledge and skills into mainstream provision across the UK. The Academy has set up a partnership bringing together the strategic leads on skills and training from the Greater London Authority, West Midlands Combined Authority, West Yorkshire Combined Authority and Greater Manchester Combined Authority. Others in similar roles with an interest are welcome to join.

More information: www.retrofitacademy.org





Energiesprong Retrofit for Nottingham City Homes

- Offsite Construction
- Guaranteed Performance Outcomes
- Transformational Results

Project background

What do you do with thousands of very cold, rather run down, unhealthy, unattractive system-built homes?



The Melius Homes 'energiesprong' solution:

Significantly improving the attractiveness of the area by placing 'a new home over the old one' whilst also transforming the energy performance with highly insulated walls, new windows, doors and a ventilation system to ensure good indoor air quality. A communal heating approach using ground source heat pumps, thermal storage & a private wire electricity distribution with central battery to maximise the onsite use of the energy generated by the PV and to load shift.

Offsite manufactured roof and wall panels, including windows and doors, developed for rapid and easy installation meaning tenant only spent one day out of their homes.

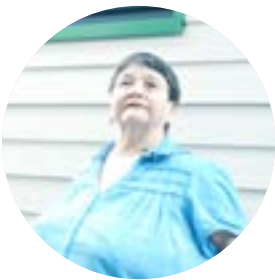


The outcome:

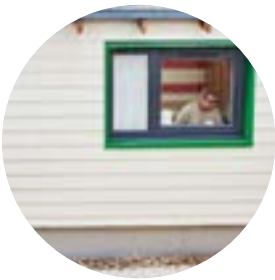
A transformed street with all householders warm and some making considerable savings - typical energy bills of circa £320pa plus the comfort charge of circa £400pa equating to the typical energy bill before works.

Initial analysis of performance shows that these homes are very close to zero carbon 'in use' and the homes are performing as anticipated.

And, in the tenant's own words:



It's cheaper, a lot cheaper, it's made a lot of difference!



I can see out without being on my tippe-toes!!



Looks a lot nicer than it did before, it's definitely warmer in my house!



Retrofit Works

- Job Creation
- Social Value
- Access to Market for SMEs

A Network of Local SMEs Committed to Quality-First

Retrofit Works is a multi-stakeholder cooperative of small to medium enterprises, designed to operate in places across the country in collaboration with local communities, councils and other community based organisations.

It was developed with and supported by leading national trade associations, professional institutions and local authorities as a reliable delivery model for good quality building retrofit – both low carbon and general improvement works - using local resources.

Retrofit Works is run for and by each local community, building on existing local supply chains and services, and ensuring more economic and social value – wealth, jobs, skills – is retained in the local area. Having cut their teeth on large scale fuel-poverty focused retrofit programmes, Retrofit Works are now live with three able-to-pay area based programmes in Greater London, Oxfordshire and Sussex, moving to Cambridgeshire and Greater Manchester in 2020.

Delivery Model

The key to the RW model is in mobilising two types of organisation locally:

- 1) Practitioners: Those seeking work, both trades and professions.
- 2) Advocates: Organisations representing the interests of groups of local householders and tenants who understand their needs and want to develop the local retrofit market and supply chain to help them. These might be:
 - A charity seeking to reduce fuel poverty for the most vulnerable.
 - A group of families at a church that work together to renovate their homes with an energy focus.
 - A Local Authority that has regular calls from the public asking about energy efficiency measures, or convening a scheme of its own.
 - A local community group that coordinates local energy efficiency action.
 - Practitioners improving the health of local residents.
 - Improving the educational environment for children - a warm home at night.
 - Helping local residents to maintain and improve their properties.
 - Stimulation of the local economy by creating a local retrofit market.

The key is that Retrofit Works is a not-for-profit commercial model, and it can be flexed to suit the local needs but on the basis that it will be based on a sound business case.

How could Retrofit Works Get Up and Running in Your Area?

Retrofit Works are keen to roll out the model anywhere in the UK but need a pull from Advocate members. Establishing the model takes time, so cashflow is critical, and the Advocate need to bring some up-front cash to solve that issue, but the RW model can pay back that working capital over 5-7 years based on conversion rates experienced to date. But it's not just about customers, it's about building the local supply chain too, so a clear plan for both is needed before a launch can take place.

More information: www.retrofitworks.co.uk

People Powered Retrofit

Carbon Co-op

- Owner occupiers
- One-stop-shop
- Bottom up approach

People Powered Retrofit is a not-for-profit service aimed at owner occupier householders in Greater Manchester, offering clear, independent advice and support to help clients plan, procure and deliver their retrofit project to high standards.

Its establishment was supported by BEIS and it is delivered by a partnership comprising community energy organisation, Carbon Co-op and design and research cooperative URBED.

The concept of the service is based around the idea that a technically proficient community intermediary can leverage high levels of trust and buy in from domestic clients, helping householders overcome key barriers to achieving retrofit - namely complexity, low trust in providers and lack of established service options etc.

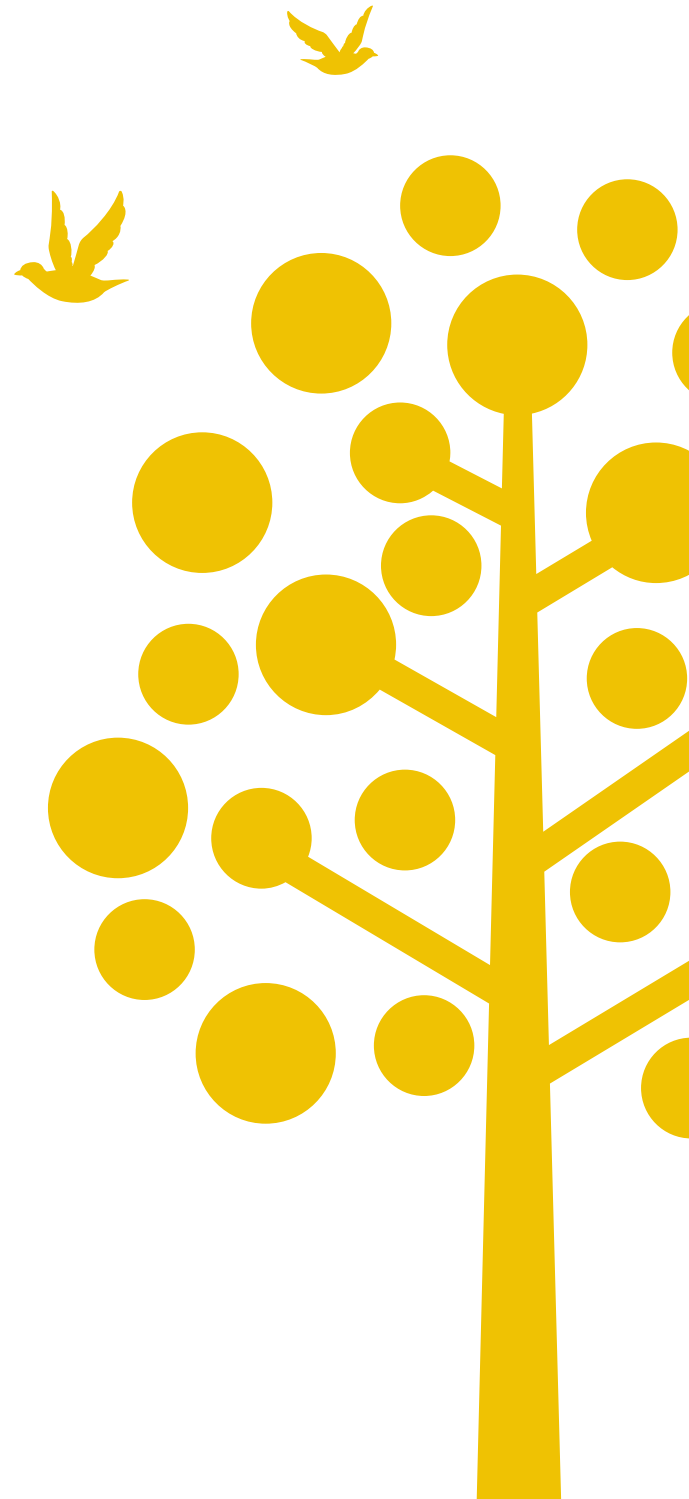
Much work has been done to build the service on to the new PAS2035 quality retrofit process standard - and the service uses key job roles including Retrofit Advisors, Assessors and most crucially Retrofit Coordinators.

The service has used 'Social Marketing' techniques pioneered within public health and deployed by municipal retrofit services in the US. Such strategies are based around individual community advocates and influencers and trusted institutions, and take a bottom up, word of mouth approach to generating demand.

As well as demonstrating the efficacy of this kind of marketing approach, the project also points to the crucial role of 'service design' activity, that is creating compelling, user-focused approaches to designing new service delivery models for retrofit in the owner occupier space.

During the first year of piloting, demand has been strong with significant growth expected in 2021 both in terms of geographical coverage and scale.

More information from www.retrofit.coop





THE
RETROFIT
ACADEMY

info@retrofitacademy.org

