



Introduction

Amo Sihra, Commercial Director
at Elmhurst Energy



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DesignBuilder



EPC Reform Update & HEETSA

Simon Flint, Elmhurst Energy



EPC Reform

EPC reform represents the most significant shake up of Energy Performance Certificates in Scotland in over a decade.

Aim:

- Scotland's journey to net zero by 2045
- Clearer, more meaningful information for property owners and occupiers
- Reliable retrofit guidance
- Consumer confidence



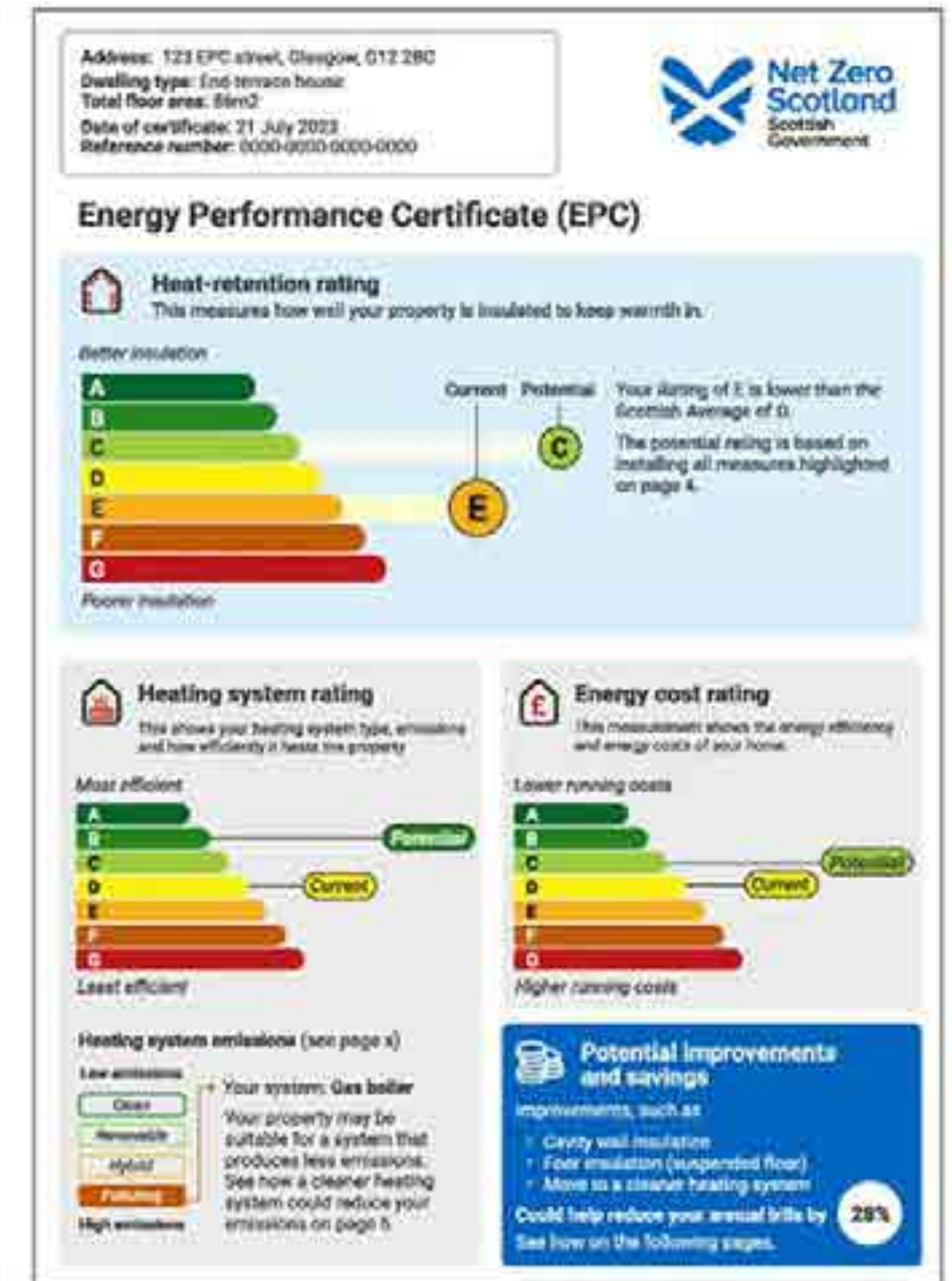
EPC Reform

Energy Performance of Buildings (Scotland) Regulations 2025

- A new direction for EPCs in Scotland – new style EPC certificates, validity periods and rating systems.
- No longer coming into force in Oct 2026 as planned – current EPC system remains in place until further notice.
- Reflects our current understanding and could be subject to change under new Government
- New HEM Methodology required



Use code
to see our
worked
analogy



Timeline

Year	Milestone	Significance
2023	EPC reform consultation	Identified need for clearer, more useful energy performance metrics
2025	New EPC regulations & HEETSA consultation	Confirmed multi-metric EPC model and introduced HEETSA concept
2026	Implementation delay & HEETSA framework design	Alignment with UK reforms
2027 (expected)	Reformed EPC regime goes live	New EPC ratings replace legacy certificates / hem
Post-2027 (expected)	HEETSA rollout	Provides building-specific retrofit decision support
2045	Net zero target	

EPC Reform – what's new?



- A new EPC rating system – three new headline metrics
- A new property report (HEETSA)
- EPC validity changes to **5 years** from 10. Trigger points for EPC's are not changing.

EPC Reform – what's new?



- New onsite Audit and Inspection function
- Proposed new lodgement fees - £6 domestic, £15.50 non-domestic (increase of £3.40 from current fees)
- Launch of a new digital EPC Platform
- New Scottish EPC Accreditation Scheme / Approved Organisations

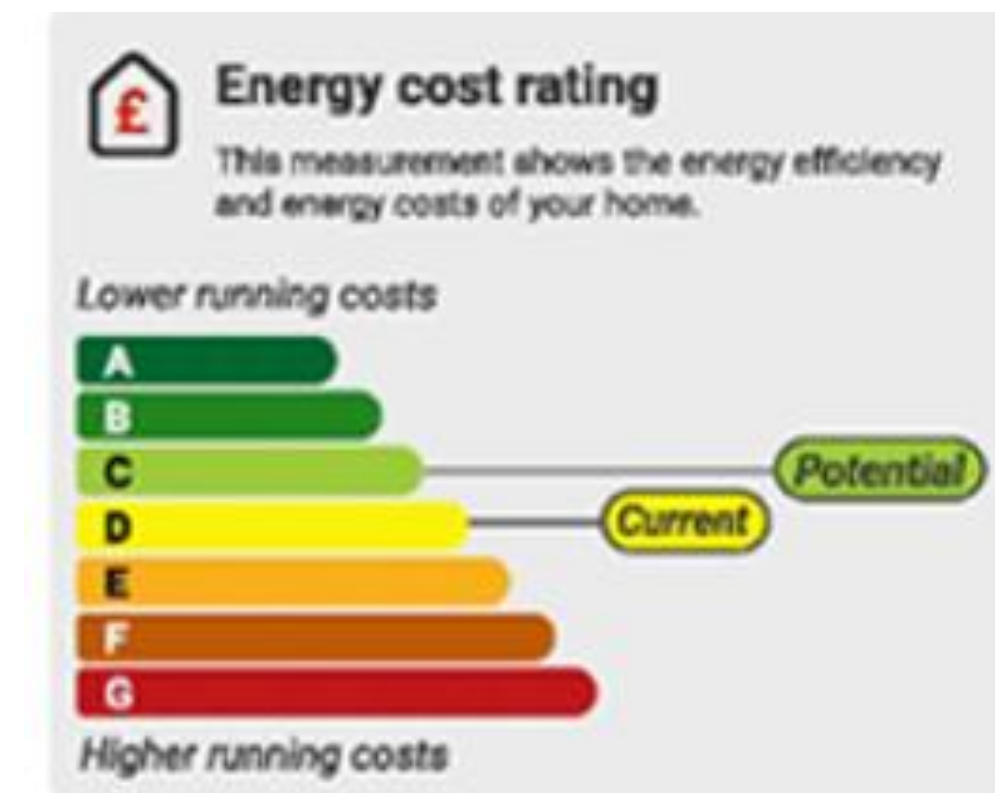
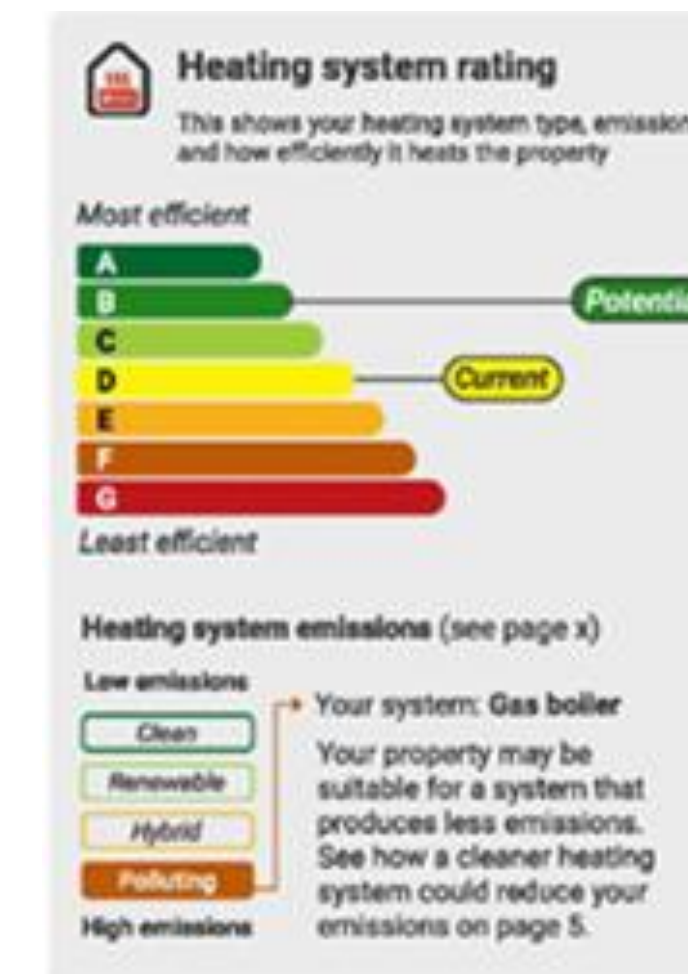
EPC Reform – New metrics (DEA)

Proposed three headline metrics:

- **HEAT RETENTION RATING** – reflecting fabric energy efficiency
- **HEATING SYSTEM RATING** – covering type, emissions and efficiency
- **ENERGY COST RATING** – updated version of the current EER rating

The ratings will continue with a A-G scale with both current and potential ratings also being displayed.

Emissions Indicator and Primary Energy Indicator ratings will remain, along with a new Energy Use Indicator displayed on the EPC.



EPC Reform – New metrics (NDEA)



Proposed metrics:

- **ENERGY PERFORMANCE RATING (A-G)** – based on modelled emissions from regulated energy use relative to a reference building
- **DIRECT EMISSIONS RATING (kgCO₂/e/m²/year)** – shows the building's direct operational emissions from regulated energy use
- **ENERGY USE RATING (kWh/m²/year)** – based on modelled regulated energy demand under standardised conditions
- **HEATING SYSTEM RATING** – Secondary indicator, aligned with approach for revised domestic heating system approach.

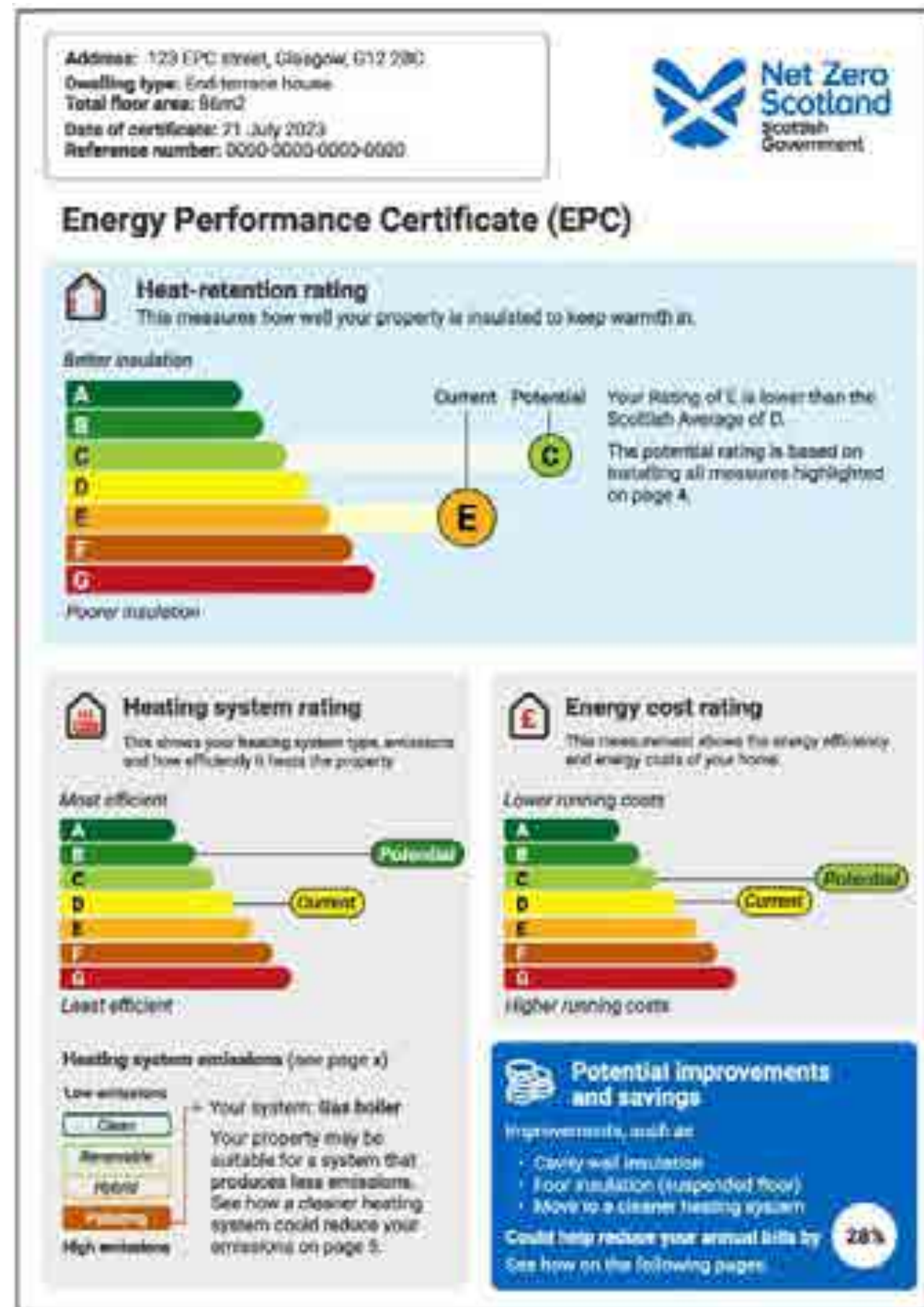
EPC Reform – Improvement measures



‘**Recommendations**’ will be renamed on EPC’s – ‘**Potential Improvement Options**’

- Clarify any possible limitations
- Clear advice on sources of funding
- Possible link to HEETSA
- Alignment with net zero policies

EPC Reform – New EPC Design



Potential new EPC front page design

- Property address/floor area/date of certificate/Ref number
- Three headline metrics

EPC Reform – EPC Summary



Property Report

Address: 123 EPC street, Glasgow, G12 2BC
Reference number: 0000-0000-0000-0000

Heat retention summary of this home

This drawing illustrates the distribution of heat lost in your property. It highlights the key areas where heat escapes, including the roof, walls, windows, and floor. Understanding these figures can help you identify the most effective ways to improve energy efficiency and retain heat and reduce heating costs.

How to interpret the ratings:

Very good (most efficient)

Good

Good

Average

Poor

Poor

Very poor (least efficient)

Does not apply

1 Walls

Solid brick, as built, no insulation (assumed)

Timber frame, as built, insulated (assumed)

2 Roof

Pitched, 200 mm loft insulation

Pitched, no insulation (assumed)

Roof room(s), insulated (assumed)

3 Floor

Suspended, no insulation (assumed)

4 Windows

Fully double glazed

'Assumed' means that the insulation could not be inspected and a determination has been made based on age and type of construction.

This feature meets a good standard of energy efficiency.

42% Escapes through the roof

22% Escapes through the windows

24% Escapes through the walls

12% Escapes through the floor

Page 3 of 8

Next: Potential heat retention improvements

Property Report

Address: 123 EPC street, Glasgow, G12 2BC
Reference number: 0000-0000-0000-0000

Potential heat retention improvements

How to read this page:

- The measures below aim to improve the heat retention and reduce the emissions of this property.
- The 'Potential improvement options' are suggested first steps, starting with low-cost options that provide good value, followed by higher-cost improvements with long-term benefits.
- Performance ratings are cumulative, assuming the measures are implemented in the order listed.

1

2

3

4

1

2

3

4

Your heat retention rating **E**

After improvements ↓

Potential improvements	Estimated installation cost	Estimated annual saving	Potential ratings after improvements
1 Cavity wall insulation	£500 – £1,500	£1,053	D E
2 Floor insulation (suspended floor)	£800 – £1,200	£438	C

This feature meets a good standard of energy efficiency.

Funding available. See next page for details.

You should consider seeking professional advice before installing energy efficiency measures. Further advice and information can be found online at <https://scot.gov/12345>

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Next: Heating system information

Property Report

Address: 123 EPC street, Glasgow, G12 2BC
Reference number: 0000-0000-0000-0000

Heating system information

Current: Gas boiler	Estimated efficiency	Estimated running costs	Estimated emissions (kg CO2/m ² /year)	Estimated installation costs
Poluting heating: Systems that produce harmful gases into the atmosphere at the point of use within the property.	F	F	51	N/A already in place

Personal alternative heating system	Estimated efficiency	Estimated running costs	Estimated emissions (kg CO2/m ² /year)	Estimated installation costs
Clean heating: Systems such as heat pumps, connection to a heat network, or electric systems such as storage heaters.	A	B	Zero	£10,000
Renewable: Systems fuelled by bioenergy, which is a renewable source of energy. Emissions are balanced against carbon dioxide that was absorbed by the fuel as it was grown.	C	D	13	£5,000
Hybrid: Systems that combine poluting heating or bioenergy heating source with a clean heat source, such as hybrid heat pumps. These can have lower emissions than poluting heating systems.	B	B	24	£5,000

Our homes and workplaces account for around a fifth of Scotland's total greenhouse gas emissions. The heating systems in most of our homes produce emissions when we use them.
Get help at: <https://scot.gov/12345>

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Next: Other energy efficiency improvements

#ElmhurstScotConf26

EPC Reform – Further information



Potential improvements and any further information.

EPC Reform – transition period



- One year transition period – 31st Oct 2026 – 31st Oct 2027 (dates subject to change due to delay)
- After the 31st October 2027 (tbc) – only the new style EPC will be allowed for sale or let. (This also applies to short term lets)
- Penalty charges remain unchanged - £500 domestic properties. (subject to consultation response)

Home Energy Model (HEM)



HEM



- Replacement for SAP Methodology.
- A complete rebuild of the methodology.
- Initially to be used to assess compliance for the Future Homes Standard.
- Interim SAP 10.3 to be used until HEM is properly phased in.
- Aim – late 2027 launch (Existing buildings)

HEM



Raw HEM Engine = The car engine



Wrappers = The Car Body and Components



Elmhurst = The Mechanic



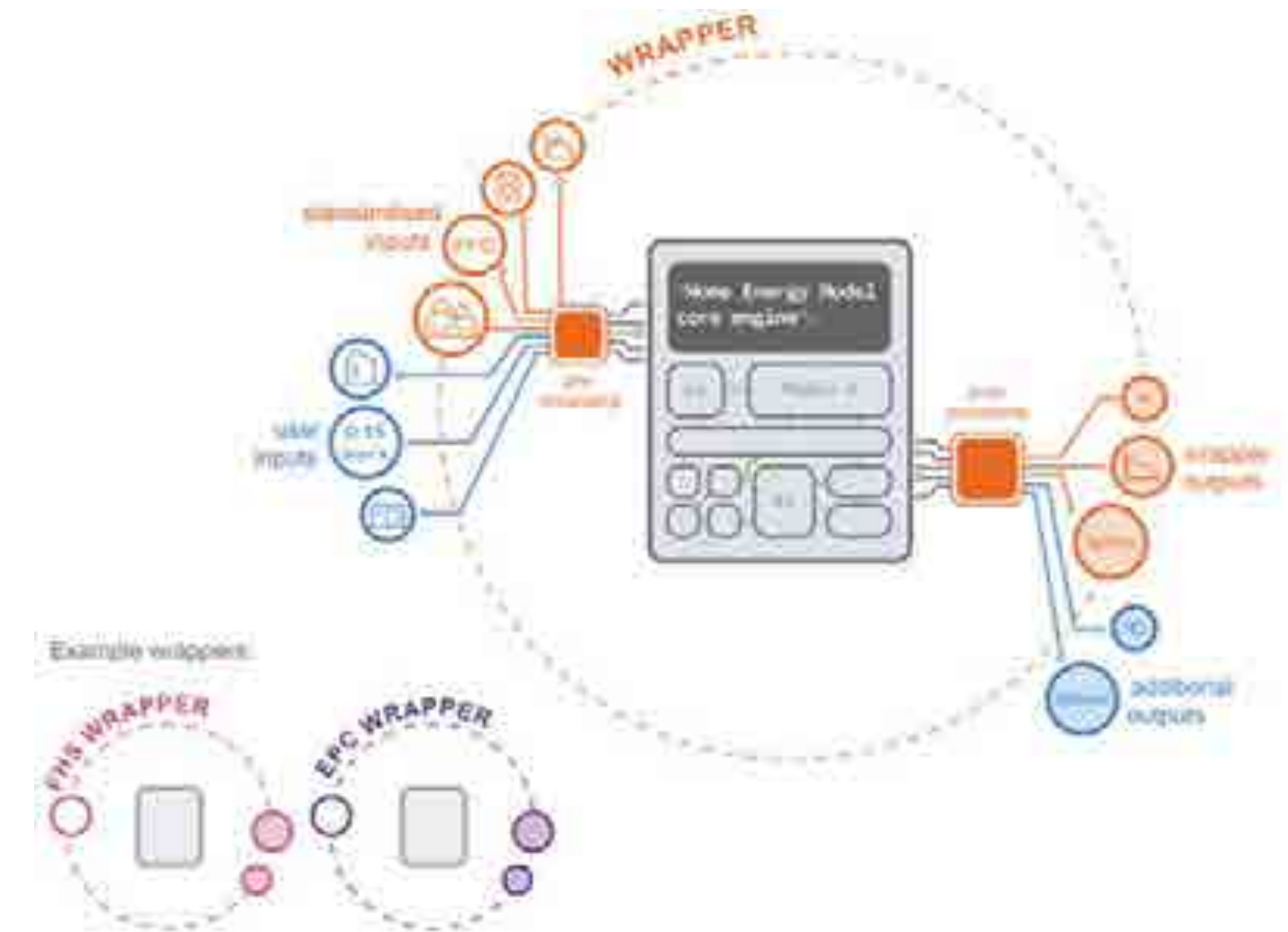
The rules of the road



You – The Driver

Key differences to SAP

- Half hourly calculation timestep compared to monthly in SAP.
- Shading from surrounding objects can be accurately modelled.
- Thermal elements must be defined by orientation, pitch and surface colour.
- Infiltration requires details of background ventilators.
- Space heating emitters are assessed against the space heat demand to determine capacity.
- Domestic Hot Water includes measurement of primary and secondary pipework characteristics.



Heat & Energy Efficiency Technical Suitability Assessment



Heat and Energy Efficiency Technical Suitability Assessment (HEETSA)

Initial consultation – 6th June 2025

HEETSA is a proposed Scottish Government technical assessment that provides trusted, building-specific advice on which energy efficiency and heating measures are technically suitable for a property—designed to prevent poor retrofits and protect consumers.

Aim:

- Improve retrofit quality
- Support Scotland's net zero aims by 2045
- Funding advice
- Not a replacement for an EPC

Heat and Energy Efficiency Technical Suitability Assessment (HEETSA)

Considerations yet to be confirmed:

- Delivery & Accreditation
- Modular approach – skillsets
- Standardisation of data – certificate/report
- Legal and regulatory framework

Scottish Government are due to consult again on the final proposed approach in due course and set out a timeline for delivery.

The Future of Building Standards

Jason Hewins, Elmhurst Energy



Agenda



- Recap of current Section 6 Building Standards
- Update on the next revision to Energy Standards
- Estimated Timeline
- Home Energy Model Update & Key Changes
- Conclusions

Section 6 – Scottish Building Standards



- Latest version introduced 1st February 2023.
- Introduced a number of changes such as;
 - 32% reduction in carbon emissions for new homes compared to previous standard
 - ‘Delivered Energy’ compliance metric
 - Optional ‘Space Heat Demand Limit Method’ for fabric compliance
 - Mandatory airtightness testing of new homes
 - Uses SAP 10.2 methodology
 - Mitigation of overheating now covered in Standard 3.28

New Build Heat Standard



- Introduced on 1st April 2024.
- Contained in Standard 6.11 of the Scottish Domestic Handbook.
- Requires new homes to provide space and water heating from zero direct emissions systems.
- This includes electric heat pumps, heat networks, electric heating, hydrogen fueled heating and solar thermal panels.

The Next Revision to Energy Standards



- In December 2022 Scottish Government committed to make legislation by 14th December 2024 as a response to MSP Alex Rowley's 'Domestic Building Environmental Standards' bill.
- This was to implement “*new minimum environmental design standards for all new build housing to meet a Scottish equivalent to Passivhaus standard.*”
- Scottish Government commenced a review of energy standards with focus on two outcomes;
 - *Improvements to the setting of energy and environmental (ventilation) performance standards for new buildings, leading to lower energy demand (and reduced running costs) and a healthy indoor environment.*
 - *Improvements to the design and construction process to give greater assurance that compliance, and therefore the performance sought, is delivered in practice.*
- Two consultations were proposed...

The Next Revision to Energy Standards



- Stage 1 consultation ran July-October 2024.
- Proposals included;
 - Definition of '*Passivhaus Equivalent*'
 - Energy rating methodologies used to demonstrate compliance – Home Energy Model to be used
 - Metrics used to set Standards 6.1 and 6.2
 - Actual vs Relative performance targets – use of a fixed target for energy efficiency standards vs setting the targets via a notional dwelling
 - Passivhaus Certification as an alternative route to compliance
- Part 1 responses issued 27th December 2024.

The Next Revision to Energy Standards



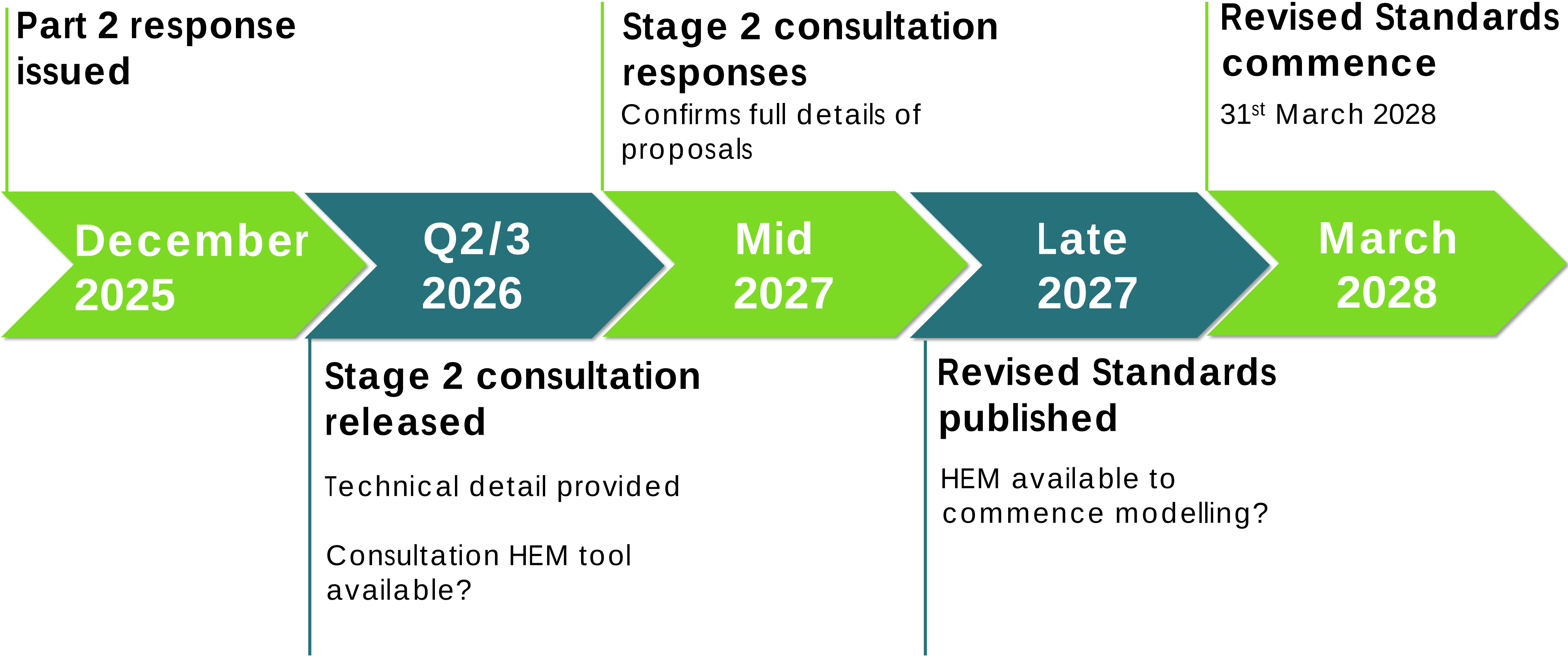
- Following stage 1 consultation responses Scottish Government confirmed “*only limited changes to regulations needed to support an outcome up to and including that delivered through voluntary Passivhaus standard*”.
- Regulations laid on 12th December 2024 include the requirement to provide an ‘energy and environmental design statement’ with warrant applications.
- Also a requirement for ‘energy and environmental construction statement’ supporting the completion certificate introduced.
- In respect to OCDEAs this will cover Standards 6.1-6.7 and 7.1.

Part 2 Response



- On 19th December 2025 Scottish Government issued Part 2 response to Passivhaus Equivalent.
 - Full Passivhaus certification will not be mandated in the Building Standards
 - Home Energy Model + Scottish Compliance wrapper will be used to demonstrate compliance. Expected in 2026
 - PHPP may also be an acceptable method. Modifications needed, expected 2026
 - The Delivered Energy metric will be retained based on regulated energy use only
 - A new metric, Target Space Heating Rate, will be introduced under Standard 6.2
 - MVHR will not be mandated; other ventilation solutions allowed
 - New standards will come into force on 31st March 2028
- Further details on the above expected in Stage 2 consultation this year.

Estimated Timeline



Home Energy Model



- The Home Energy Model is a completely new methodology.
- Core model is based on modern international standards and 'open source'.
- 'Wrappers' define the inputs to, and outputs from, the core model for a purpose e.g. Building Standards compliance and EPCs.
- Much more detail needed in areas such as fabric, infiltration, space and domestic hot water heating.
- First official use will be to calculate compliance with Future Homes Standard in England.
- HEM Theory CPD courses running since last summer covering the changes in detail.

Calculation Time Resolution



- SAP 10 calculates energy use on a monthly basis.
- Struggles with new technologies, time of use tariffs, heat pumps etc.
- HEM will calculate on 30 minute intervals.
- Will ensure it is more suited to new innovations.
- However makes the calculation of results much more complex.

Shading



- SAP 10 is very simplistic when assessing shading with generic categories e.g. 'heavy overshading'.
- HEM takes a much more detailed assessment of overshading. Two types are accounted for;
 - Shading from distant objects e.g. other buildings.
 - Shading over windows from overhangs or reveals.
- Results in a much more accurate calculation of solar gains, output from PV etc.

Building Fabric



- Increased data entry compared to SAP.
- All thermal elements must be defined by orientation, pitch and base height.
- New fields to assess thermal mass and solar absorption coefficient.
- Openings must be entered individually.
- Openable parts of openings defined with openable area needed.
- Thermal Bridging same as SAP 10.

Infiltration & Ventilation



- Based on BS EN ISO 16798-7.
- Much more detail than SAP.
- More inputs needed to establish infiltration of the home.
- Trickle vents, air terminal devices etc. effective area must be entered.
- More inputs needed to establish the performance of the ventilation system.
- Much more information on ductwork needed e.g. length, form, insulation characteristics.

Space Heating



- HEM will compare heat emitters with space heat demand.
- More systems now in PCDB e.g. heat batteries, heat emitters.
- Characteristics of emitters required e.g. height and type of radiators.
- More detail on different temperatures required e.g. minimum flow temperature, design flow temperature, design temperature difference across emitters.

Domestic Hot Water



- HEM introduces more granular dynamic modeling of hot water demand.
- With half hourly timesteps HEM can calculate demand based on actual length and frequency of hot water events.
- Details of showers, baths and taps required.
- Improved modelling of water storage systems based on number of hot water events.
- Seasonal variation of mains cold water also accounted for.
- Primary Pipework losses now modelled fully.

Conclusions

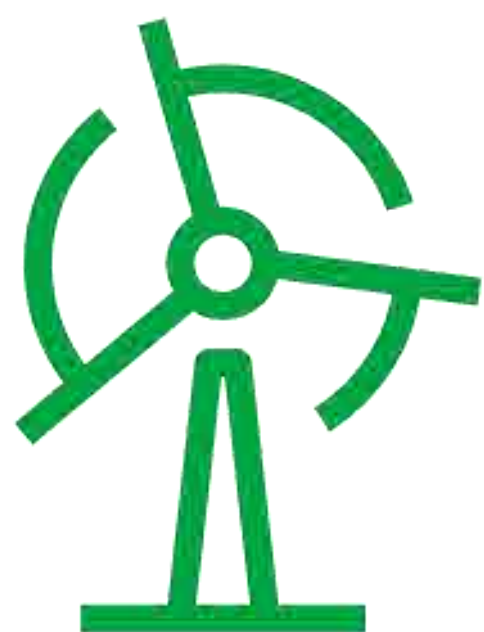


- The next revision to Energy Standards is under development.
- New standards come into force 31st March 2028.
- Passivhaus Equivalent does not mean all new homes will achieve Passivhaus Certification.
- Stage 2 consultation due this year.
- HEM is a significant step up in terms of calculation complexity and information required.
- Elmhurst will keep all members updated with announcements and future CPD courses.

Changing Funding Landscapes

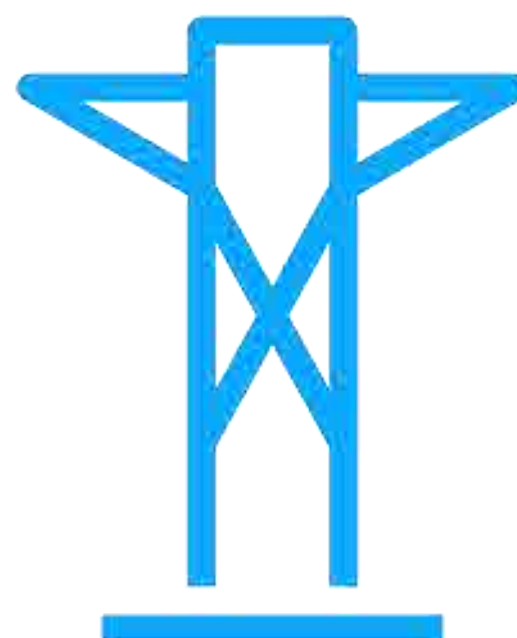
Paul Slater, ScottishPower





Renewables

- | Develops, constructs and operates onshore and offshore windfarms, battery storage and solar
- | ~3GW total installed capacity
- | Community benefits fund >£64M



Energy Networks

- | Responsible for regulated electricity network businesses across three nations in the UK
- | 3.6M customers
- | Priority services register
- | Net Zero Fund



Customer Business

- | Supply electricity and gas to our customers and provides solutions to help support and decarbonize their homes
- | 4.5M UK supply customers
- | Energy Company Obligation (ECO)
- | Great British Insulation Scheme (GBIS)
- | Warm Home Discount

- 30+ years of obligations

 Energy Efficiency Standards of Performance (**EESoP**)
1994 – 1998 – 2000 – 2002

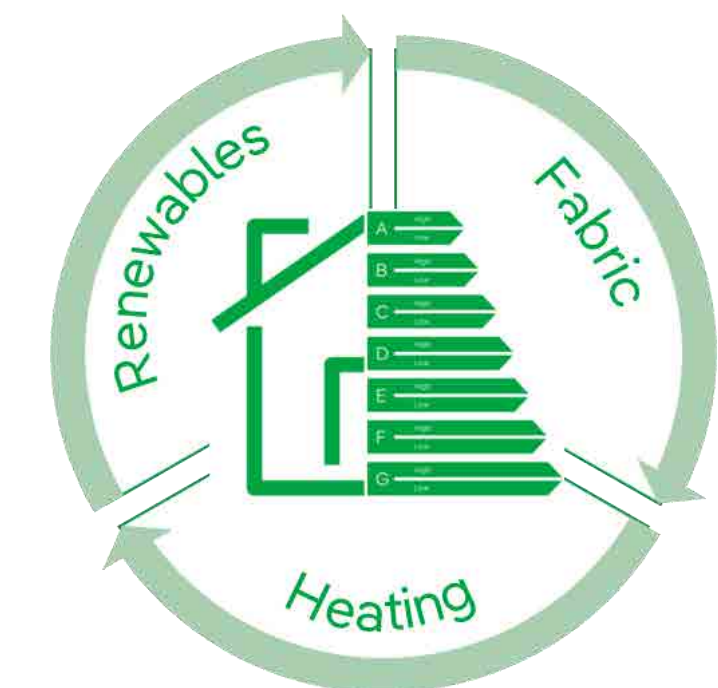
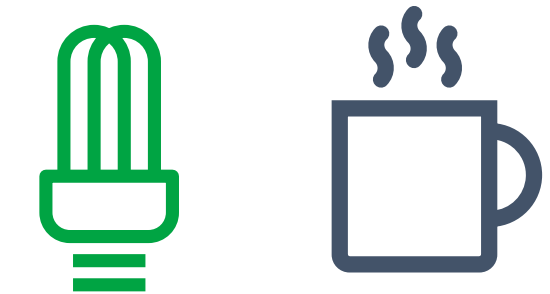
 Energy Efficiency Commitment (**EEC**)
2002 – 2005 – 2008

 Carbon Emissions Reduction Target (**CERT**)
2008 – 2012

 Community Energy Saving Programme (**CESP**)
2009 – 2012

 Energy Company Obligation (**ECO**)
2013 – 2015 – 2017 – 2018 – 2022 – 2026

 Great British Insulation scheme (**GBIS**)
2023 – 2026



Energy Company Obligation & Great British Insulation Scheme

What is ECO?

Energy Company Obligation (ECO)

1st Apr 2022 – 31st Mar 2026

Support the most vulnerable households in the least efficient homes

- Vulnerable households in or at risk of fuel poverty
- Inefficient homes = EPC Bad D, E, F or G

Funding for fabric first, whole house retrofit

- Fabric first = property maintained and insulated to retain heat
- PAS2035 – holistic approach to retrofit
- Low carbon heating upgrades

Improve energy performance on households by 2 x EPC bands
F&G - D
D&E - C

- £4Bn Budget across energy sector
- Consumer protection: PAS2030; MCS; Trustmark accredited supply chain



Scheme ending December 2026

ECO Measures

Pre-Install assessment identifies condition of property (SAP score / EPC Band)

PAS2035: Retrofit Advisor, Assessor, Co-Ordinator, Designer and Evaluator

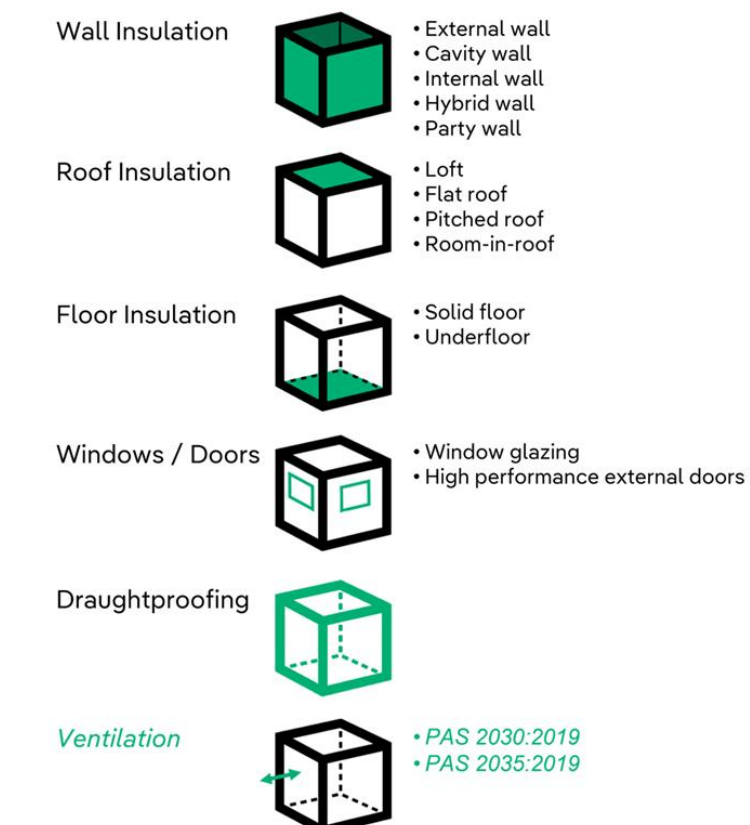
Primary fabric improvements required before heating measures can be supported

Funding based on Annual Bill Savings (ABS) from eligible measures installed within property

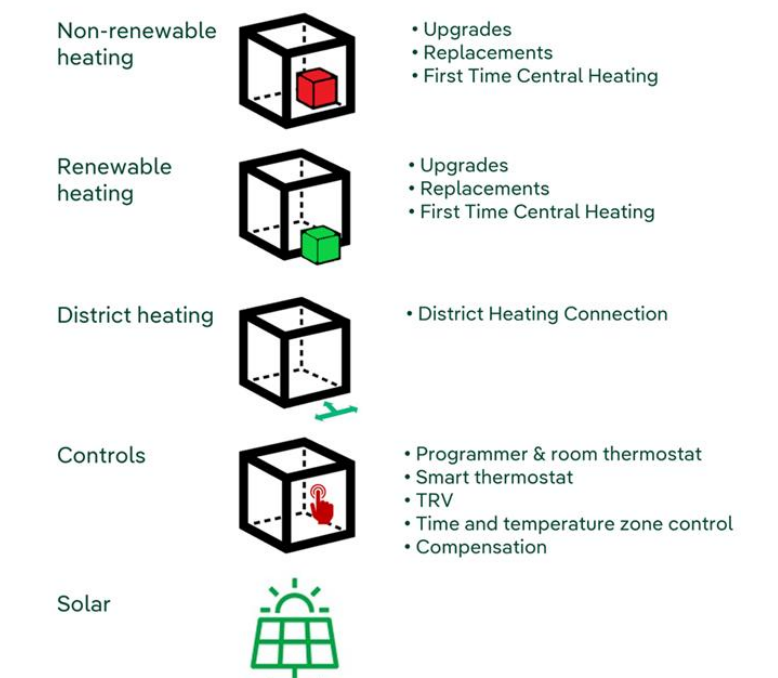
Uplifts available for rural off-gas areas in Scotland

ECO Guidance / Measure tables / Scores matrices available on Ofgem website

Fabric Improvements



Heating Improvements



What is GBIS?

Great British Insulation Scheme (GBIS)

1st Apr 2022 – 31st Mar 2026

GBIS / ECO+

- Designed as a single measure scheme
- Cost-effective measures at scale
- £1Bn budget across energy sector

Low Income Group

20% of target

- ECO4 qualification criteria
- EPC Band D-G
- No Cost

Generals Group

80% of target

- EPC Band D-G
- Council Tax Band A-E (Scotland)
- Contributions may be required



**Scheme ended
March 2026**

Reflections on ECO / GBIS

Complexity

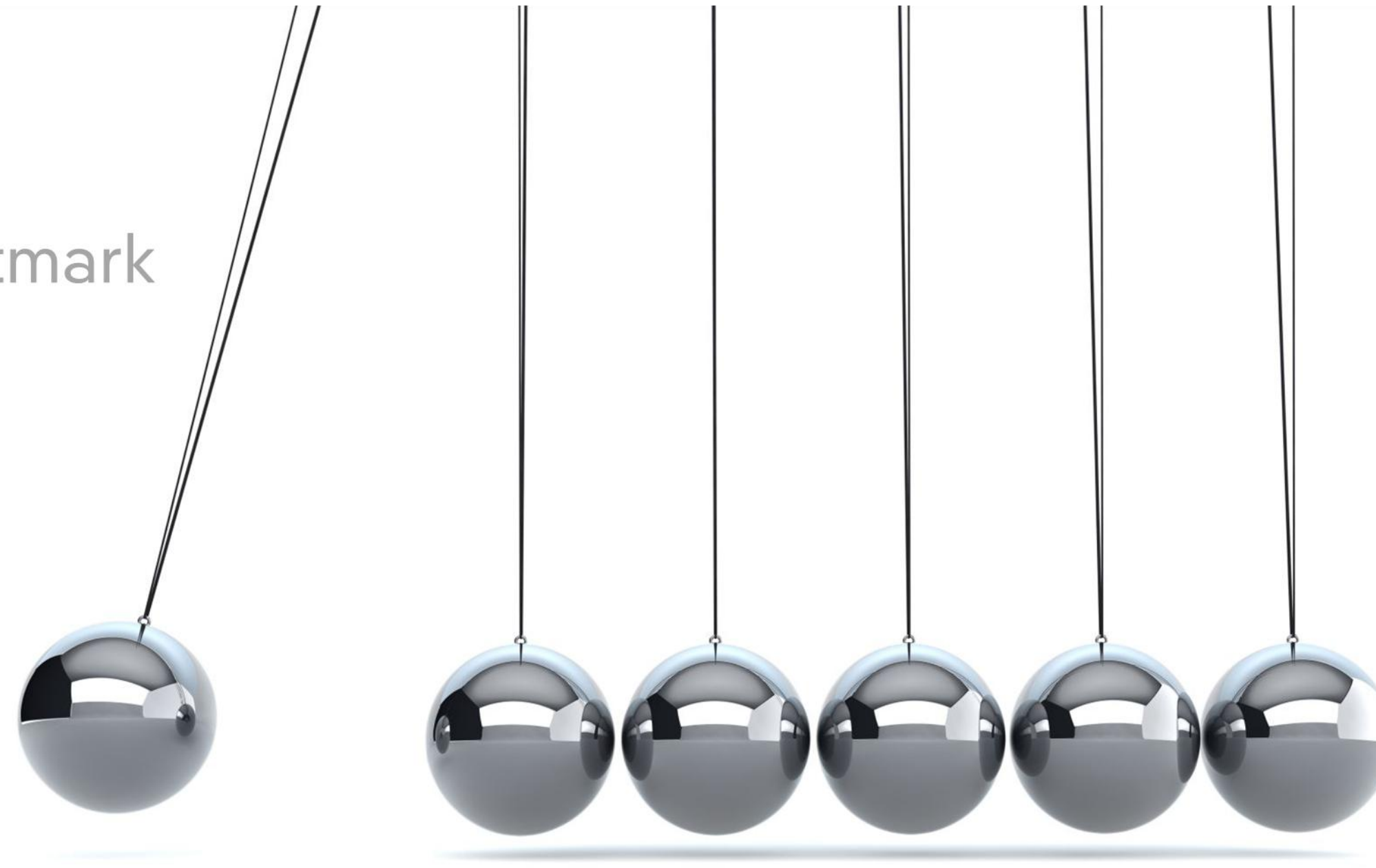
- | Whole house retrofit
- | Scoring methodology
- | PAS2030 / PAS2035
- | Certification / MCS / Trustmark

Different delivery model

- | Cost of living
- | Autumn budget
- | Shift in focus
- | Detail tbc

Market

- | Limited engagement
- | Fully funded v contributions



Warm Homes Plan?

What do we know?

Measures

- Focus on low carbon heating
- Package of measures



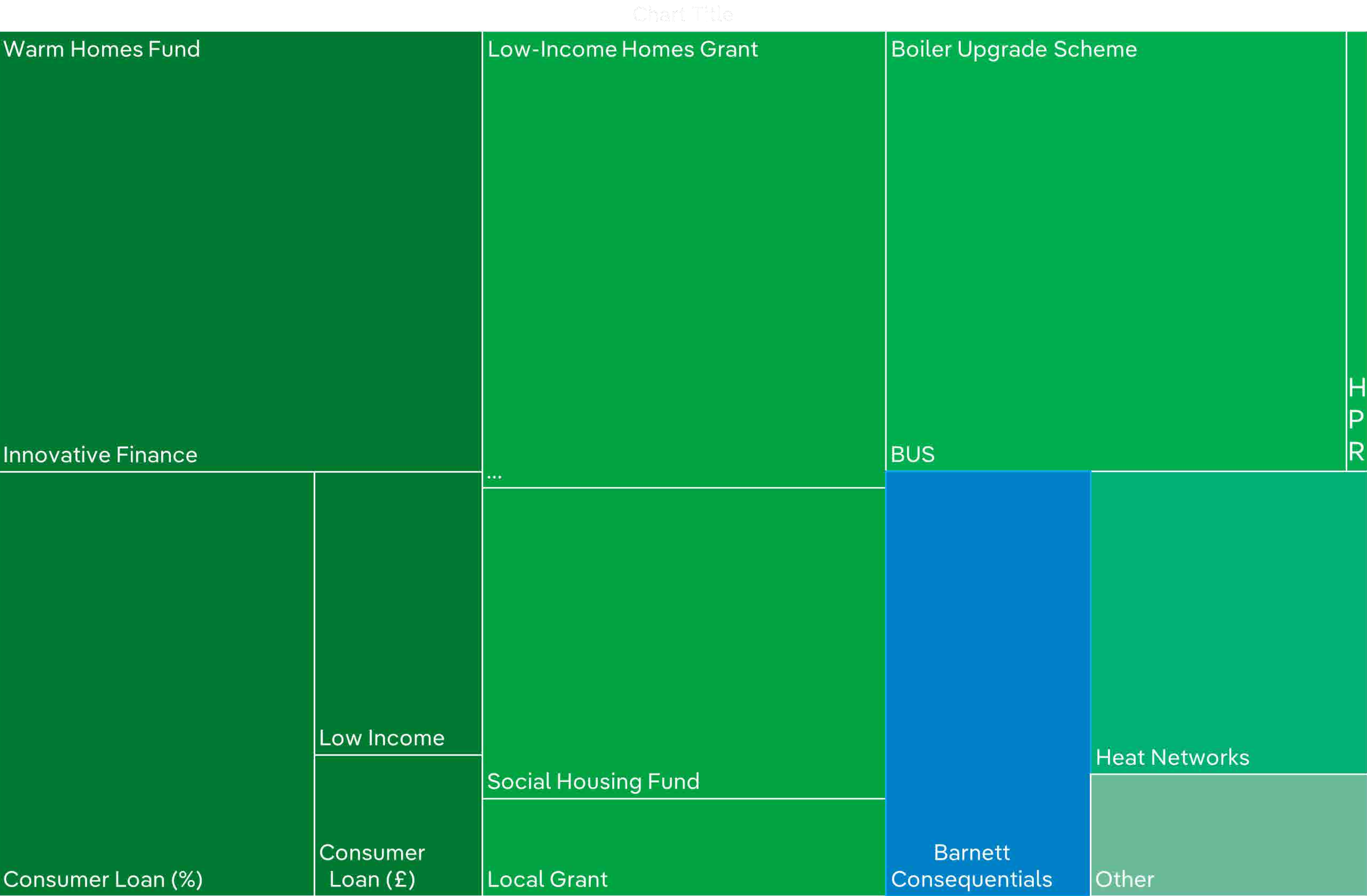
Policy

- Cost effective delivery
- Reduced complexity
- Based on bill savings
- Prioritised consumer protection
- Longer term approach

Methods

- Partnership approaches
- Area Based approaches

How much funding is there?

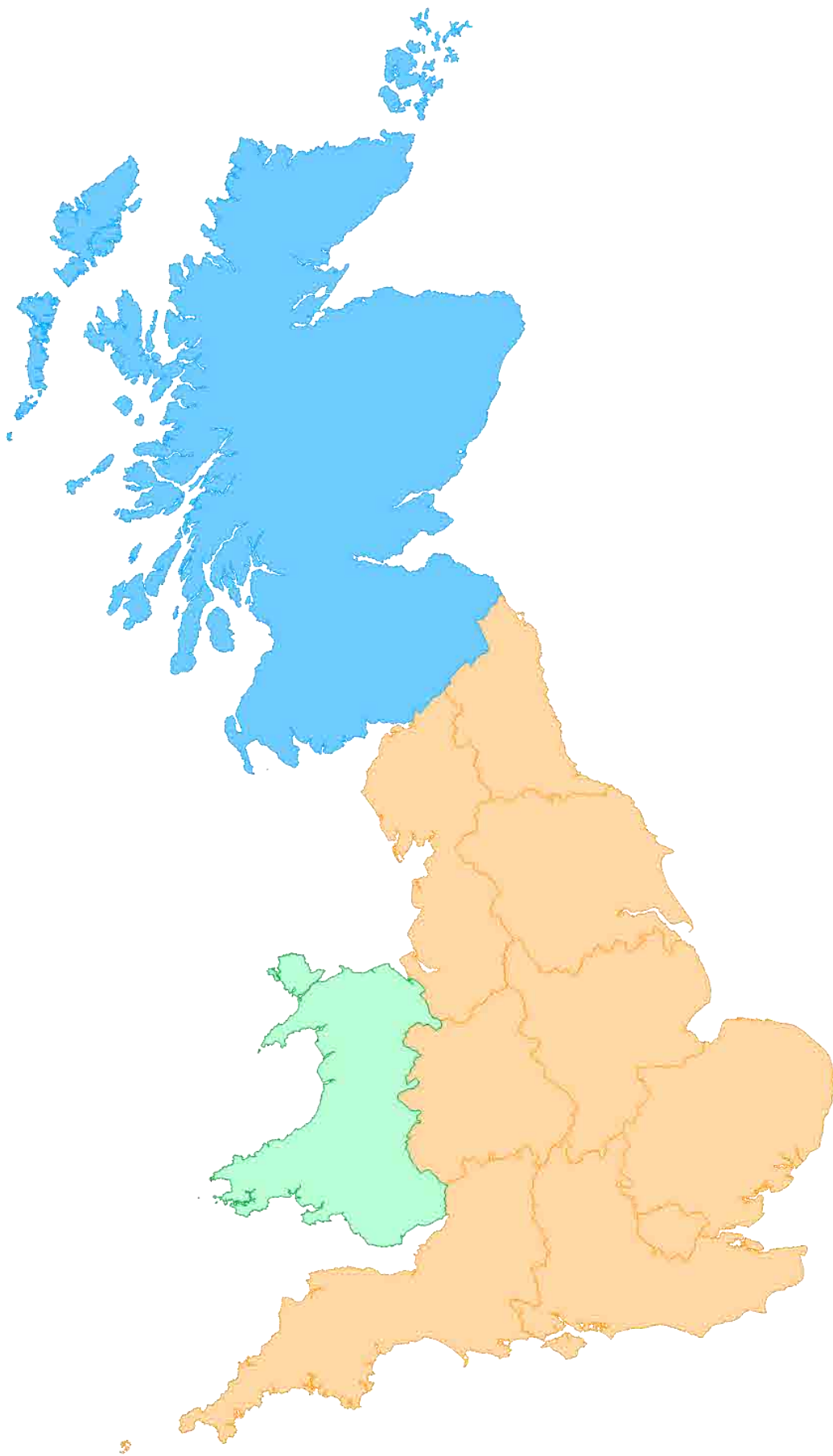


Funding Stream		Budget
Warm Homes Fund	Consumer Loan (%)	£1.7 Bn
	Consumer Loan (£)	£300M
	Low Income	£600M
	Innovative Finance	£2.7 Bn
Low-Income Homes Grant	Social Housing Fund	£1,6 Bn
	Local Grant	£500M
	...	£2.3 Bn
Boiler Upgrade Scheme	Heat Pump Ready Grant	£120M
	BUS	£2.6 Bn
Heat Networks		£1 Bn
Barnett Consequentials		£1.1 Bn
Other		£428M
Total		£15 Bn

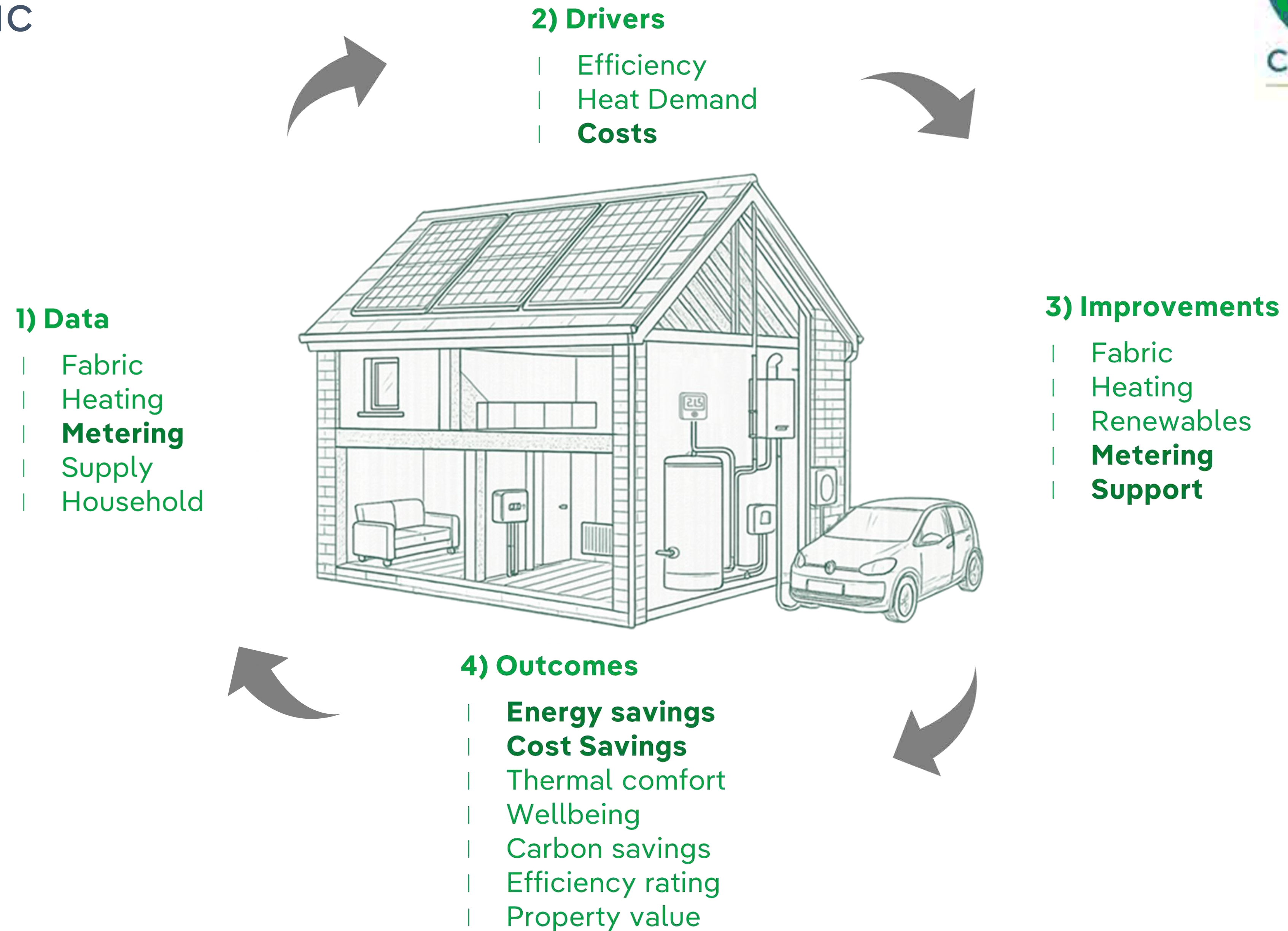
Funding streams



	Scotland	England	Wales
Energy Companies (Fuel Poverty)	ECO / GBIS	ECO / GBIS	ECO / GBIS
Area Based	ABS	HUG / LAD	HUG / LAD
Vulnerable	Warmer Homes Scotland	WH Local Grant	NEST
Low Carbon Heat	Home Energy Scotland	Boiler Upgrade Scheme	Boiler Upgrade Scheme Green Homes Wales
Social Housing	Net Zero	SHDF WH Social Housing Fund	Optimised Retrofit Programme
Community	CARES	Community Energy Fund	WcVA
Heat Networks	Energy Efficiency Grant Scheme / Heat Network Fund	Green Heat Network Fund	Green Heat Network Fund
Low Income	Warm Home Discount		



Funding logic



Thank you

Paul Slater
Contractual Services manager
UK Government Obligations

E-mail: paul.slater@scottishpower.com





Warm Homes Plan: What does it mean for Scotland?

Nicola Mcleod
Managing Director, Scotland Division

Why the Warm Homes Plan matters

National Energy Action estimates that there were more than **six million UK homes in or at risk of fuel poverty** at the end of last year

This means that the picture was bleak even before recent global events and the likelihood of a further price shock – we all need to start from the perspective that fuel poverty is **a national social crisis** that may get worse before it gets better

However, fuel poverty is more solvable now than ever before, with widespread availability of heat pumps, solar panels and battery storage that can provably reduce bills – we've done the hard yards in demonstrating that **the technology is there**

The Warm Homes Plan **commits the cash** to scaling this up, which is a terrific opportunity, making homes more resilient and energy efficient

Improving energy efficiency to tackle fuel poverty **reduces bills for the long-term**, it creates jobs in local communities and supports a wide range of policy outcomes



Our role in delivery

Warmworks is a joint venture, initially set up in 2015 to manage the Scottish Government's national fuel poverty scheme, Warmer Homes Scotland (WHS) – now delivering similar activity across the UK

The £728m new phase of WHS began in 2023 and runs to 2030. The scheme provides **whole house retrofits to homes in or at risk of fuel poverty**

More than 50,000 households have been helped through schemes and projects we manage, with an average annual bill saving of **over £400 per year**

We have supported or enabled the creation of more than 160 apprenticeships and over 900 new jobs, making 'green jobs' and 'green skills' tangible and developing a supply chain that seeks to **marry national scale with local experience**

Our skill set is about providing an **end-to-end service** for fuel poor homes and communities that understands the needs of individual homes, communities and buildings



How the process works



What this model has shown

Scalability matters to everyone, and WHS spent almost £100m last year

Seamless handoffs between office, field and customer – single point of contact

Centralised quality standards bring consistency and clarity, generating confidence

Compliance with standards is embedded in a non-obtrusive way

Long-term commitment key, many supply chain relationships have lasted since 2015

The supply chain has the potential and will invest if the conditions are right

Relationships critical in supply chain development process, partnership-based

Key is to combine national-level scale with a localised customer experience

One size never fits all and broad assumptions about 'fuel poor homes' don't work

Investment in fuel poverty schemes creates positive wider policy outcomes

Perfect is the enemy of the very good – analysis helps, but delivery matters more



Making the Warm Homes Plan work in Scotland

Build on what already works: Scotland is ahead of the rest of the UK in its track record of delivery, but use this as a positive and encourage others to see what works. There is no time to reinvent the wheel, even if it made sense to do so

Share best practice across the UK: establish the right mechanisms to share best practice across regions and territories, avoid parochialism and narrow focus

Show it can be personalised but still scalable: it is possible to deliver a local, bespoke and high-quality service at a national scale – the key is getting the right framework in place to drive it

Embrace new products and technologies: technologies will improve, but solutions need to be adapted to the lives of individual homes and families



How can this be applied in practice?

The context is different in Scotland, but the underlying problem is the same – more people going into fuel poverty increases urgency and need for solutions that work

If we assume local agency and devolution of funding remains the focus in England, this **does not remove anyone's ability to deliver at scale**

There are c.5m homes in Scotland, but this is comparable to many Combined Authority and Mayoral catchment areas in England: almost 3m homes in GMCA, over 2m in West Yorkshire and so on

The further delivery is devolved, then the more difficult it becomes to gather and maintain clarity of outcomes

Scaling up to deliver support to fuel poor homes in greater numbers would provide **multiple positive policy outcomes**



What should the priorities be?

1. Ensure that the WHP has the **clarity of focus** to create the right conditions for scalable delivery, matched by long-term commitments
2. Learning from examples and best practice to **avoid re-inventing the wheel**, or at least aspects of it
3. Targeting of support and evaluation of impact are both important, but **balance has to be struck** with the very real need to get on with it
4. Working with key stakeholders to ensure that **energy market conditions** (e.g. availability of innovative tariffs and billing) can actively support delivery in homes
5. Building understanding across Government to **bind in other policy areas** and highlight the cross-cutting benefits that tackling fuel poverty will provide



Measuring What Matters Energy Performance in Historic Buildings

Chris Ricketts, Elmhurst Energy



The Core Problem



Why assessment is difficult in historic buildings

- EPCs rely on standardised assumptions
- Traditional buildings are highly individual
- Materials, form and alterations vary widely
- Assumptions can lead to:
 - inappropriate recommendations
 - misdirected retrofit funding
 - moisture and ventilation risk

Why Historic Buildings matter



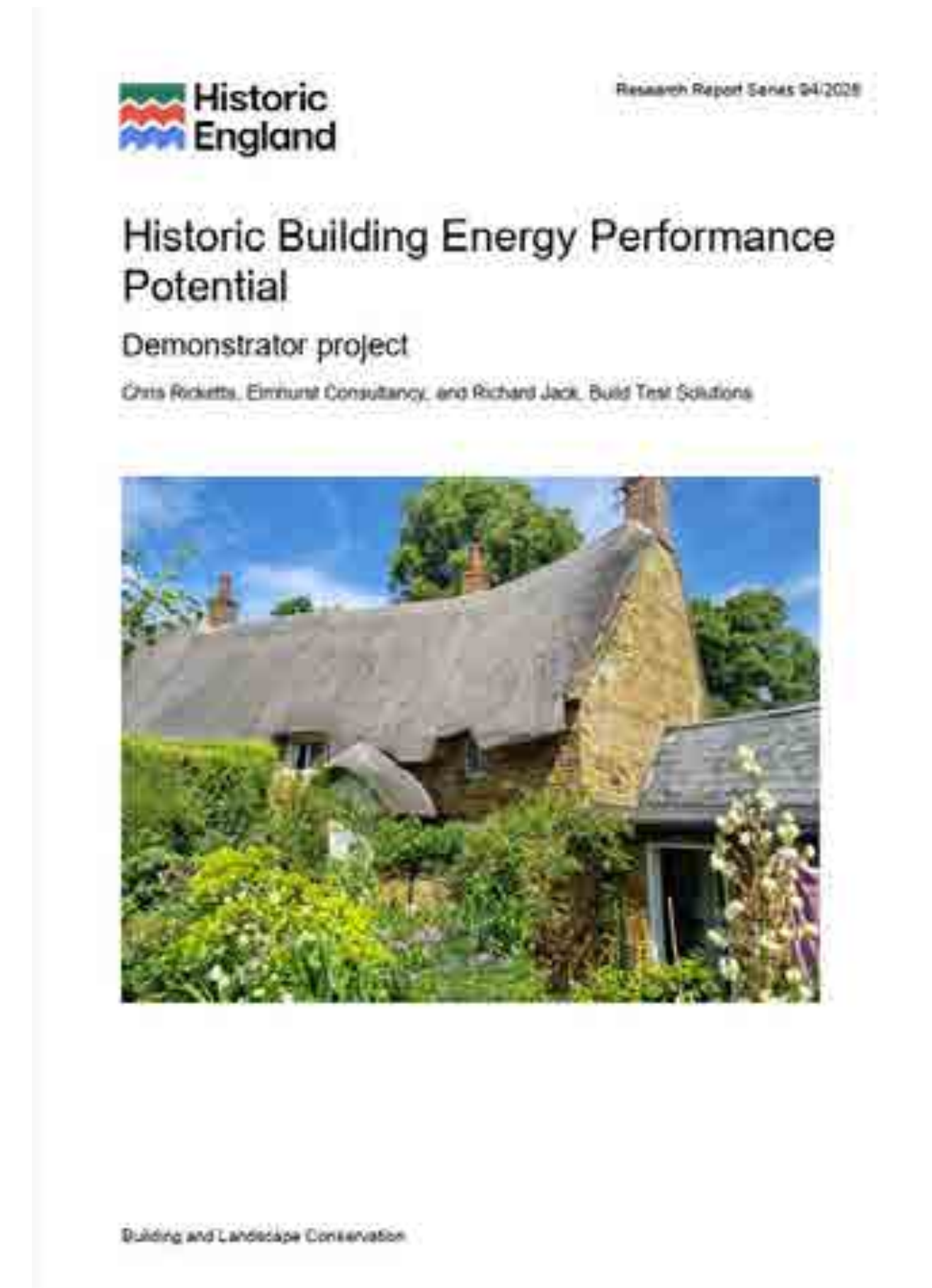
Historic buildings expose the performance gap

- Greater construction variability than modern housing
- Assumptions are often wider of the mark
- Performance gap becomes visible
- Lessons are transferable to all buildings

The Demonstrator Project

Project overview

- 6 occupied historic dwellings (pre-1900)
- Range of sizes, forms, locations and fuels
- Traditionally constructed buildings
- Aim:
 - Compare RdSAP assumptions with measured performance
 - Understand impact on EPC outcomes



The Demonstrator Project



From Modelling to Measurement

What we measured

- Airtightness (Pulse testing)  EPC permitted
- In-situ wall U-values (Heat3D)  EPC permitted
- Whole-house heat loss (HTC)  EPC permitted
- Condition survey and occupant feedback

- Baseline RdSAP EPC
- EPC + measured airtightness
- EPC + measured wall U-values
- EPC + airtightness and U-values
- Comparison with measured HTC

- Baseline RdSAP EPC
- EPC + measured airtightness
- EPC + measured wall U-values
- EPC + airtightness and U-values
- Comparison with measured HTC

Headline Results



31%

**Better airtightness
than assumed**

34%

Better wall U-values

45%

**Lower whole-house
heat loss**

Average difference from RdSAP default assumption

Airtightness

The only in-situ measurement EPCs allow

- RdSAP minimum infiltration often pessimistic
- Wide variation across historic housing stock
- ~70–80% of pre-1949 homes improve EPC if tested
- Measurement identifies both opportunity and risk



In-Situ U-Values

Walls that perform better than expected

- All six properties exceeded RdSAP assumptions
- Improvements ranged from **11%–58%**
- Assumed fabric heat loss often overstated
- Insulation benefits may be exaggerated in models

Whole-House Heat Loss (HTC)

Cutting through complexity

- Captures fabric, infiltration and thermal bridges
- Provides true baseline building performance
- Effective screening and diagnostic metric
- Supports proportionate retrofit decisions



What Changed (and What Didn't)



EPCs became better calibrated

- Recommended measures largely unchanged
- But changes seen in:
 - priority
 - proportionality
 - technical suitability
- Better evidence leads to better decisions

Beyond Historic Buildings



Why this matters everywhere

- Performance gaps exist across housing stock
- Implications for retrofit programmes
- Critical for heat pump sizing and system design
- Measurement improves targeting of funding
- Enables “pay for performance” approaches

A Better Way Forward



Enhanced Technical Suitability Assessment

- EPC as baseline assessment
- Condition survey – mandatory
- Airtightness testing – mandatory
- HTC and U-values – targeted and proportionate
- Staged diagnostic approach

Final Reflections



Measure first. Intervene second.

- Historic buildings often perform better than assumed
- Measurement reduces risk and unnecessary intervention
- EPCs improve when informed by evidence
- Measurement-led thinking benefits all buildings

Raising Standards with Damp and Mould Competency

Simon Flint, Elmhurst Energy



Introduction



Scotland's Housing Secretary Mairi McAllan said:

"Everyone deserves to live in a home free from damp and mould"

Awaab Ishak

- 'Awaab's Law' named after two-year-old Awaab Ishak, who died in 2020 from a severe respiratory illness caused by prolonged exposure to the mould in his family's housing association flat in Rochdale, Greater Manchester.
- The poor conditions in his home were first reported in 2018



Awaab Ishak



- The toddler's death caused outrage and prompted the passage of 'Awaab's Law' south of the border with a requirement for landlords to investigate and fix reported hazards concerning damp & mould in social housing within strict timelines and rehouse tenants in safe accommodation if necessary.
- The new law came into force in England in October 2025, in Wales in April 2026
- **From October 2026 equivalent legislation will be introduced in Scotland**

Scottish Legislation



- **The Investigation and Commencement of Repair (Scotland) Regulations 2026**
- Will introduce new duties on landlords to investigate reports of damp and mould and initiate any necessary repairs within a set timescale
- Expected to pass into legislation 6th October 2026
- Applies to both social & private rented properties



Scottish Legislation

- Obligation on landlords is to:

“Ensure the property is **substantially** free from damp and mould and to investigate and commence repairs in relation to damp or mould”



Requirements

- As soon as a landlord is made aware of a potential issue, they then have up to 10 working days to investigate and determine if a 'qualifying repair' (as defined in existing legislation) is required.
- Investigation must be by a '**competent person**'
- Written summary of the investigation must be provided to the tenant within 3 days of the investigation being finished.
- If investigation determines that a 'qualifying repair' is needed, work must begin within 5 days of the investigation completion.

Requirements

- Repair should be completed within 20 working days.
- Once complete, landlord must ensure that property is 'substantially free' from damp & mould, and as far as is practical, will continue to be free from damp & mould.
- Investigation must be by a '**competent person**'



NEW: Elmhurst's Damp & Mould Assessor Competency Scheme



Training

- Elmhurst's Damp and Mould Assessor Training equips you with the practical skills to competently assess damp and mould hazards in domestic properties and produce clear, professional reports.
- Elmhurst's Damp and Mould Assessor Training is designed to build the practical competence needed to identify damp and mould risk, understand how ventilation and building performance contribute, and produce professional reports.



Training



- **Duration:** 1 Day
- **Format:** Remote online learning led by our expert trainers – study from your home or the office (can be delivered face to face)
- **Competency Test:** At the end of the course, you'll complete a 30-minute, multiple-choice competency assessment to confirm your understanding of the content.
- **Suitable for:** DEAs, surveyors, stock condition surveyors, retrofit professionals, housing practitioners, or professionals responsible for investigating moisture issues within properties

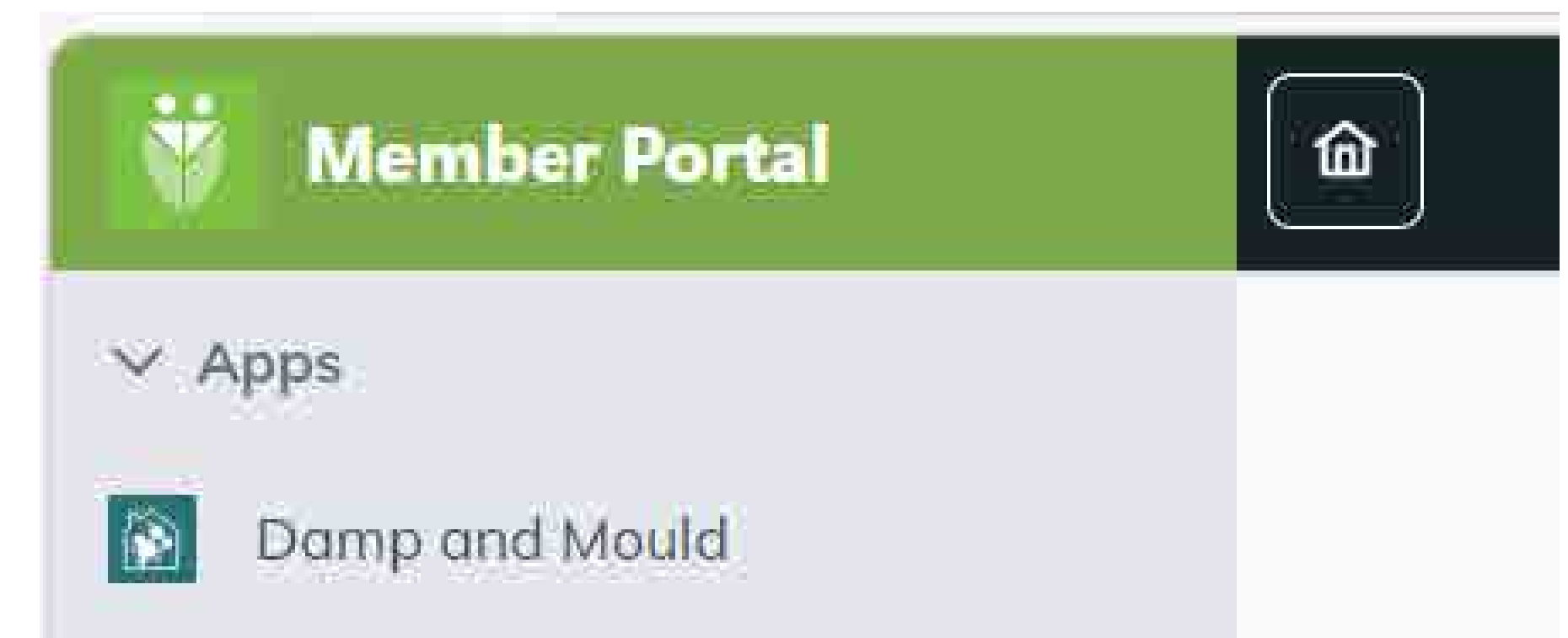
Competency Scheme



- After completing the training, you will be eligible to join Elmhurst's Damp and Mould Assessor scheme, one of the first of its kind in the industry, demonstrating your competence and professional standards. You will also gain access to our industry-leading software, technical support, our Find an Assessor directory and insurance cover for your work.
- **Following our training, application and membership to the scheme is free for the first 12 months, a saving of over £360**

Software

- Brand-new purpose-built desk-top software allows you to collect all the required data and photographs to create a professional, insured report for your client.
- New Elmhurst Member Portal
- Long term replacement for Access Elmhurst



Software



> Damp and Mould > Damp and Mould Assessment

Report

Save

Damp and Mould

Property Type

Occupants

External

Room by Room

Risk Assessment Summary

Lodgement

Reference

7A16/9235/9186

My Reference

Test 3

Property Details

Property Type

House

Number of Bedrooms

2

Client Contact Details

joe.bloggs@gmail.com 07456328746

Tenure Type

Address

Address Line 1

1 The Lane

Address Line 2

Woodford Glebe

Address Line 3

Welford

Town

Lutterworth

Postcode

LE12 5AB

Front Elevation

Test Case...

#ElmhurstScotConf26

Software

 > Damp and Mould > Damp and Mould Assessment

 Report  Save 

 Property Type

 Occupants

 External

 Room by Room

 Risk Assessment Summary

 Lodgement

— Occupancy

Occupancy Level

Normal Occupancy  

No. of occupants

4

☒ Occupants within age risk

☒ Are there any medical conditions to report?

Medical Conditions

Lung infections

☒ Are there any vulnerabilities to report?

Vulnerabilities

One tenant over 80 years old

— Condensation

☒ Occupants have reported damp or mould present

No previous reports of issues

☒ Has mould been treated previously

N/A

☒ Is issue recurring

N/A

— Heating Schedule Images

Software



Damp and Mould Report

Property Address	1 The Lane, Lutterworth, LE12 5AB
Inspection Date	27/03/2026 13:30
Assessor ID	
Assessor Name	Mr Simon Flint



Disclaimer: This report is based on a visual, non-invasive inspection of the property, at time of assessment. It does not provide advice or recommendations for remedial action, but supports in identifying actionable next steps.

Page 1 of 6

Damp And Mould Assessment v1.1

Damp and Mould Report



Property Type

Reference
Reference: 8518-0180-5032
My Reference: Test 2

Property Details
Property Type: House
Number of Bedrooms: 3
Tenure Type: Rental social

Risk Assessment Summary

Risk Assessment Summary
Total Number of Rooms Affected: 1
Is Mould Located within Habitable Rooms: Yes
Extent of Mould in Property: Larger areas affected or in bedrooms

Ventilation Adequacy
Ventilation Adequacy: Inadequate

Page 2 of 6

Damp And Mould Assessment v1.1

Damp and Mould Report

Benefits of Damp & Mould Assessor



- Respond to increasing legislative demand
- Broaden your service offering
- Boost your earning potential
- Support healthier, safer homes



Summary



“Everyone in Scotland deserves the right to live in a warm, safe and secure home, free from disrepair. We already have a strong set of rights and standards that have been improving in Scotland.

However, these measures will go even further and give power and confidence to tenants that any issues are identified, and repairs started in a timely manner, so any issues do not have a detrimental impact on their health”

Social Justice Secretary Shirley-Anne Somerville

Summary



- New legislation due October 2026
- Already a requirement in England & Wales
- Applies to both social and private landlords in Scotland
- Timescales introduced to ensure issues are resolved promptly

Summary



- Competent persons required to complete investigation
- New training course available
- New competency scheme for Damp & Mould Assessors
- New opportunities for you to take charge and shape your future, offering this new product to your clients

Next Generation EPCs Across Europe

Professor David Jenkins, Heriot-Watt University



Why Europe?



- EU Energy Performance in Buildings Directive
 - Provides a common starting point
- Not about “who has the best EPCs”
 - But there may be good practices to note
- Avoiding learning the same lessons, and making the same mistakes, more than once

Why 'Next Generation'?



- EPCs are changing
 - And their uses are changing
- EU Technical Committees currently refer to new metrics
 - Smart Readiness Indicator
 - Operational Energy Ratings
 - Internal Environmental indices
 - Links with Building Renovation passports
- We need to understand the limits and potential of EPCs

But EPCs have their limits



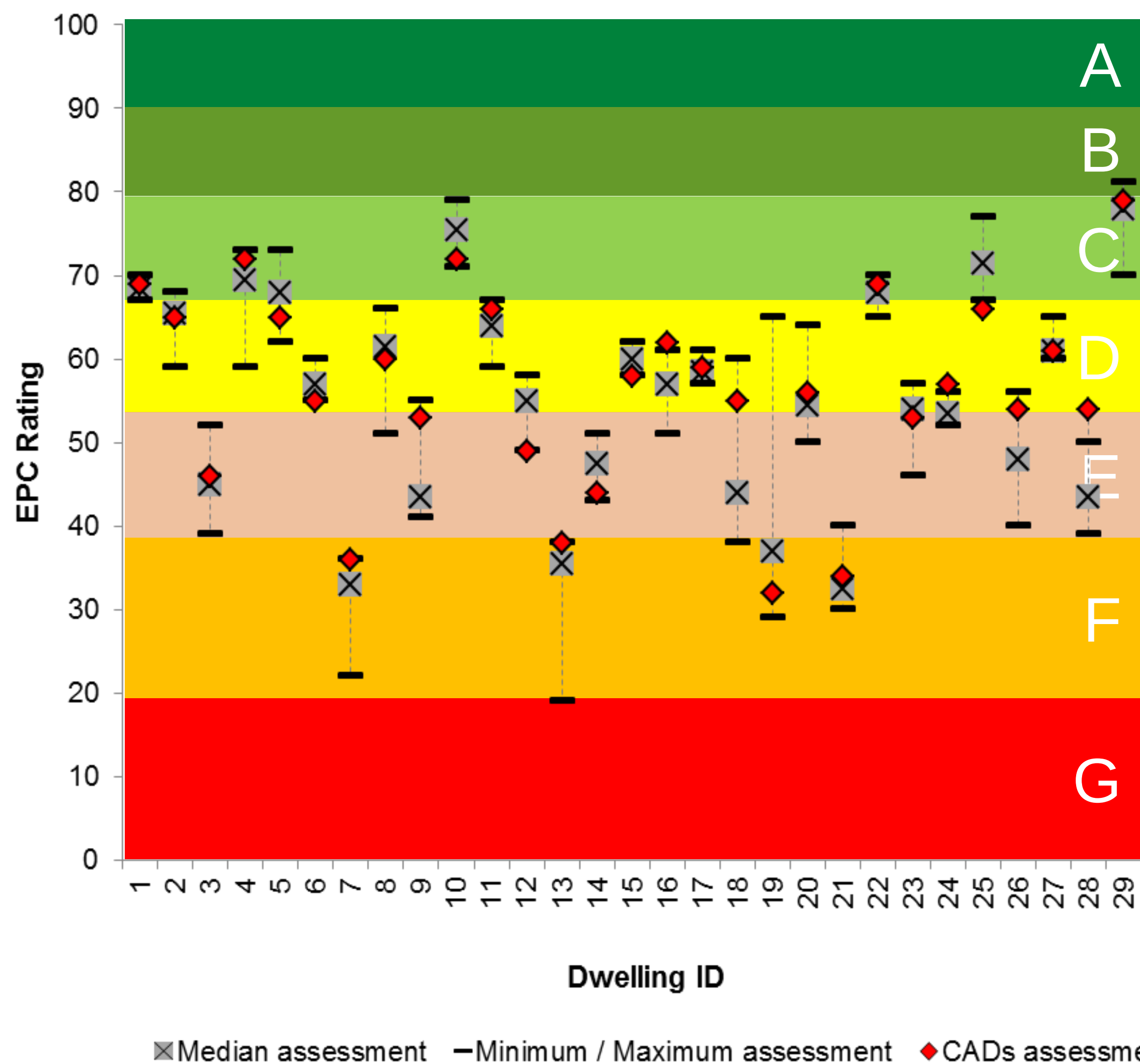
What are they trying to do?

- Standardise
- Simplify
- Communicate/inform
- Instigate change

What are they not trying to do?

- Provide detailed thermal models
- Characterise real occupancy and behaviour
- Replace real monitored energy data
- Interact with other sectors of energy modelling (e.g. energy systems/networks)
 - At time of writing...

And issues with 'accuracy'....



Green Deal Mystery Shopper, DECC (2014)

crossCert project



- €3M Horizon-funded project providing guidance towards user-centred next-generation EPCs
- Directly compared EPC approaches across 9 European countries
- How and why are they different? Is there potential for good practice sharing? How do the EPCs interact with the user community?
- What happens when innovations are added to EPCs, such as new output metrics?
- Will they work equally well in all countries?



Comparing across Europe



- How are EPCs different across Europe
 - Calculation methodologies
 - Assessment frameworks
 - EPC documents and metrics
 - Assessors running assessments
 - End-users receiving assessments
- From this, we can understand consequences of these differences
 - EPCs used in different ways (by different users?)
 - Design of next-generation EPCs
 - Are all European EPCs able to evolve in the same way?

But...EPCs across Europe are not alike



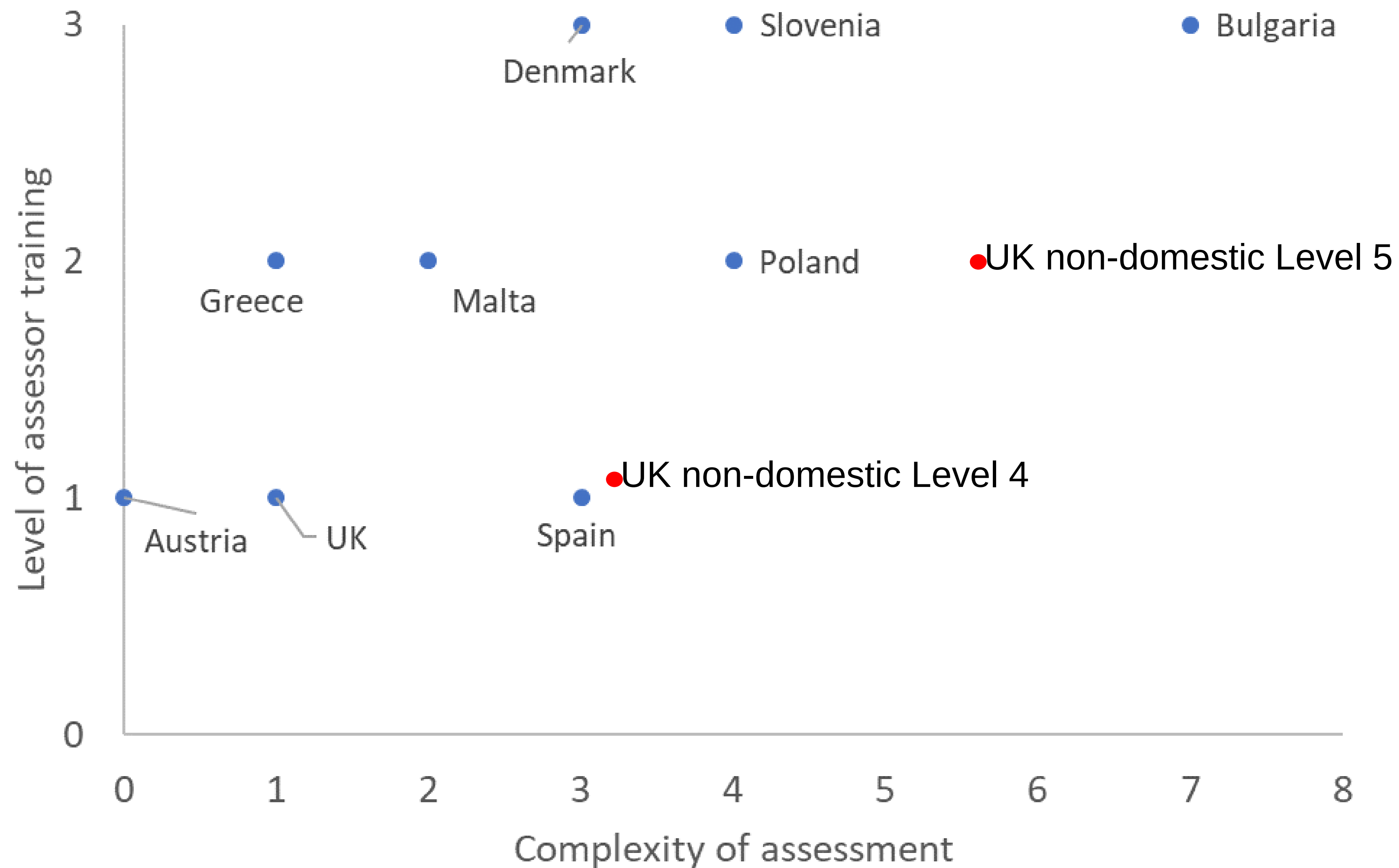
- Similarity of EPC documents gives illusion of harmonisation
- Across Europe, significant differences exist in
 - Inputs used
 - Calculation engines
 - Assessment protocols
 - Assessor training/background
 - Balance between standardisation vs tailoring for a specific building
- What is the role of the assessor in shaping the form of assessment?

	HVAC schedules	HVAC specification	Lighting and equipment schedules	Occupancy	Construction thermal parameters	Ventilation rates	Infiltration rate	Setpoints
Austria	Default based on building type	Default values available	Default values	Default values	Database available	Database available	Default values available	Fixed
Bulgaria	Assessor	Actual values	Assessor	Assessor	Database available	Measurement/ assessor knowledge	Measurement/ assessor knowledge	Assessor
Denmark	Assessor	Default values available	Default values	-	Database available	Database available	Default values available	Depends on use type/activity level/control
Greece	Default based on zone activity type	Default values available	Default values	Default values	Database available	Database available	Default values available	Depends on use type/activity level/control
Malta	Default based on zone activity type	Default values available for some building categories	Default values	Default values	Database available/ Inference based	Database available	Default values available	Depends on use type/activity level/control
Poland	Assessor	Default values available	Default values or assessor	Assessor	Database available but outdated	Database available	Default values available	Depends on use type/activity level/control
Slovenia	Default based on zone activity type	Actual values	Default values	Default values or assessor	Database available	Database available	Measurement/ assessor knowledge	Depends on use type/activity level/control
Spain	Default based on building type	Actual values	Default values	Default values	Database available/ Inference based	Database available	Default values available	Fixed
UK	Default based on zone activity type	Default values available for some building categories	Default values	Default values	Database available/ Inference based	Database available	Default values available for some buildings	Depends on use type/activity level/control

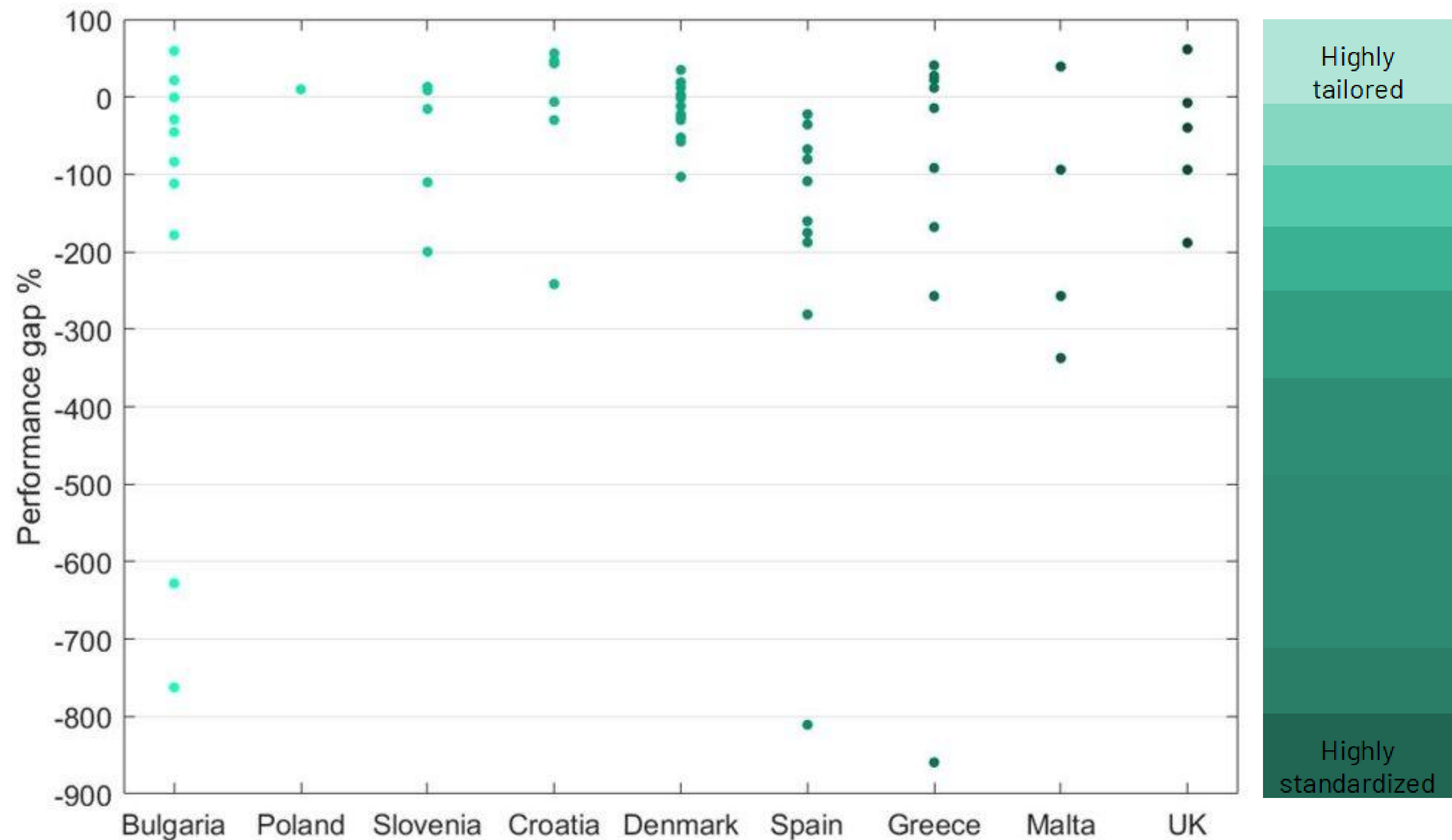
And EPC assessors are not alike either



	Prior education	Further training/ examination
Austria	Engineers, architects, and some technical professionals	No mandatory training
Bulgaria	Technical education with 6 years' experience, university degree with 2-3 years' experience	Level 1 (eligible to issue EPCs for all buildings): must finish a 115-hour course Level 2 (eligible to issue EPCs for residential building, low rise mixed-use buildings and country-house buildings): must finish an 80-hour course.
Croatia	Architects, civil engineers, mechanical or electrical engineers	For buildings with simple HVAC systems: a successful completion of 40 hours training course For buildings with complex HVAC systems: a successful completion of above plus additional 40 hour course It is mandatory to participate in skills upgrading programs once every year. The courses are only
Bulgaria	Technical education with 6 years' experience, university degree with 2-3 years' experience	Level 1 (eligible to issue EPCs for all buildings): must finish a 115-hour course Level 2 (eligible to issue EPCs for residential building, low rise mixed-use buildings and country-house buildings): must finish an 80-hour course.
Greece	Architects and engineers	To qualify for assessing Class C (more complex) buildings, the auditor's should pass an exam
UK	Diverse backgrounds without specific education requirement	Compulsory training courses for the intended level of certification (e.g. Level 3 = simple Domestic Energy Assessment (DEA) for residential buildings, Level 5 = complex buildings with features requiring dynamic simulation) Annual training of 10 hours Valid CPD per certification strand each year. For any additional strands, an additional 5 hours Valid CPD per additional strand must be completed.
Spain	Engineers, architects, professionals with technical vocational training	No mandatory training.
UK	Diverse backgrounds without specific education requirement	Compulsory training courses for the intended level of certification (e.g. Level 3 = simple Domestic Energy Assessment (DEA) for residential buildings, Level 5 = complex buildings with features requiring dynamic simulation) Annual training of 10 hours Valid CPD per certification strand each year. For any additional strands, an additional 5 hours Valid CPD per additional strand must be completed.



Does this impact 'Performance Gap'?



Where do you want to sit?

Standardise

Harmonise
Quality control
Reach non-expert
users
Align with EPBD
Align different countries
Simple training regimes

Customise

Tailor to property
Provide value to expert users
Optimise use of modelling/data
Accommodate new metrics
Allow for country-specific focus
Higher technical competence of
assessors

crossCert project findings



- Stronger need to identify where harmonisation is required for EPCs
- Assessor-Assessment is a symbiotic relationship
 - Assessor training is a good indicator of type of assessment in that country
- Next-gen EPCs are likely to require more complex calculations – this **may** require more complex training for assessors
 - Training gap will be different for different countries
 - Implications on number of assessments/yr
- Do we want EPC assessors to be "building physicists"?
 - **YES** – different training regimes required
 - **NO** – need a clearer path for building modelling in energy compliance
 - Is this answer different for residential vs non-residential sectors?

What does HEM mean for all of this?



- Does more nuanced building physics allow for more versatility of use?
 - e.g. Choice of new metrics
 - Changes perceived limits of what EPCs should be used for?
- Will the use of 'wrappers' soften the impact of increased calculation complexity on resource (i.e. time) implications?
- Is it possible that DEAs end up using more advanced models than NDEAs (Level 4)?
 - Does that matter?

Thank you

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www.crossCert.eu



PAS2038 Update

Sam Cante, Elmhurst Energy



What is PAS2038



PAS 2038 is the Publicly Available British Standard for Retrofit in Non-Domestic buildings

First published August 2021

Similar to PAS 2035, including the use of PAS 2030 or MCS certification for installers

It provides the framework for the retrofit process for all non-domestic buildings.

Following the standard can assist with:

- Improving Energy Efficiency
- Achieving sustainability goals
- Securing Government Funding



Why is it important

PAS 2038 enables lower energy use and costs, better building performance, and stronger alignment with environmental targets.

Net zero cannot be achieved by ignoring Non-Domestic buildings. Retrofit is key.

Improving building performance vs. design – addressing performance gap between predicted and actual energy use.

Increasing demand for quality retrofit advice

Non-domestic portfolio owners, want to ensure any 'investment' is protected when it comes to Retrofit



Where it fits

PAS2038 identifies the following roles/requirements:

- Project Management & Governance
- Building Assessments
- Evaluation of Improvement options
- Improvement Planning
- Design and Specification
- Installation of measures
- Testing, Commissioning and Handover
- Monitoring and Evaluation

For Energy Assessors, PAS 2038 creates:

- New formal roles
- New mandatory reports
- Ongoing advisory income, not just one-off assessments



What is involved?

Two key roles than Elmhurst will be involved in:

- **Retrofit Lead Assessor (RLA)**

- Has to hold an NDEA, DEC or ACI Assessor qualification
- Has to complete the RLA course
- The appointed person to collate the reports required to pass onto the RLP.
- Can undertake the reports themselves if they are qualified and competent to do so.

- **Retrofit Lead Professional (RLP)**

- Like the Retrofit Coordinator for Domestic
- Needs RC qualification and RLA competency
- Other routes to competency are available



The 'Golden Thread'



Baseline Assessment Report:

EPCs

- Provide a consistent, regulated benchmark of building energy efficiency
- Support strategic retrofit planning through improvement recommendations
- Form the regulatory backbone of MEES, funding eligibility and future compliance

ACIRs

- Provide targeted inspection of HVAC systems over 12 kW
- Identify inefficiencies, poor control and maintenance issues
- Support cost-effective energy reduction and compliance with EPB regulations

Condition Reports

- Provide a breakdown of areas of poor condition within a building
- Identifies building fabric and services defects of all sizes
- Drives improvements relating to condition rather than efficiency

DECs

- Mandatory for public buildings, driving transparency and accountability
- Enable year-on-year performance tracking and operational energy management
- Mandatory for buildings over 1000m²

Challenges and Market reality

Where we are here today:

PAS 2038 is not yet widely embedded

Skills, capability and supply chain capacity are still developing

Retrofitting Non-Domestic Buildings is challenge.

The standard is not 'mandatory'

So why now?



How to get involved



Elmhurst members can be first to market, in securing training and recognized competency in this space.

Non-Domestic Retrofit Lead Assessor (RLA) Training – available to [book now](#)

Non-Domestic Retrofit Lead Assessor Competency Scheme – available to join imminently

Non-Domestic Retrofit Lead Professional ‘upskill’ – available to book imminently

Non-Domestic Retrofit Lead Professional Competency Scheme – available to join imminently

Simply want to find out more, check out our informational CPD’s:

<https://www.elmhurstenergy.co.uk/product/introduction-to-non-domestic-retrofit-on-demand/>

<https://www.elmhurstenergy.co.uk/product/pas-2038-retrofitting-non-domestic-buildings/>

Or check out webpages:

Retrofit Lead Assessor Competency Scheme - <https://www.elmhurstenergy.co.uk/retrofit-lead-assessor-competency-scheme/>

Retrofit Lead Professional Competency Scheme - <https://www.elmhurstenergy.co.uk/retrofit-lead-professional-competency-scheme/>

Thank you all for attending

Stuart Fiarlie, Managing Director
at Elmhurst Energy

