

BUILDERS INTRODUCTION TO RETROFIT

Guidance



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“An Introduction to the Retrofit Sector”

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THE RETROFIT ACADEMY

Our vision is a world where every home is warm, healthy and low carbon. The UK Green Building Council say that 1.8 homes per minute will need to be retrofitted to deliver the UK government's commitment to net zero by the year 2050. Insulating and decarbonising millions of homes over the next few decades will require thousands of new retrofitters to deliver home decarbonisation at a scale never seen before.

The Retrofit Academy CIC has a mission to drive the development of 200,000 competent retrofitters by 2030. The driving force in retrofit knowledge and skills, we develop new qualifications and training courses to support people and organisations to deliver high-quality and large-scale retrofit, as well as by working with colleges and universities nationwide.



David Pierpoint
Chief Executive



LEARN, SUPPORT, NETWORK

The Retrofit Academy develops, delivers and licenses best-in-class courses and qualifications relating to the retrofit challenge.

We help industry academia and government to understand and deliver whole house retrofit at scale.

We work with government agencies, employers and clients to create jobs and growth through the retrofit economy.



I completed the course last month and just wanted to say a massive thanks. The course has showed me lots of new things and help develop my own business. An extra thanks to Alan Pither who has been a big help and a real fountain of knowledge.

Rob Garner, Installations Director at Green Hut Energy



Click here to find out more

Why join The Retrofit Academy?

Members of The Retrofit Academy benefit from access to:

We have created The Retrofit Academy memberships to support the growth and development of the UK retrofit industry. By combining our state-of-the-art learning resources with industry-leading technical expertise and a growing professional network we will help deliver warm, comfortable, and efficient homes for all by upskilling retrofit professionals and maintaining compliance with PAS 2035 standards.

Membership of the Academy gives you exclusive access to industry training and technical guidance, a growing archive of industry analysis and insight, CPD programmes, professional networking through the Retrofit Careers Hub, and so much more.



Access to our online knowledge base



License for annual use and training for our PAS 2035 compliance software



Invitation to exclusive virtual and physical events



Continuous improvement of CPD



Providing technical guidance

[Click here to look at the memberships page and discover the benefits of joining](#)

Supporting Employers and Clients

We don't just train individuals wanting to develop a career in retrofit. We work closely with key stakeholders to develop the supply chains they will need to deliver net zero housing.

We have:



Partnerships with local authorities, college groups and universities nationwide.



A National Retrofit Employer Group consisting of the largest contractors and managing agents.



A National Retrofit Client Group drawn from the largest social landlords.

What is Retrofit?

Retrofit is the process of improving the performance of an existing building by installing additional measures that weren't included in its initial design. A high proportion of the UK's current housing stock does not offer the level of energy efficiency and sustainability that is required if the UK is to meet its Net Zero targets by the year 2050. Energy used in domestic buildings accounts for around 26% of the UK's total emissions. Therefore, retrofit is a majority priority for de-carbonisation.

Retrofit measures are wide-ranging and sometimes complicated. Changes can include the home's structure and insulation; its heating, ventilation and cooling systems; or appliances around the house. The most effective way to reduce the energy demand in buildings is by installing insulation and low-carbon technologies. Insulation will improve the building's heat retention, thus resulting in less energy being used for Space heating.

On average, 64% of energy used in a home is to heat it. Quick improvements with less expense can be installed such as using LED bulbs and smart plugs or adding draughtproofing to windows and doors, and these will help to reduce your energy use - but the biggest gains come from deep retrofits, or whole house retrofits. This is why there is a demand for multi skilled contractors to upskill in retrofit to meet the demand for carbon reduction.

29 m

> Homes will need retrofitting by 2050

50 %

> of UK homes have uninsulated walls

£56 bn

> In potential health benefits if a national retrofit strategy is implemented

20 %

> Decrease in gas demand for each home raised to an EPC 'C' energy efficiency rating

The benefits of Retrofit

Several benefits come from retrofitting your home, for homeowners as well as the environment to tackle climate change. Retrofitting can help to improve the energy efficiency of homes, reduce fuel bills and create a comfortable, even temperature in the dwelling all year round as well as help to eliminate draughts, and improve ventilation. At present, the UK has some of the leakiest homes in Europe!

Retrofit has huge personal and societal benefits. A well-retrofitted home will likely be a healthier environment drastically reducing the risk of poor internal air quality-related illness.

With just under two-thirds of the nation's homes rated an EPC rating of 'D' or below, we have a sizable housing stock that wastes precious energy daily. Around 85% of the nation's homes are heated by gas, the price of which continues to rise as the energy and cost of living crises continue, making our inefficient homes an environmental, social and economic challenge. All of these issues can be tackled by an ambitious nationwide retrofit programme designed to improve insulation and energy efficiency. We want to see this starting with the 19 million homes rated EPC 'D' or below. Upgrading these homes to a grade 'C' would reduce gas demand by 20% alone.

Therefore, retrofitting in time will reduce pressure on the health service. In short, Retrofitted homes are comfortable, use less energy and put less pressure on the power grid. They will increase in value faster and will be more aesthetically pleasing to look at when they have received a new lease of life.

By improving airtightness and tackling ventilation, a retrofit can also improve air quality and eliminate mould and condensation problems which has been a prominent issue across the social housing sector of late.

Did you know: The NHS spends £1.6bn per year on respiratory illness

[Click here to find out more](#)

Whole House Retrofit

Whole house retrofit is a thorough approach to making homes as energy efficient as possible. This means not only dealing with the fabric of the house, which includes walls, roof, floors, windows and doors, but also making provision for ventilation, heating efficiency, and avoiding overheating in the summer, it also includes making sure the dwelling is in good repair and condition to receive any retrofit measures.

Deep retrofit involves making changes to the fabric of your house. Whole House Retrofit is defined as a 'deep', 'radical' retrofit where a wide range of measures are installed alongside each other to reduce a building's energy needs considerably, and draws heavily on the Passivhaus low-energy building methodology and principles. Energy efficiency measures on a deep retrofit project are not considered as individual tick-box improvements but as working as part of a holistic, whole-house system.

Some of the renovation options on a whole house retrofit include:

Insulation: This is a key element of a retrofit programme, which tends to involve external wall insulation, internal wall insulation, cavity wall insulation, roof insulation, and floor insulation. Attention to detail is important to avoid thermal bridging (cold spots), where gaps meet, such as when the first floor meets walls, and to ensure the long-term performance of the house.

Airtightness: Minimising any gaps in the insulation which could break the continuity and lead to heat loss from your home.



Once you've improved the fabric of the property, you could then install a low-carbon heating and hot water system, and/or renewables, if the budget allows, such as:

- **Solar Thermal / Solar PV**
- **Heat Pumps**
- **Biomass Boiler**

Why Assess the Whole House?

The most effective and successful retrofit starts with a full understanding of the property and how the occupants that live there use it – this is what the Retrofit Assessor role is designed to do.

A Whole-house assessment will identify opportunities, noting any constraints for any improvements recommended, so the delivery of any measures will make the property more liveable and comfortable for the residents.

The improvements will be scalable allowing for the measures to be undertaken in one improvement or staged over time on the pathway to Net Zero carbon emissions. This could be a budgeted plan for a customer. Retrofit Assessors are providing this service to customers up and down the country, but they need to find builders like you to do the work!

PAS 2035:2019 (the UK standard for energy efficiency work carried out on property) delivers a whole-house approach to the retrofit process, considering the home, environment, occupancy and the householders' objectives and behaviours when determining the most suitable measures to install.

Whole House Measures covered by PAS 2035

Insulation

Airtightness and Ventilation

Heating and Cooling Systems

Renewables Technologies

Water Heating Systems

Efficient Lighting

Energy Monitoring Systems

Generated power that uses Zero-Carbon Technologies.

What is Fabric First?

“Decarbonising Heating Systems are likely to have higher running costs and so to avoid increasing fuel poverty, we need to reduce energy demand first through fabric improvements.”

“Fabric first also reduces the size for the required heating system.”

Fabric First is an approach to retrofitting homes that aims to reduce demand for heat and power as far as possible, through insulation and airtightness combined with adequate ventilation, before improving or decarbonising the building services or installing renewable energy systems. A Fabric First approach of insulation and airtightness measures is the key first step as part of any “Whole House Retrofit”.

Improving the building fabric to minimise heat losses and maximise airtightness is sensible because insulation has a relatively low cost, and a long life and should only be required once before 2050 for most properties. By contrast, building services have a shorter life and will almost certainly need to be replaced every 10-15 years. Renewable energy systems are also short-lived (typically twenty-five years) and expensive enough to require subsidy, at least initially. The capacity for onsite renewable energy systems is often limited by the available, unshaded roof area.

Therefore, the Fabric First approach assumes that renewable energy systems are used to ‘top up’ the performance of the dwelling to the required standard, as the building fabric and building services have been treated.



The benefits of a Fabric First Approach

Insulating and draught proofing your housing stock delivers long-term benefits to tenants and the environment and is the critical first step in any housing retrofit programme.



- Even, all-round insulation of heat loss floors etc, walls and roofs to ensure even internal surface temperatures and reduce the risk of condensation.
- An airtight building envelope that is also appropriately ventilated, to reduce uncontrolled, wind driven air infiltration and air leakage.
- Vapour permeable construction to promote a safe, dynamic equilibrium between moisture in the internal air, moisture within the construction and moisture in the external air, to minimise risks of condensation, mould and rot.
- Retained thermal capacity inside the insulated envelope, to moderate internal temperatures. This improves comfort in winter and reduces overheating in summer. When insulating and draught proofing homes, care must be taken to avoid health risks.

What can you do today?

Join "The Retrofit Academy", and train your staff and supply chain to deliver on this huge challenge, which is also a huge opportunity to create warmer, healthier, zero-carbon housing.

“The Retrofit Process & Standards”

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Passivhaus, or passive house in English, refers to buildings created to ambitious and rigorous energy efficient design standards so that they maintain an almost constant temperature all year with excellent air tightness. Passivhaus buildings are so well constructed, insulated and ventilated that they retain heat from the sun and the activities of their occupants, thus requiring very little additional heating or cooling requirement.

The Passivhaus Institute in Germany developed the energy efficient building principles, following a research project to investigate why low-energy building designs didn't deliver on their expected energy savings.

Builders of energy efficient homes and buildings can apply to have the buildings certified by the Passivhaus Institute. To achieve the certification, the builder must use the specific Passivhaus planning system and follow protocol, which allows you to adjust your design until the property reaches the required energy efficient standard. While not all customers will be in a position to build a new home, the principles can apply to the reduction of energy demand in existing homes through energy efficient design, including older buildings. **Click here**

EnerPHit is the established Standard for the refurbishment of existing buildings using the Passive House principles and components. The Passive House Standard for new construction is not always achievable retrofitting existing buildings, even with a large budget! Therefore, for this reason, PHI (Passive House Institute) developed the 'EnerPHit – Quality Approved Energy Retrofit with Passive House Components' certification process for existing buildings.

The basic 5 principles of the Passive House Standard are still used to achieve the EnerPHit Standard;

- (1) Thermal Insulation levels with
- (2) Thermal Bridge Free design, high thermal performance
- (3) Passive House Windows, very low air-leakage throughout the building
- (4) Airtightness levels, utilisation of passive, solar and internal gains and good indoor air quality maintained by a
- (5) Ventilation with a Heat Recovery system with highly efficient heat recovery levels.

Building Regulations Part L

Part L, or Document L, is an amended building standard that decrees all new dwellings should be built to increase the conservation of fuel and power, or in other words, meet a certain energy efficiency standard by being well insulated and airtight. The standard is divided into part L1A, which covers new builds, and part L1B, which covers renovations to existing buildings.

In December 2021, the government announced new targets of 30% less CO2 than current building standards and a 27% reduction of emissions as part of their ambition to achieve net zero targets. The new regulations have also been designed to pre-emptively prepare for the 2025 Building Standards, so there will be no need for retrofiting on new builds between 2022 and 2025.

When a project has started on-site, it is the responsibility of the installers to ensure that photographic evidence is being collected as the build progresses. This is a mandatory requirement under Part L.



PAS 2030 and PAS 2035

What is the difference?

PAS 2030 is a certification that businesses can achieve to demonstrate the compliance of their installations. Unlike PAS 2030, PAS 2035 is not a certification; it is a standard that sets out the specifications which compliant retrofitting must meet. Both PAS documents are to be taken as a whole and closely relate to each other.

PAS 2035 is an overarching framework for preparing plans for domestic retrofit projects in the UK. Any retrofit designs that emerge from its specifications must be installed in accordance with the requirements outlined in PAS 2030.

PAS 2030

PAS 2030: 2019 (which replaced PAS 2030: 2017) concerns the commissioning, installation, and handover of domestic retrofit projects.

PAS 2030: 2019 has been redeveloped to work alongside PAS 2035. Both documents should be seen as working together to create a single cohesive approach to domestic Retrofit. Taken together, PAS 2030 and PAS 2035 lay down the steps all domestic retrofit projects should follow to gain compliance and ensure consumer satisfaction in accordance with the recommendations of the Each Home Counts Review.



PAS 2030

PAS2030 Certification

By gaining PAS 2030: 2019 certification, retrofit installers can demonstrate that they have installed energy efficiency measures which meet the required specifications and have delivered on customer requirements and expectations by TrustMark standards.

PAS 2030 accreditation can help homeowners gain funding for domestic retrofit, which in turn makes your business a more attractive proposition for customers. Being PAS 2030 certified can also help you win tenders, and work on energy efficiency schemes offered by Local Authorities who require PAS 2030 compliance.



To become PAS 2030 certified, your business will need to demonstrate that you use a PAS-compliant Quality Management System (QMS) to ensure you have the correct processes in place to deliver consistent customer satisfaction and retrofit implementation.

Installers will need to have relevant qualifications and competencies; each team will require a qualified retrofit professional, and one member will need to hold an NVQ. PAS 2030 certification requires you to have up-to-date Health & Safety certification and you will also need to comply with PAS 2035 when assessing and designing retrofit plans.

A technical assessment of one of your energy efficiency installations will need to be carried out and any compliance issues addressed before you receive certification. An approved certification body will need to carry out the PAS 2030 assessment and certification. For more information, visit the TrustMark website.

If you are a sole trader or organisation that offers services such as plumbing, installation of boilers and heating systems, lighting units, insulation or glazing, you can apply to an approved body for certification.

Further information to follow in the Scheme Providers section

PAS 2035

PAS 2035:2019 offers an end-to-end framework for the application of energy retrofit measures to existing buildings in the UK and provides best practices for their implementation.

There are 27 million domestic buildings in the UK and the majority of them require significant energy efficiency improvements. Previous attempts to deliver retrofit measures were seen as a failure, as no universal standards or approach had been agreed upon, and several high-profile failures compounded the issue.

The result was the UK government's 2015 Commission of the Each Home Counts (ECH) review. This comprehensive review of the energy efficiency sector outlined 27 recommendations, including the establishment of a universally recognised quality mark in the form of a Trustmark. Most significantly, the ECH review called for the establishment of an industry-wide Code of practice, which resulted in the publication of the PAS 2035 document.

PAS 2035 is a specification for what is called a 'whole house' or 'whole building' retrofit. This is an approach to the installation of energy efficiency measures (EEMs) which considers the requirement of the entire building, both from a technical standpoint and considering factors like occupancy comfort. PAS 2035 is concerned with assessing domestic dwellings for energy retrofit. This involves identifying areas where improvements can be made and specifying and designing the relevant improvement measures. It is also concerned with the monitoring of domestic retrofit projects.

PAS 2035 is to be used in conjunction with PAS 2030: 2019, which sets out the standards required for installing EEMs.

[Click here to download our free PAS2035 guide](#)

Is PAS 2035 Mandatory?

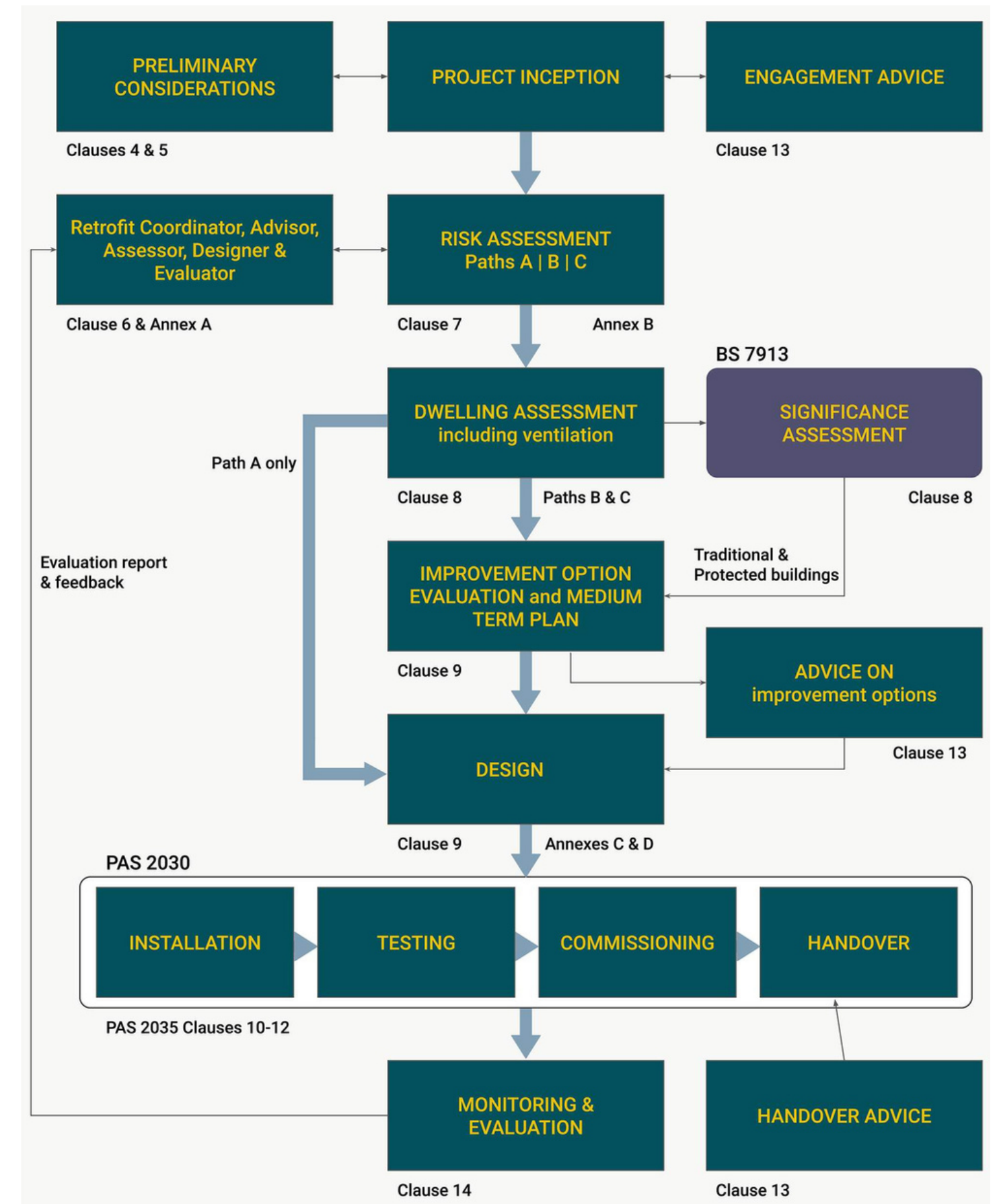
From 30th June 2021, compliance with PAS 2035 and PAS 2030 is mandatory for all companies installing Energy Efficiency Measures (EEMs), including domestic retrofit. An exemption lasting until the end of October 2021 was made for firms participating in the Green Homes Grant and Local Authority Delivery Phase 1 scheme.

In PAS 2035:2019 there was an additional stage in the PAS 2035 process - a risk assessment. This led to the classification of projects into 'risk paths' A, B or C, depending on the number of dwellings involved, the number and inherent technical risk of the measures involved, and the type of construction. The risk path then determined some of the details of the assessment and design stages, and 'path A' projects did not require an improvement option evaluation or medium term plan.

In PAS 2035:2023, all projects follow the same process, although there are some different requirements for the qualifications of retrofit assessors, retrofit coordinators and retrofit designers based on the number and type of measures per dwelling and the type of construction.

[Click here for more detailed information on the PAS2035 process.](#)

PAS 2035 Process Map



PAS 2035 Roles

Several professional roles are outlined in PAS 2035, including that of Retrofit Advisor, Retrofit Assessor, Retrofit Coordinator, Retrofit Designer and Retrofit Evaluator. It is not necessary that all of these roles are carried out by separate individuals, as long as whoever carries out each role has received the levels of training and certification required by PAS 2035, and that there are no unresolved conflicts of interest.

Retrofit Advisor

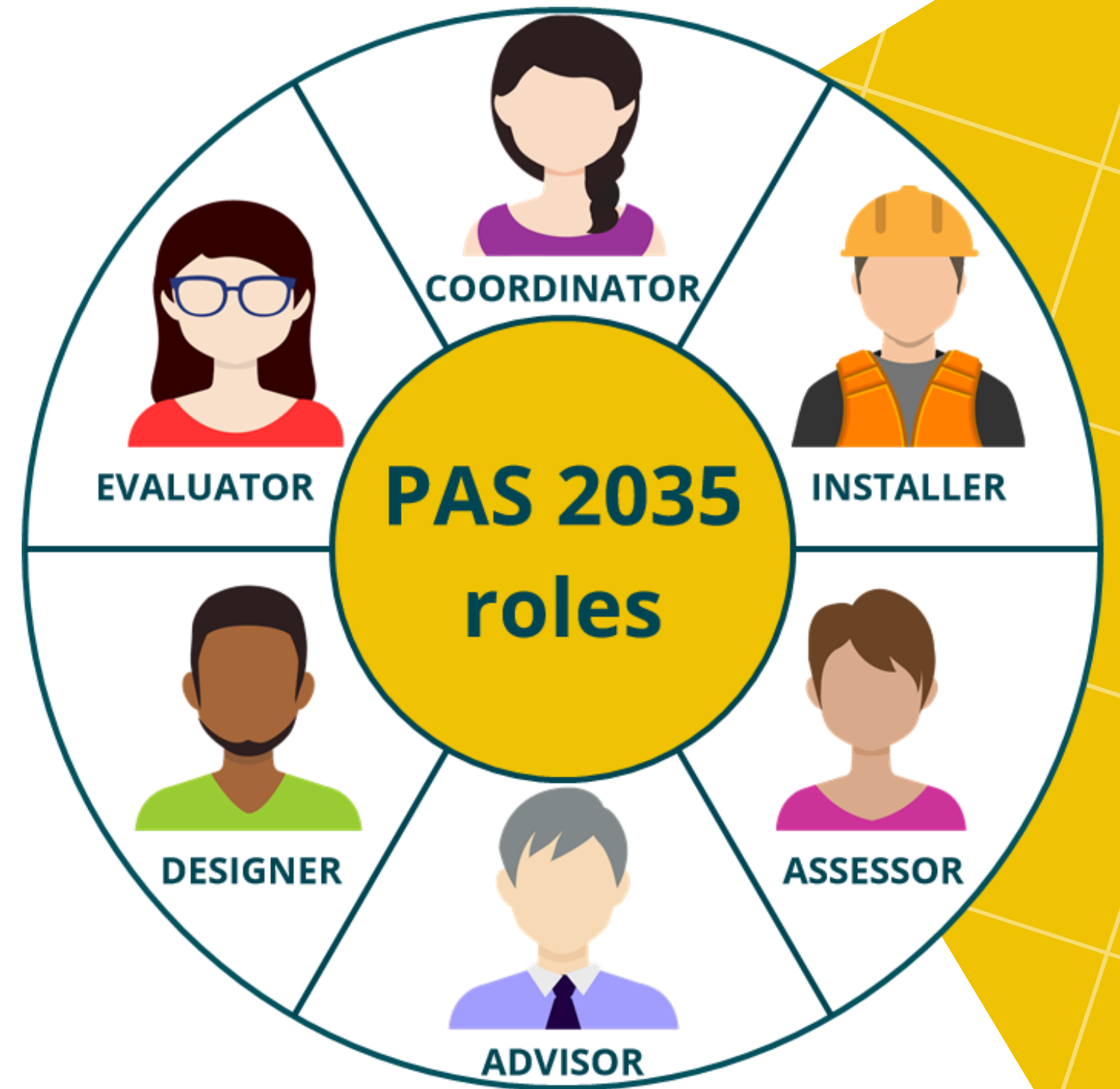
Retrofit Assessor

Retrofit Coordinator

Retrofit Installer

Retrofit Designer

Retrofit Evaluator



At present, there are no specific qualifications for Retrofit Evaluators nor any requirement to join a Trustmark accreditation scheme to practice as a Retrofit Evaluator

Retrofit Advisor

Retrofit Advisors work in a range of organisations such as housing associations, local authorities, energy and utility companies and specialist retrofit companies. The role might vary depending on the organisation, but in all organisations Retrofit Advisors provide excellent customer service to support and guide customers through their retrofit project.

A Retrofit Advisor is a customer service focus role, they are able to give independent advice to homeowners or residents, with a view to help them understand retrofit and the impact it will have on their property.

Retrofit Advisors are often the first point of contact for residents and have 2 key responsibilities, they provide support and advice to those going through the administrative process support through the retrofit project, and they liaise with assessors, coordinators, designers, and installers to ensure everything is going to plan.

How to become?

Retrofit Advisors don't need to hold any special qualifications under the existing standards. However, most Advisors will have gained the Level 3 Award in Domestic Retrofit Advice.



Retrofit Assessor

The assessor gathers information about the building that is the subject of retrofit work. Domestic retrofit assessments are very wide-ranging and include factors such as the building's construction, structure, and architectural features. The assessment will also consider the building's current condition, including any structural defects, and issues such as leaks, condensation and mould build-up.

Current installations such as heating and hot water, lighting, and ventilation will be documented. Any protected status, conservation restraints, or planning permission requirements will be investigated before work can begin. The Retrofit Assessor must also consider information regarding the number of building occupants and special considerations including the presence of vulnerable people, or people with disabilities.

How to become?

To become a Retrofit Assessor, you must first train to become a Domestic Energy Assessor (DEA), by gaining the Level 3 in Domestic Energy Assessment.

The Retrofit Academy recommends that DEAs complete the Level 4 Award in Retrofit Assessment.



Retrofit Coordinator

One of the key roles emerging from PAS 2035 is the role of the Retrofit Coordinator. Retrofit Coordinators ensure that all elements of domestic retrofit are properly managed and coordinated and that a cohesive retrofit plan is designed and implemented. For more information on the role of the Retrofit Coordinator and how to gain the necessary training and certification, see our page on Retrofit Coordinator Training.

PAS 2035 specifies the domestic retrofit process that must be complied with to meet its requirements. The retrofit process begins with the assessments performed by the retrofit assessor. This is the foundation of all subsequent retrofit design plans. By PAS 2035, the Retrofit Assessor provides their evaluation in an assessment report which may be scrutinised by the TrustMark quality assurance scheme. The work of the Retrofit Assessor is the basis on which the retrofit designer carries out their work and close cooperation is required between each role

How to become?

To become a Retrofit Coordinator, you must hold the Level 5 Diploma in Retrofit Coordination and Risk Management. You must then join a TrustMark Retrofit Coordinator Accreditation Scheme



Retrofit Designer

To design relevant energy efficiency improvements to the dwelling using the energy assessments and their knowledge and experience of the best retrofit measures appropriate for each dwelling. For lower-risk path projects, the designer can be a technically competent person such as an MCS-accredited solar PV installer if this was to be the measure installed under PAS 2035, or a retrofit co ordinator in many instances. For higher risk paths with complex measures or a high number of dwellings, the designer would be appropriately qualified such as Architects or certain Building Surveyors.

How to become?

Retrofit Designers must have qualified to become a Chartered Architect, surveyor or construction manager. This involves several years of study at a university or architectural school, and also considerable time learning the ropes in practice. The Retrofit Academy will be releasing a Retrofit Designer course in 2024.

Many architects, surveyors or construction managers do not learn much about retrofit during their studies. Therefore many also undertake the Retrofit Academy's Retrofit Designer



Retrofit Installer

This could be you! The industry needs more contractors, and fast.

Your company could be assisting many clients with retrofit services, and helping process energy efficiency measures through funding schemes such as the Energy Company Obligation (ECO), Local Authority Delivery (LAD), and Social Housing Decarbonisation Fund (SHDF). Over 29 million homes need retrofit works between now and the year 2050. They need installers like you who can follow the whole house approach, to install the appropriate viable energy-saving measures in various property types, to reduce their carbon footprint, save on energy bills, and improve the indoor air quality of their home.

How do I become an Installer?

The Energy Company Obligation (ECO) is a government energy efficiency scheme which began in 2013. Its purpose is to reduce carbon emissions and tackle the scourge of fuel poverty. Companies that wish to participate in the ECO scheme must be TrustMark registered via an approved body. They must also have been awarded a PAS 2030 certification by a relevant certification body, and be PAS 2035 compliant. The ECO scheme covers a wide range of measures, including insulation and glazing, the installation of boilers and heating systems, and micro-generation systems such as solar panels. ECO measures must comply with the ECO3 Order, a set of government legislation which is administered by Ofgem.



[Click here for more information on the Retrofit Toolkit, helping local authorities kickstart deep Retrofit.](#)

BS7913

Approved document BS7913: Guide to the conservation of historic buildings describes best practices in the management and treatment of historic buildings. It applies to historic buildings with and without statutory protection.

The document provides information on the principles of the conservation of historic buildings and sites, useful when seeing conservation policy, management strategy and procedures. The standard offers good guidance on conservation, describing how to best deal with historic buildings, based on previous research evidence around the use of competent advisors and contractors. This document will also aid decision-making. Contractors need to consider and understand the conservation of historic buildings requires judgment based on an understanding of principles informed by experience and knowledge.

[Click here to purchase the document](#)



BS5250

This standard gives recommendations for the management of moisture in buildings. The document covers all states of water as gas, liquid and solid, and the interactions between these states. It describes the principal sources of moisture in buildings, its transportation and deposition and provides recommendations and guidance on how to manage those risks during the assessment, design, construction, and operation of buildings.

BS 5250 on the management of moisture in buildings is useful for designers, builders, and users of any class of building. Moisture in buildings is a significant cause of many building failures, including some building-related occupant health problems such as respiratory illness. By adapting BS 5250 guidance builders and other users can investigate risks of all sorts from high moisture levels, whether in the building fabric or in indoor air, which can endanger the health and well-being of building occupants and the integrity of the building.

BSI Framework



“Becoming a trusted, accredited installer”

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Watch - 5 Steps to a Retrofit Project

TrustMark is the UK Government-Endorsed Quality Scheme for home improvements. They strive to ensure homeowners and Registered Businesses receive the right quality assurances for these improvements.

Since TrustMark's establishment in 2005, they have been aiming to increase the protections provided to homeowners when having work carried out to overall improve the standards across the industry. As TrustMark are a not-for-profit organisation, it means their sole focus is on the customers- not on shareholders.

They assist homeowners in finding experienced, qualified and competent tradesperson to undertake the work required for various trades such as plumbers, electricians, carpet cleaners or gardeners – the list of Registered Businesses includes them all. There are around 15,000 Registered Businesses and more tradespeople are encouraged to apply to join today to demonstrate their commitment to delivering the best service.

Trustmark's credentials are found on their website

Under the TrustMark Framework operating requirements, Scheme Providers are responsible for providing adequate service including customer service. This includes ensuring that they do their best to resolve any arising disputes between businesses and their customers.

If the dispute is complex, the Scheme Provider may suggest using an independent Alternative Dispute resolution (ADR) provider to help conclude the dispute. TrustMark understands that dealing with disputes can be stressful for any contractor and their main aim is to help consumers achieve fair, timely and cost-effective solutions. Although they do not investigate specific consumer complaints, they will work closely with Scheme Providers, and Registered Businesses, to ensure that the correct processes and procedures have been complied with.

The Government Endorsed Quality Scheme provides enhanced consumer protection with a quality mark for domestic retrofit. As a TrustMark registered business, they are dedicated to working in line with the TrustMark Framework Operating Requirements, Code of Conduct and Customer Charter.

TRUSTMARK

Benefits of being Registered

Being a TrustMark Registered Business ensures quality, assurance and peace of mind for your customers. It is Government Endorsed Quality Scheme in the UK.

Help Customers Find You

TrustMark's website consists of two online directorates 'Find a Business' and 'Find a Trader' to allow customers to easily find exactly what contractor they are looking for. Any registered contractors can create a unique profile, provide links to business websites and manage the business presence. Members can also manage customer enquiries, track progress and build positive feedback.

Visible Campaigns and Marketing Support

Businesses can assure customers that they are a trusted, high-quality company by displaying the TrustMark logo on letterheads, marketing material, websites and vehicles. It also increases exposure by benefiting from Trustmark's marketing initiatives.

Business Portal

A secure, convenient and free platform where you can upload your company biography, logo and photographs of completed projects, tailor your trade scope and specify your location coverage. You can see enquiries and requests from customers and respond to them, track progress and manage your business presence.

Trading Standards Approval Scheme

By applying to be a member of the Trading Standards Approval Scheme it increases the confidence customers have in the services offered. Upon successful completion of intelligence checks, Companies can promote the membership by placing the 'Trading Standards Approved' logo for all documentation and marketing materials.

Insurance

To help support businesses, TrustMark allow access to insurance offers and business procurement services from known companies they work with.

Trustmark License Plus

To provide a key route in encouraging TrustMark Registered Businesses to engage in a transitional adoption of fabric-first, whole-house retrofit, The Licence Plus Scheme was created. This additional aspect of the licence aims to support the achievement of the UK's Net Zero targets and aid homes in reducing their household energy bills. The Licence Plus Scheme showcases the competency and quality workmanship of TrustMark Registered Businesses that can join the Licence Plus Scheme through participating TrustMark licensed Scheme Providers. The delivery structure is flexible so that onsite audits of Licence Plus businesses can be carried out by Scheme Providers who elect to do so, or by TrustMark where required.

The Benefits

Supports acquisition and scheme development through enlarged engagement

Further recognition of present competent trades

A transitional approach into the existing certification process

Additional engagement with UK Net Zero objectives

Straightforward participation through an extension to Licence scope

To learn more, [click here!](#)

PAS 2030 Certification Bodies



British
Assessment
Bureau

[Click here for more information](#)

Retrofitting dwellings for improved energy efficiency – Specification and guidance



Department for
Energy Security
& Net Zero

bsi.

Retrofit Measures covered:

- (BFM) Building Fabric Measures which include insulation, glazing and doors.
- (BSM) Building Services Mechanical which includes boilers and heating systems.
- (BSE) Building Services Electrical which includes lighting controls.



PAS 2030 certification will help you:

- Become an installer in the Retrofit Sector
- Grow your business with Green Deal and ECO installations.
- Inspire customer trust.
- Gain new business. Grow your business with UKAS-accredited PAS2030 certification.

PAS 2030:2019 certification will help you:

- Grow your business via Green Deal and ECO installations.
- Win new business through Trustmark and Green Deal Orb listings.
- Inspire customer trust by increasing installer competency and improving customer service.
- Access funding for your clients.

Why do you need to be certified?

Eco installers can access funding to enable their customers to benefit from vast savings on the installation of a range of efficiency measures. This generates an opportunity for installers to gain more business by encouraging consumers to purchase, creating growth in the sector and for their businesses.



Watch - BBA

British Board of Agreement - BBA help the construction industry build confidence in the solutions throughout the entire supply chain [Click here for more information Solid Wall Competent Person Scheme:](#)

The Solid Wall Competent Person Scheme (CPS) allows installers to self-certify their installation work in line with the Building Regulations, providing homeowners with immediate reassurance that all installation work undertaken is compliant. In addition, the Solid Wall CPS Certification also saves certified installers money by avoiding expensive Building Control notification fees. As a Competent Person certification is awarded to a business, not to an individual installer, approval is obtained by an independent audit of company procedures against Building Regulation requirements, followed by an examination of a recent installation.

Being a BBA Approved Installer allows access to a wealth of expertise and knowledge the BBA has built over many years in addition to the following:

- Opportunities for Business Growth – Demonstrating competency and ability through the Installer Scheme itself, providing a competitive gain over those not on the scheme.
- Professional Development – Building on the knowledge and competencies within the BBA to further the skills and capabilities of each installer.
- Installer Search Portal – A place within the BBA installer search portal helps to draw attention to your business and certification to customers.
- Technical Support – Daily contact for generic queries covering installation and product application, supported by more formal technical reporting if required as well as access to product manufacturers and/or associations i.e. ATMA, EOTA etc.

Click here for more information

MCS Certifications covered:

MCS004 – Solar Collectors (solar thermal)

MCS005 – Photovoltaic Panels

MCS006 – Small and Micro Wind Turbines

MCS007 – Heat Pumps

MCS008 – Biomass

MCS012 – Pitched Roof Installation Kits for solar products

MCS014 – Combined Heat and Power Systems (CHP – Heat Led, CHP – Electricity Led)

MCS017 – Bespoke Building Integrated Photovoltaic (BBIPV)



BFC offers certification in Gas, Oil, Electrical, Solid Fuel, Building Services, Renewables and Energy Efficiency

Certification can be verified against the installation of the following PAS 2030 Measures:

Building Fabric Measures:

- Cavity wall/ Party wall insulation
- Draught proofing
- Energy-efficient glazing & doors
- External wall insulation
- Flat roof insulation
- Room-in-Roof insulation
- Floor insulation
- Hybrid wall insulation
- Internal wall insulation
- Loft insulation
- Pitched roof insulation.
- Flexible thermal linings
- Solar blind, shutters & shading devices (internal & external)

[Click here for more information](#)

Building Services (Mechanical):

- Chillers
- Condensing boilers, natural & LPG fired (domestic & non-domestic)
- Condensing boilers, oil-fired (domestic & non-domestic)
- Electric storage heaters
- Flue gas heat recovery devices
- Heating system insulation Heating, hot water, air conditioning & ventilation system controls Hot water systems Radiant heating Underfloor heating.
- Warm air heating Water efficient taps & showers

Building Services (Electrical)

- Electrical storage heaters
- Light fittings, lighting systems & lighting system controls
- Variable speed drives for fans & pumps (non-domestic)

Becoming an Approved PAS 2030 Installer Only Approved Installers will be able to identify themselves as "PAS 2030 Installers" and use the Quality Mark. Blue Flame Certification was one of the first Certification Bodies accredited by the United Kingdom Accreditation Service (UKAS) to approve PAS 2030 Installers. Becoming a PAS 2030 Installer with Blue Flame Certification is simple. We follow a straightforward, transparent, staged process according to the requirements of PAS 2030: Improving the energy efficiency of existing buildings.

CERTASS

Certass is Government authorised to operate a Competent Person Scheme and is a UKAS accredited Certification Body

Measures covered:

- Energy-efficient glazing
- Draught proofing

To apply for PAS 2030 certification, you must demonstrate that your business has:

- Quality Management Systems
- Suitable contracts
- Evidence of appropriate training and competency within your team
- Continual professional development plans for your team
- Continual improvement plans for your products, services, processes and performance
- Records of historical installations
- Evidence of stored documents
- Health & safety policy statement
- Evidence of specialist equipment standards
- Complaint procedures
- Customer engagement procedures
- Customer handover procedures



NAPIT is a government-approved UKAS-accredited membership scheme operator in the building services and fabric sector.

Measures covered

Electrical:

- Full electrical installations
- One or more new circuits
- Full or partial rewires
- Replacement consumer units
- Circuit alteration or addition in a special location

MCS Accreditations:

- Photovoltaic systems
- Wind turbines
- Micro-CHP
- Solar thermal systems
- Heat Pump Systems
- Biomass System

Competent Person Scheme (England & Wales) CPS is a Government-authorised scheme for installers who carry out work covered by the Building Regulations in England and Wales. Members are required to demonstrate their ability, must have at least £2 million public liability insurance, and be responsible for the compliance of their work against the Building Regulations for 6 years following completion.

Any work detailed in this section is required to comply with the Building Regulations certificated by law. If you use a NAPIT CPS Scheme Member they are entitled to self-certify the compliance of their work and you will get a Building Regulations Compliance Certificate from NAPIT. Local authorities are also notified that the work has been completed and certified as compliant.

If regulated work is undertaken by an installer who is not certified, then it must be notified in advance to Building Control (which can be local authorities, authorised Approved Inspectors or approved third-party Certifiers) and subject to inspection and fees and will issue a Completion Certificate.

MCS

Working with industry, MCS defines, sustains and improves quality by certifying low-carbon energy technologies and contractors – including heat pumps, solar, biomass, wind and battery storage.

MCM aims to decarbonise heat and power in homes throughout the UK by giving homeowners confidence in home-grown energy.

Measures covered:

- Solar PV
- Solar thermal
- Air source heat pumps
- Battery storage
- Biomass
- Micro CHP
- Small and Micro Wind Turbines

[Click here for more information](#)



MCS is a standards organisation.

They create and maintain standards that allow for the certification of products, installers and their installations. Associated with these standards is the certification scheme, run on behalf of MCS by Certification Bodies who hold UKAS accreditation to ISO 17065.

MCS certifies low-carbon products and installations used to produce electricity and heat from renewable sources. MCS is a mark of quality. Membership of MCS demonstrates adherence to these recognised industry standards; highlighting quality, competency and compliance.

“Procurement and Funding Opportunities”

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LHC Procurement Group

The new Retrofit and Decarbonisation Framework Agreement (N9) will be the successor to LHC's successful Energy Efficiency Measures & Associated Works (N8) Framework which expires in November 2024.

The framework is intended to support clients with delivering a range of energy efficiency and decarbonisation works by assisting them with their journey to achieving net carbon zero and improving the EPC ratings of their properties.

The LHC's Procurement Group have over 30 years of experience delivering energy efficiency and retrofit solutions to the public sector.



You can register as a supplier here

North and Central England



London and SE England



Scotland



South West England



Wales





What is ECO?

The Energy Company Obligation (ECO) is a British Government programme. It is intended to offset emissions created by energy company power stations. The first duty period ran from January 2013 to 31 March 2015. The second obligation period, known as ECO2, ran from 1 April 2015 to 31 March 2017. The third period, known as ECO3, commenced from 3 December 2018 until 31 March 2022. The fourth iteration, ECO4, began on 1 April 2022 and will run until 31 March 2026.

[Click here for more information](#)

The government necessitates larger energy suppliers to help support lower-income households to improve their energy efficiency. It achieves this by focusing on heating, in particular improving insulation. This programme replaces both the Carbon Emission Reduction Target (CERT) and the Community Energy Saving Programme (CESP).

The programme focused on heating, in particular improving insulation.

Ofgem has been appointed the scheme administrator by the Department for Energy Security & Net Zero.

How can Installers get involved?

ECO4 aims to support the most vulnerable consumers through insulation and heating measures. The eligibility criteria to be involved is as an installer they must be a TrustMark registered business. The exception to this would be if an installer is a district heating connection and not linked to a shared ground loop.

What measures can be installed?

There are a large variety of energy efficiency measures that can be filled under ECO4 such as insulation, heating and connections to district heating systems. Suppliers can use the ECO4 measures table to meet their obligations as it provides data on eligible energy efficiency measures. Despite this, the table is non-exhaustive, and others may qualify but first have to be reviewed individually.

Retrofits

ECO4 follows Publicly Available Specification (PAS) 2035:2019 by adopting a whole-house approach energy efficiency improvement. This approach is when a full assessment of a home's needs is undertaken then multiple measures are installed in a property. Any ECO4 projects which have one or more measures are required to follow the domestic retrofit process required by PAS 2035:2019.



Green Homes Grant Scheme The Green Homes Grant voucher scheme provides grants to homeowners and landlords to assist them in making energy-efficient improvements to their homes.

What are the eligibility requirements?

The eligibility criteria are they must be certified to install energy efficiency measures against Publicly Available Specification (PAS) standards:

- PAS 2030:2017
- PAS 2030:2019
- PAS 2035:2019

(for park homes, high-rise buildings and buildings that are both traditionally constructed and protected). You must be certified by a body that has been accredited by the United Kingdom Accreditation Service (UKAS). In addition to this, businesses must be TrustMark registered and MCS certified for low carbon heat measures.

How do installers apply?

Companies are required to be registered as certified installers with TrustMark which can be done through HIES which is a Trustmark Scheme Operator. User approval is received, and organisations will be added to a directory of certified installers. The businesses and contact details can then be found by homeowners via the directory.

Important notes about registration

Once registered as a Green Homes Grant installer, there is a requirement to sign the Terms and Conditions of the scheme and provide details for payment. Each scheme's measures planned to be undertaken need to be registered individually. Before undertaking any work under the scheme, all companies must have received confirmation that their registration has been successful.

[Click here for more information](#)



Home Upgrade Grant (HUG)

In England, The Home Upgrade Grant Scheme is available for low-income, off-gas households which aims to provide energy efficiency improvements, such as insulation, double glazing and low-carbon heating. This makes homes warmer and more comfortable whilst lowering energy bills and striving towards Net Zero 2050 targets by reducing carbon emissions.

How to get accredited:

Over 1,000 installers have already registered for the scheme. To sign up to be a registered Green Homes Grant installer, ensure the qualifications held meet the minimum requirements that you must already have and then follow **the six steps:**

1: Register as a certified installer with TrustMark

You must be a TrustMark certified installer, you'll be added to a directory and homeowners can make contact to retrieve a quote.

2: Register to be a Green Homes Grant Installer on GOV.UK

Once registered as a Green Homes Grant installer, there is a requirement to sign the Terms and Conditions of the scheme and provide details for payment. Each scheme's measures planned to be undertaken need to be registered individually. Before undertaking any work under the scheme, all companies must have received confirmation that their registration has been successful.

3: Once registered, you can give quotes to customers

The price quoted must reflect the total costs of the installation including materials, labour and VAT. The quote must not be higher than the price which would have quoted if the installation was not being carried out under the scheme.

4. Once you give your quote to the customer, they can apply for a voucher

Once approval received, a voucher will be issued containing your name or your business's name. Vouchers cannot be used to assist paying for works that were carried out prior to the voucher being issued.

5. When your customer receives their voucher, you can start work

Following approval of the customer's application the work can commence. It must not be before the approval is received, the voucher received and they have asked you to go ahead with the work.

6. When the work is complete, you'll be paid in 5 working days

Once the work has been finished and you have received the customer contribution to the application then the costs covered by the voucher will be paid. The grant payment is usually payable within 5 working days and sent from the grant administrator. If the customer is contributing then it is a condition of the voucher eligibility you mustn't accept non-payment or pay it yourself as this will invalidate the voucher and constitute fraud.

Why become a Green Homes Grant Installer: Some of the benefits of becoming a Green Homes Grant Installer are detailed below:

- .£2 billion of government money available for homeowners to make home improvements under the Green Homes Grant scheme.
- It generates new work for accredited tradespeople in green construction, supporting more than 100,000 jobs throughout the UK.
- Increases in customer volumes due to the increasing requirement and demand for green home improvements.
- Playing your role in making the housing stock fit for the future. Working together to provide low-carbon homes, enabling healthier and more comfortable living conditions, whilst aiding reach the goal of net-zero carbon by 2050.
- It is estimated that 24 million homes across the UK need energy-efficiency improvements, which is a huge opportunity for tradespeople.
- It creates an opportunity to showcase the business's green credentials and enhance its reputation within the sector as a trusted installer, with a Trustmark quality marker.

GLOSSARY

A

Air Source Heat Pump

An air-source pump uses the outside air as the basis for collecting heat and as the 'sink' to replace the heat indoors if they're being used to cool the internal climate. Air-source heat pumps are available in two methods - Air to Air Heat Pumps and Air to Water heat pumps. In the UK, Air to Water heat pumps are more popular as existing heating systems are water based. As Air-Source Heat Pumps are more environmentally friendly than boilers as they don't require fuel to burn to create heat which is hugely beneficial. They are more cost effective as they generate more energy than they use.

B

Boiler Upgrade Scheme (BUS)

The Boiler Upgrade Scheme is aimed at lowering the upfront cost of installing a low carbon heating system such as heat pumps or more energy efficient boilers.

You can get: £5,000 off the cost of installing an air source heat pump:

- £5,000 off the cost of installing a biomass boiler
 - £6,000 off the cost of installing a ground source heat pump
- The eligibility criteria is living in England or Wales and owning the property.



GLOSSARY

B

Battery Storage

Home battery storage actively stores excess electricity that is generated throughout the day from home generation (like solar panels). The purpose is later in the day aren't generating enough power - such as in the evenings or on cloudy days the reservation of energy this energy can be used. Battery storage is ideal if the household uses more electricity in the evening than in the day, as the energy is stored in the battery, rather than relying on the national grid. There are numerous types of solar storage batteries, including lithium-ion, lead-acid and flow batteries. Lithium-ion batteries are the most commonly used type of solar storage battery as their benefit include their high energy density, long lifespan, and low maintenance requirements. The capacity of a solar storage battery is commonly measured in kilowatts-hours (kWh) and varies depending on the size of the solar power system and the energy needs of the user. The larger the battery, the more energy it can store, and the longer it can provide energy for. The average battery currently holds 10 kWh, which is considerable the average hourly use in the UK is 0.43 kWh. Theoretically from a full charge, you'll be able it will be power a home for approximately 20 hours but it should be considered energy usage does tend to be higher in the evening!

GLOSSARY

C

Cavity Wall Insulation (CWI)

CWI is a layer of insulation material placed between an exterior and interior wall to assist in retaining the heat within the house. It exists in houses built post-1990 as a more effective way of reducing heat loss- compared to previous buildings which were built with a thicker exterior wall to help keep it warm. The insulation material is usually mineral wool (the stuff you'll find in your APC) but it can consist of beads and granules, or foam. It's installed by drilling a small hole in the wall and then blowing it in. Cavity Wall Insulation isn't suitable for properties situated in very rainy areas as the likelihood of it getting wet is hugely increased.

D

Demand Controlled Ventilation

Demand Controlled Ventilation manually or automatically manages the airflow in a property to meet the exact requirement at a given time. If one room is empty and another is full, or if one room isn't used much throughout the year then the ventilation system will push the airflow to this part of the property. This generates a more energy-efficient house as it reduces the spend on heating and cooling specific rooms and ensures there's no build-up of dampness or condensation which can cause structural issues later on.

Double Glazing

Double glazing involves adding two layers of glass in a window frame. Adding another layer of glass in windows and glass doors helps to lessen noise, retain heat and increase security. The work involves removing existing windows before filing a new frame in the brickwork, and then finally, the new glass will be secured into place. While triple glazing is gaining more popularity, double glazing has still the standard in most of the UK since first being introduced in the 1980s as there is a costly difference between the two.

GLOSSARY

D

Draught Proofing

Draught proofing in its most basic form is simply blocking or sealing any openings where air or heat might escape from the property. This can reduce both heating costs and emissions as it reduces the amount of energy used as none of it escapes. A lot of draught proofing can be done without a tradesperson, it can be easily fixed by placing plastic strips around the edge of your windows or putting a draught excluder along the bottom of external doors. Other work will include having insulation fixed around your air conditioning hatch or having your front door replaced all together by a professional.

E

Electric Vehicle Charging (EV)

EV home charging charges electric cars at home to generate miles to be used the next day. The charger joins up to the mains and powers the car through a connector cable. If only off-street parking is available then a charger can be retrofitted on the wall adjacent to where you park your car. These can be used in conjunction with a home battery and Solar PV system storing energy generated at home and using it to charge your car without it costing you from the grid.

Energy Efficient Lighting

Energy efficient lighting is a retrofit measure is one that the homeowner can save money from and do it themselves. By replacing older incandescent light bulbs with longer lasting, energy efficient bulbs will use less energy to power them and reduce energy bills and carbon emissions. There are two main types of energy-efficient lighting: light emitting diodes (LEDs) and compact fluorescent lamps (CFLs).

GLOSSARY

E

Energy Performance Certificate (EPC)

EPC ranges from A to G, with A being the most energy-efficient a house can be and G being the worst. Insulation, the windows and the fabrics of the building in addition to boiler and generation are all taken into consideration in the certificates. EPCs were introduced by the government in 2007 following a directive by the European Union on the energy performance of buildings. The aim was to make the homeowners more informed about how energy-efficient their property is. Currently, the understanding is that any property below C is energy inefficient. An EPC is broken down into four sections:

- The property details
- The rating
- The top actions you can take to improve your score

External Wall Insulation

(EWI) EWI is cladding that is attached to the outside wall of a property to improve heat retention and protect against the elements, it also improves the exterior aesthetics of the home. External Insulation is most suitable for solid walls – commonly built before 1920 - and it fixes a layer of insulation material to the outside wall, before covering it in render (plasterwork) or cladding. The finishing can be tailored to your requirements and wishes - smooth, textured, painted, tiled, panelled or pebble-dashed. Depending on your property, external insulation work can be completed in between 3 and 6 weeks. External Insulation is about £100 per sqm. On average, External insulation costs £12,000. The Energy Saving Trust states - adding solid wall insulation could save you between £930 (Detached) and £240 (mid-floor flat) per year in energy costs, so, you're likely to have the difference paid off in about 10 years as well as the instant benefits and reduced energy bills

GLOSSARY

F

Fabric First

The "fabric-first" approach to retrofit is a sustainable building strategy that prioritises enhancing the thermal and structural performance of a building's existing "fabric" or envelope (i.e., walls, roofs, floors, and windows) before implementing other energy efficiency measures. This approach focuses on improving the fundamental building elements responsible for heat retention, air tightness, and moisture control. By strengthening the building envelope first, the fabric-first approach aims to reduce energy consumption, enhance occupant comfort, and minimise environmental impact. It involves measures such as adding insulation, sealing gaps and cracks, and upgrading windows and doors to optimise a building's energy efficiency and sustainability while preserving its architectural integrity.

Flat Roof Insulation

Flat roof insulation is used to reduce a property's heat loss through the roof and greaten the property's energy efficiency. This can be done by either:

- Warm Flat Roof Insulation - adding insulation material to the outside of the roof which is the most effective in reducing energy use.
- Cold Flat Roof Insulation - fitting insulation within the joists of the roof, which is most cost effective.

Floor Insulation

Floor Insulation is the process of inserting a layer of insulating material such as mineral wool or natural fibres in the space between floorboards and the ground below to achieve greater heat retention. Insulation can be inserted over the top of solid flooring before adding another layer of flooring over the top. Floor insulation greatly reduces or slows the transfer of heat out of the home through the ground.

GLOSSARY



Generation (Home)

Home generation refers to generating electricity from either wind, sun or water through technologies such as solar, wind turbines or hydroelectric. The energy generated can power appliances and electric vehicles. This reduces your dependency on the grid and decreases your energy costs as you import less. Another benefit is excess energy that you export into the grid via your energy supplier can be made in return for money. Anyone who installed a home generation pre-2019 may be paid via the Feed-in Tariff (FIT) scheme, and if you had your generation installed in 2019 you'll be paid via the Smart Export Guarantee (SEG). It will result in the reduction of home carbon emissions as it is a clean form of energy generation.

The Great British Insulation scheme

Previously known as ECO+ is a government scheme to help homes decrease their energy usage by installing energy efficiency measures such as insulation. The £1 billion scheme is expected to help around 300,000 homes in the UK and is aimed at assisting those on the lowest incomes or with homes with the lowest energy ranges (D and below). The scheme works by obligating energy suppliers to assist customers in making their homes more energy efficient, distributing their share of the £1 billion to install measures like cavity wall insulation and other retrofit improvements.

GLOSSARY

G

Green Financing

Green home finance is money put in place by banks, lenders and financial institutions to help and enable investments in the construction of green homes, or improvements such as home retrofit that lower the impact of homes on the environment through reducing energy consumption and therefore carbon emissions. A popular green finance product is the 'green mortgage'. The idea is that banks benefit as homeowners will pay more towards their mortgage if they are spending less on energy bills. The incentive for homeowners is they will benefit from a better mortgage as a result of the changes they make, so mortgaging to a green mortgage can free up cash initially and long term you benefit from a better-fixed deal on your home.

Ground Source Heat Pumps (or ground-to-water heat pump)

Transfers heat from the ground around the property to warm the home through radiators or underfloor heating. It also heats the water. To achieve this a network of pipes are buried underground nearby. These pipes are then pumped full of water and antifreeze, creating a mixture called Thermal Transfer Fluid (TTF). The TTF moves around the pipes, absorbing the naturally occurring heat that is stored in the ground. When it reaches the pump, this mixture is then compressed (similar to the air source pump) and then pushed through the heat exchanger which retracts the heat and transfers it to the heat pump, then pushed to the home heating system.

GLOSSARY

H

Healthy Home

A healthy home is defined as a home which is totally energy efficient and is up to date with its maintenance. It must be well-ventilated, fully insulated and have the most efficient, clean generation system. There should be no major repairs and most importantly it should be comfortable to live in.

Heat Loss

Heat loss happens when the heat that is generated inside the property is transferred through walls and windows and fabric out of the building, referred to as fabric heat loss. Heat loss is also transferred, via draughts of air, and holes in the fabric, which are then replaced by cooler outside air from outside, known as ventilation and infiltration losses. To reduce this home retrofit measures can be taken, for example, improving insulation in the walls of your home, and through improved windows that have at least double glazing and trickle air vents. It's also worth considering the heat loss from external doors.

Heating and Hot Water Controls

Heating controls monitor the amount of heat coming from a boiler to heat the home and water. Basic heating controls trigger the boiler to switch on and go off through a thermostat. A thermostat is set to the aimed temperature in a room and directs the boiler to come on in that room until the temperature is reached. Once the room has reached the desired temperature the thermostat will turn the boiler to go off again. There are other more advanced heating controls to set different rooms to different temperatures depending on whether they're in use, and can keep your home regulated at a specific temperature rather than turning the heating on and off again.

GLOSSARY

H

Heat Pump

A heat pump is a machine that can heat a building by transferring outside energy into the property as heat. This can replace a boiler or air conditioning unit. There are three types of heat pumps; ground source, air source and hybrid. A ground source heat pump takes energy from the ground, an air source heat pump from the air, and a hybrid does a combination of both. As heat pumps use less energy to power themselves than the energy they create in the house, and because they use pre-existing energy, they burn no fuel and therefore create no emissions.

Home Assessment

A retrofit assessment involves an assessor performing an in-depth inspection of your property to find out what changes are needed to make it more energy-efficient. As part of the assessment, the assessor will talk to you about your plans for the home and any constraints on getting work done. They'll then perform a Standard Assessment Procedure (SAP) inspection, and a ventilation inspection and may use thermal imaging to assess how energy-efficient the property is, and how it can be improved. The retrofit assessor will spend the first half of the visit talking with you about your property, your aspirations for the home and what obstacles exist to getting certain jobs done (these could be financial, structural or time constraints). They'll then conduct a Reduced Standard Assessment Procedure (RdSAP) inspection. This looks at how much energy your house is using to reach a specific level of heat. The assessor will also carry out a ventilation report, to see how your house handles dampness and the like. You can see all the changes needed rather than committing to one job and finding there's still work to do. You get a plan that shows the return on investment in your bills and your property value. Your assessor can provide accredited contractors to carry out the work rather than finding your own.

GLOSSARY

H

Home Energy Plan

After a home has been assessed and findings analysed, the information will form a plan that forms part of your home energy dashboard. This looks at Your current energy efficiency, house value, carbon emissions and what work needs to be required - The level of improvement that can be met in energy efficiency, carbon emissions and house value - It lays out the scope for the work required and timescales for the work. Following this you can choose whether this is done through chosen or your contractors.

Home Energy Storage

Home Energy Storage is the practice of storing electrical energy generated at home for later use. Normally a battery is attached to solar panels to store excess energy that is generated during the day. The purpose is later in the day aren't generating enough power - such as in the evenings or on cloudy days the preservation of energy. There are various types of batteries, including lithium-ion, lead-acid and flow batteries. Lithium-ion batteries are the most frequently used type of solar storage battery due to their high energy density, long lifespan, and low maintenance requirements. The capacity of a battery is normally measured in kilowatt-hours (kWh) and varies depending on the size of the solar power system and the energy needs of the user. The bigger the battery, the greater energy it can store, and the longer it can provide energy. The average battery currently holds 10 kWh, which is considerable the average hourly use in the UK is 0.43 kWh. Theoretically from a full charge, you'll be able it will be power a home for approximately 20 hours but it should be considered energy usage does tend to be higher in the evening!

GLOSSARY

I

Internal Wall Insulation (IWI)

IWI is the process of filling insulation material inside the walls of a property and is one of the best ways of ensuring it retains energy. The difference between this and cavity wall insulation as internal insulation can reduce floorspace slightly. IWI either involves attaching rigid insulation boards to the wall inside or building a stud wall and filling it with insulation material such as mineral wool fibre. A stud wall is required to be at least 120 cm thick to be effective, so it is a crucial consideration of which option to pick.

J

Junctions

Are where walls meet roofs, floors, etc. – these require insulation and attention should be made to lessen heat loss and prevent thermal bridging.

K

Kilowatt-hour (kWh)

A unit of energy generally used to measure electricity consumption. When retrofits involve energy efficient measures, reductions in kWh are commonly reported.

K-Value (Thermal Conductance)

is a measure of how easily heat can flow through a material. The lower the K-values the better insulated the property is.

GLOSSARY

L

Loft Insulation

Loft Insulation (aka APC insulation) is the placing of insulation material within the Los. Normally, this material is placed between the racers and joists. This placement reduces the amount of heat lost from the APC - thus keeping the house warmer. Los insulation can be made from many materials, including fibreglass, mineral wool, cellulose, foam and reflective foil. Budget, effectiveness and climate should be taken into consideration when choosing a material.

Landscaping (Energy Efficient)

Energy-efficient landscaping is an environmentally friendly and sustainable type of landscaping. It aims to create aesthetically pleasing, and functional, outdoor spaces whilst prioritising reducing energy consumption and the use of natural resources. It focuses on practices such as Suitable plants for the climate and soil. The practice uses native and drought-tolerant plants due to their lesser need for maintenance and water. Effective irrigation. It prioritises efficient watering systems such as drip systems or smart irrigation controllers as they can adjust speeds depending on the weather. Using foliage as windbreaks and shade. By strategically placing trees and other vegetation, it controls the temperature in buildings, minimising the need for internal climate control. Permeable surfaces. Utilising materials such as gravel or porous asphalt let rainwater soak into the ground. Green Exteriors. Installation of vertical and roof gardens can improve insulation and increase energy efficiency. Rainwater harvesting. The collection of rainwater in cisterns or barrels to reuse in irrigation. Wildlife Habitats. The creation of a wildlife-friendly habitat and native species, plus features such as bird baths and shelter.

GLOSSARY

L

Leadership in Energy and Design LEED Certification

LEED is the world's most widely used green building rating system. It is applicable for nearly all building types, the certificate provides a framework for healthy, efficient, and cost-saving green buildings, which offer environmental, social and governance benefits. LEED certification is a globally recognized symbol of sustainability achievement, and it is supported by an entire industry of combined organisations and individuals aiming to transform the industry.

M

Monitoring

Monitoring is reviewing the effectiveness of your retrofit home improvements to demonstrate the return on investment by energy and emissions that are reduced. Smart meter data and air quality and temperature sensors are used to track the effectiveness of the improvement in the home. Home Monitoring allows you to get a means clear picture of the property's health and ensure that energy efficiency has improved. If anything is not as efficient as promised or planned then capturing it through Home Monitoring allows it to be reported

N

Nest Thermostatic

Is a 'smart' self-learning thermostat that learns a home's ideal temperature and the occupant's routines to optimise its schedule to provide the most efficient use of energy. It is compatible with most standard central heating systems, and can be set to run automatically or controlled manually via an app. Its benefit include making recommendation to reduce energy usage and therefore, bills and carbon footprint.

GLOSSARY

N

New Home Buyers Report

A Home Buyer Retrofit Plan ensures when a homeowner is completing their home purchase with a plan of improvements to increase the new home's energy performance. The EPC and RICS survey indicate the home's energy performance and building condition but usually do not provide information on how to effectively plan and commence the renovation project. Whereas, the Home Buyer Retrofit Plan can help understand how energy efficiency improvements can integrate with the suggested building condition improvement measures from your RICS report.

O

Occupancy Modelling

Is the process of designers and engineers considering how the occupier of a property behaves within their home. The benefit of this is the design is created around the occupant habits such as when in the week they use the most energy. Occupancy patterns and occupant behaviour are even more crucial to energy and thermal performance in models that include occupancy-based controls. These modelling approaches based on the occupant can consider temporal, spatial and occupancy resolution.

P

Passive home (aka "Passive House")

Is a building standard and design approach focused on high levels of energy efficiency, indoor air quality and comfort, alongside a significant reduction of energy consumption for heating and cooling.

They are designed to maintain a consistent indoor temperature without traditional systems such as boilers or air conditioners. Instead they utilise passive design principles such as insulation, airtight construction and energy recovery systems.

GLOSSARY

P

PAS 2035

Is a code of practice created to ensure that retrofit standards and approaches on UK housing stock are done to a consistent standard. It was created in 2015 to address a lack of reliability in retrofit projects in the past.

Project Support

Is offered on the back of receiving a Home Energy Plan which outlines what your home requirements are and how it can be improved. Full project management offered will organise the work, installation and the full end to end process including aftercare and deadlines to achieve this. If the homeowner wishes to be more involved other Project Support can be offered where they will source the contractors and they will be given advise throughout on the process to ensure the plan goes smoothly.

Q

Quality Assurance

Ensuring that retrofit works are completed to the highest standard and performance.



GLOSSARY



R

Rainwater Harvesting

Is the sustainable practice of gathering rainwater that falls on rooftops to be reused. The simplest way of collecting rainwater is via a roof, gutters and downpipes. It is then held in a container such as a rainwater barrel. Once stored, it is commonly used for non-potable applications such as washing clothes, toilet flushing and watering the garden. An additional benefit of collecting rainwater is the reduction of water into sewers and drains, which as a result minimises the risk of flooding

Retrofit

Is the process of upgrading existing buildings with technology, whilst also focusing on a 'fabric first' approach: ensuring heat preservation is prioritised over heat creation. This increases energy efficiency and reduces carbon impact with a reduced requirement for heating. Retrofitting existing structures reduces the environmental footprint of our current stock and the energy efficiency improves, with the happy by-product of lower bills.

Retrofit One-Stop-Shop

Is a service that makes the process of retrofit straightforward. The one-stop-shop will do provide you with a tailored list of options and a defined plan based upon your requirements which saves time for many.

GLOSSARY

S

Smart Meters

A device used to measure a building's energy usage. This can be electricity, gas or water consumption. The transmission of real-time data to energy suppliers results in greater accuracy of meter readings for utility companies and ensures that homeowners have transparency of their energy usage. This enables occupants to be informed and adapt habits accordingly if they want to reduce energy consumption for cost or environmental reasons.

Solar Panels

Are panels of semi-conductive material (usually silicon) designed to generate electricity when light shines on them? The stronger the light, the more effective the connection, and the more electricity is created. Even on a cloudy day, it is possible to generate electricity from solar panels. In bright sunlight, a single panel can create over 350 waBs but typically each panel creates 265 waBs per day. Most systems commonly have between 6 and 12 panels installed. The generated electricity can be used in the home or sold to the grid. The current generated is DC, so an inverter is also installed as part of the process, to turn it into AC for use in the home. This can then be stored in a solar battery, for your system to use. It has proven to reduce energy bills and it results in a lesser requirement to export from the grid. They're also clean sources of energy which results in improved household carbon emissions too.

GLOSSARY

S

Solid Floor Insulation

Is required if there are concrete floors in the home. It is made of rigid insulation foam. In an existing solid floor, the insulation will be placed on top of the existing floor and the chipboard laid on top. Assessment of skirting boards and sockets is required before installation as it raises the floor height. In a new-build or floor replacement work, insulation will either be installed above or below the concrete. If it's below the concrete, it may store heat during the day which will help raise the temperature at night. If it's above the concrete, the room will heat faster in the morning. It is usually advised to lay a damp-proof membrane beneath the insulation.

Solid Wall Insulation

Is required for homes built before the 1920s as this was before cavity walls became standard in new builds. External wall insulation (EWI) involves placing solid insulation boards on the external wall before covering it with render, reinforcing mesh and potentially a new render. Internal wall insulation (IWI) is comparable but has an addition of a solid insulation board or creating a stud wall and filling that with mineral insulation or similar. Commonly exterior insulation boards are preferable as there is less disruption to the house in installing these. Internal insulation will reduce floor space in the insulated room. The other factor to consider is stud walls are not suitable for hanging heavy objects onto reducing suitable shelving options.

GLOSSARY

S

Sound proofing

Is an imperative part of home retrofit. It reduces the amount of noise that comes in and out of your home so that occupants have peaceful homes. Or they can turn the music up and party a bit more without disturbing your neighbour. Improvements such as double and triple glazing, and insulation can limit the amount of noise coming in and out of the property, and occupants are less likely to be disturbed by traffic outside.

Super Homes

Refers to a network of homeowners who have refurbished their houses to the highest standard of energy efficiency – resulting in very minimal energy being wasted in the home, and no reliance on fossil fuels for energy. The network was established in 2007 to raise awareness of how homeowners could reduce their household carbon emissions by 60-80%, and inspire others to follow. In the first stage, 222 homes gained Super Homes status. In 2021 there was a relaunch with the support of the National Energy Foundation.

Suspended Floor Insulation

Is compulsory in the event of floorboards (suspended floors) rather than concrete. As they are less effective at maintaining heat (due to being above a void) the gap between the joists should be filled with insulation. This is standardly in the form of mineral or sheep's wool, but can also be hemp, recycled plastic bottles, rigid insulation boards or spray-foam insulation. It is crucial to ensure enough ventilation is available, otherwise, the floorboards will rot.

GLOSSARY

T



Triple Glazing

Is two or three layers of glass in a window frame. By adding another layer of glass in windows and glass doors, it helps to lessen noise, retain heat and increase security. While triple glazing is gaining more popularity, double glazing has still the standard in most of the UK since first being introduced in the 1980s as there is a costly difference between the two.

Thermal Imaging

Also known as infrared thermography, is a tool that can be used in a home energy assessment. It provides a visual of areas in the building where energy is lost. In addition, it identifies why energy is being lost whether it be due to inadequate insulation, air leaks, or other issues that can result in higher energy bills and discomfort for the homeowners.

Thermal Bridging

In the context of building and construction refers to a situation where a pathway of significantly higher heat conductivity allows heat to bypass or "bridge" around insulation materials within a building's envelope. Often these pathways occur at structural elements such as wall studs, concrete beams, or metal framing, as they conduct heat more efficiently than insulation materials like fibreglass or foam. In areas where thermal bridging is present, heat can escape or enter a building more easily than in insulated sections, resulting in temperature variations, a reduction in energy efficiency, and potential issues like condensation or mould growth. Thermal bridging is a critical consideration in building design and retrofitting to ensure adequate insulation and optimal energy performance.

GLOSSARY

U

Underfloor Heating

Is a heating system that warms your floor, it can act as your primary heat source, replacing your radiators or heating. There are two forms either by electric cables that generate heat or as a water system that uses piping and a pump to push the hot water around the floor.

V

Ventilation

Refers to the process of providing controlled airflow from the interior to the exterior of a building to keep air quality high, remove pollutants and maintain internal comfort. Installation of ventilation of insulation is required in floors, walls and APC to allow effective moisture control and avert roping. It comes in the form of mechanical ventilation (heat, ducts or natural ventilation solutions such as windows or vents).

W

Whole House Approach

Is considering the entire home and all its interacting parts when carrying out improvements. This includes the fabric of the building, the insulation, the heating system, the ventilation and airtightness. The benefit of looking at the home in its entirety is it ensures all the components work together optimally. Whereas, if fragmented changes are made there is a greater risk of discrepancies between the changes made or that the changes have negative impacts on each other. It's also more cost-effective to take a whole-house approach for the homeowner as they don't have to pay for new contractors and equipment each time. Another benefit is it is less disruptive to have workers in just once.

GLOSSARY

X

Xeriscaping

Is the practice of designing landscapes that reduce or remove the necessity for irrigation. This results in the natural climate being able to provide enough water to nourish its vegetation. In areas that experience little rainfall, it has become a feasible substitute for landscapes which require much water (such as lawns). It can self-sustain and reduce water consumption between 50% and 75% which has caused an increase in popularity. Examples of xeriscaping plants include cacti, agave and juniper.

Y

Yield

In the context of energy retrofits is the measure of a return on investment on a specific retrofit measure or the amount of energy produced (as in the case of solar panels).

Yearly Energy Consumption

Is a metric that can be used to determine the success of a retrofit project in terms of energy savings by homeowners or companies.

Z

Zero Emissions

The UK government aims to achieve Net Zero Emissions by 2050. To accomplish this there is a requirement to decarbonise the country's housing stock, along with all other industries. Every single minute 1.8 homes need to be retrofitted between now and 2050 to achieve this..



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