

Making the case for
**measured performance
in government policy**



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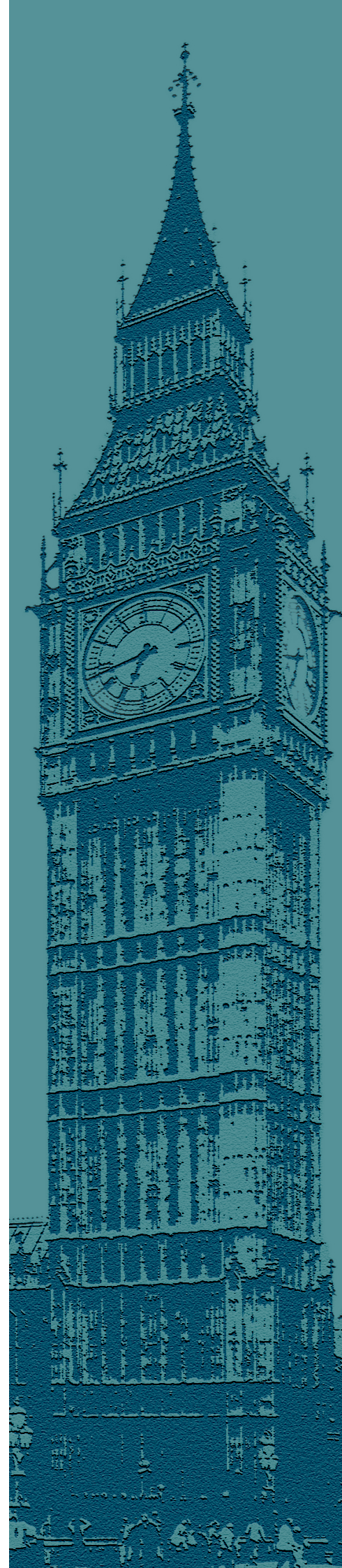
Too many households in the UK live in homes that are expensive to heat, uncomfortable, and damaging to health. Poorly performing building fabric drives up energy bills, contributes to fuel poverty, and leaves occupants cold in the winter – problems that fall disproportionately on those least able to bear them. Improving our homes is therefore first and foremost about people: warmer rooms, lower bills, and better quality of life. It is also essential to meeting our broader obligations. The UK's building stock accounts for approximately 20% of total greenhouse gas emissions¹ and decarbonising our homes and workplaces is a necessity to meeting net zero by 2050. Yet ambition alone will not deliver transformation at the scale required. For retrofit to accelerate across the country, people must have confidence that it works.

Measured performance has a critical role to play in building that confidence. When outcomes are demonstrated, not just predicted, retrofit shifts from being a policy aspiration to a proven solution. At a time when an estimated 28 million homes will require improvement², illustrating success in real, measurable terms is essential to stimulating demand and ensuring investment flows where it will have the greatest impact.

There are many ways to improve a property's energy efficiency and reduce its carbon footprint - from enhanced insulation and low-carbon space and water heating systems to renewable energy technologies and other innovative solutions. However, selecting the right measures for each property requires a clear understanding of how that building is currently performing. Without this insight, investment risks being misdirected and opportunities to reduce emissions and energy bills may be lost.

We are entering a new phase of policy development. The Warm Homes Plan has been published, the Boiler Upgrade Scheme has been expanded, the Future Homes Standard is on the horizon, and new Minimum Energy Efficiency Standards (MEES) for the private and social rented sectors are being introduced. Alongside these are emerging opportunities through innovative financing models, the Warm Homes Fund and the Warm Homes Agency. Each of these initiatives will play a key role in accelerating the transition to a low-carbon, healthy future. However, success ultimately depends on getting it right the first time.

¹ UK Green Building Council. 2026. Climate Change Mitigation. [Source](#)
² RICS. 2024. The big push for retrofit in UK housing. [Source](#)



Whether action is taken by property owners, government, industry, investors, energy suppliers or private markets, retrofit must be delivered to a high standard - resulting in homes that are warm, affordable to run and low in carbon emissions. The need for reliable, measurable outcomes has never been greater. The Sustainable Energy Association therefore supports growing calls for performance measurement to be embedded across both retrofit and new-build development, ensuring that promised outcomes are delivered and that confidence in the market continues to grow.

This short report highlights ongoing work and technological innovation across the sector, explores opportunities to embed performance measurement within the policy landscape, and demonstrates the wide range of benefits this approach can deliver for households, industry and the UK's journey to net zero.



What is the challenge?

The UK's building stock is widely regarded as among the oldest and least energy-efficient in Europe, and retrofitting will be required on an unprecedented scale. As noted above, around 28 million properties will ultimately need retrofit, albeit to varying degrees of intervention. However, uptake among homeowners will only accelerate when retrofit becomes an attractive, accessible and affordable proposition.

In the shorter term, large-scale retrofit activity is expected within the Private Rented Sector. Approximately 6 million properties will require improvements of varying depth to comply with the anticipated 2030 MEES deadline.

This raises a critical question: which measures are most appropriate for each of these homes? At present, decisions typically rely on an assessor's recommendations and the outcomes of an Energy Performance Certificate (EPC) assessment. While these provide a useful starting point, a more accurate understanding of how a building is actually performing would enable better-informed decisions and help avoid a one-size-fits-all approach to the UK's diverse housing stock.

Fundamentally, buildings do not perform uniformly. Two properties that appear identical may, in practice, behave very differently. Standardised methodologies such as the Reduced Data Standard Assessment Procedure (RdSAP) may be "right on average" across the housing stock, but they cannot accurately reflect the performance of every individual home.

This leads us to a broader issue: **the performance gap**.

The performance gap describes the difference between a building's predicted performance - for example, at the design stage or as estimated through visual surveys and assessment models - and its actual performance in use. This is not a new phenomenon; it has been recognised internationally for decades. It arises from built-in assumptions within design and modelling processes, combined with the fact that buildings are rarely monitored to assess how they perform under real-world conditions.

Industry and academia have long sought to address this challenge, yet it remains a persistent barrier to delivering genuinely low-carbon, healthy and high-performing homes.

Given the unprecedented scale of retrofit ahead - and the fact that we have only one opportunity to get it right - we must build on existing progress, complement established methodologies, and rethink how policy is shaped and how building performance is measured if we are to move forward successfully.



HOW ARE BUILDINGS MEASURED IN THE UK?

In the UK, building energy performance is assessed primarily through calculation models rather than direct measurement. These models estimate heat loss and energy efficiency using design specifications or observed building characteristics, with standardised assumptions used to fill any gaps in available data. While this approach underpins compliance with EPC requirements, it reflects predicted performance rather than how a building actually performs in use.

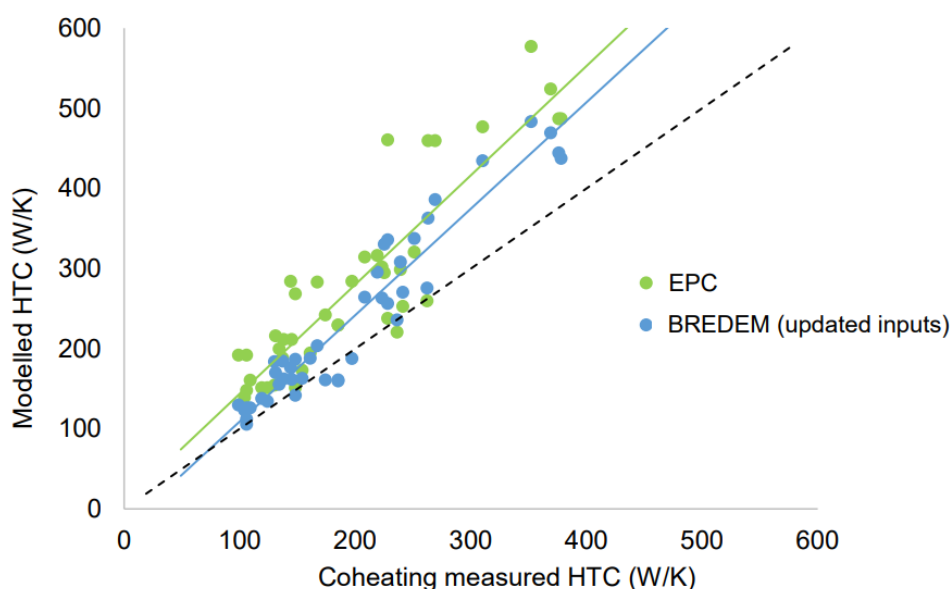
- **SAP (Standard Assessment Procedure)** is used at the design stage for new-build properties. It is based on specified materials and construction details, meaning the calculated Heat Transfer Coefficient (HTC) reflects the building's design intent.
- **RdSAP** is used for existing buildings. It relies more heavily on default values for elements such as wall types, thermal bridging and airtightness. Although it also calculates an HTC to estimate heat loss, if these default assumptions do not accurately reflect the building's true characteristics, the modelled HTC may differ significantly from in-situ measurements.

While the performance gap is well documented, advances in technology now make it increasingly feasible to compare modelled predictions with measured performance. This is driving new research, improved methodologies and more robust approaches to understanding how buildings perform in reality.

DEMONSTRATION OF ENERGY EFFICIENCY POTENTIAL (DEEP)³

The DEEP project, led by Leeds Beckett University, the University of Salford, and Loughborough University, and commissioned by DESNZ, highlighted similar issues within RdSAP when assessing building fabric.

In this study, modelled HTC based on default RdSAP values were compared with HTC measured through co-heating tests. Across the case study homes, EPC-based predictions overestimated HTC by an average of 42%, with discrepancies ranging from 7% lower to more than 100% higher than measured values in individual dwellings.



EPCs have been crucial in helping us understand how buildings operate and, on average, provide a reasonable estimate. However, gaining a deeper insight into actual building performance unlocks significant opportunities for better policy design and more effective retrofit strategies.

Where does the industry currently stand in gaining deeper understanding into actual building performance?

In short, meaningful progress is being made. An updated British Standard (BS 40101) for building performance evaluation is under development, alongside significant advances in monitoring technology. The cost of SMETER systems is falling, new training courses are being introduced by leading domestic energy assessor organisations, and academic research into in-situ measurement of HTC in dwellings continues to expand.

At the time of writing, the Government has published a consultation on the potential use of Smart Meter Enabled Thermal Efficiency Ratings (SMETERs) as part of EPC reform. However, although there have been opportunities to embed performance measurement within government policy - including through the adoption of SMETER technology - this has not yet been implemented in practice.



PERFORMANCE MEASUREMENT & POLICY

Policy	Performance Measurement	Description
ENGLAND		
WH: Local Grant	No	<i>Performance measurement not considered as part of scheme design</i>
EPC Reform: Home Energy Model	TBC	Government is currently proposing to introduce an option for recording HTC's based on SMETER measurements in the EPC system, as supplementary information about fabric performance.
Home Energy Upgrade	No	<i>Performance measurement not considered as part of scheme design</i>
Energy Company Obligation	Consulted on in ECO4 pay for performance (PFP) ⁵	Representing almost half of the ECO4, PFP, and GBIS consultation, the Government had proposed introducing a voluntary mechanism that would reward suppliers based on actual improvements in home energy efficiency, rather than merely for installing measures. The aim was to incentivise higherquality retrofits, with SMETERs intended as the tool for monitoring insitu performance. However, following the identification of widespread solidwall insulation failures under ECO and what appears to have been an overstretched civil service diverted to address these issues, the proposal was ultimately not taken forward. In the meantime, the Energy Company Obligation itself has now been scrapped.
SCOTLAND		
Warmer Homes Scotland	No	<i>Performance measurement not considered as part of scheme design</i>
Social Housing Net Zero Heat Fund (Scotland)	No	<i>Performance measurement not considered as part of scheme design</i>
WALES		
Nest	No	
Optimised Retrofit Programme	Yes	As part of the support provided by Welsh Government, sensors are required to be installed by the landlord to monitor the performance of the improvements being made. Data is collected by Welsh Government to show how improvements to homes work in real time, rather than relying on predicted outcomes. While these are positive steps that have been taken in Wales to date, it is worth noting that the data collected so far has been largely environmental. The next phase should place a strong emphasis on the collection of energy data.
STANDARDS		
PAS2035	Yes	PAS 2035 introduces measured performance as a core element of the retrofit process, moving beyond reliance on design assumptions. It requires Retrofit Assessors to gather accurate data on building condition and thermal characteristics and Retrofit Evaluators to verify outcomes after installation. This includes checks such as airtightness testing, ventilation performance, and post-retrofit monitoring to ensure improvements deliver real-world energy savings and avoid unintended consequences like damp or overheating
INTERNATIONAL RECOGNITION		
International Developments EU EPBD - Member State guidance on measured vs calculated performance	Recommendation	The European Commission's guidance accompanying the recast EPBD (EU 2024/1275)⁶ recommends that member states introduce EPC tools that allow building users to modify or override certain input parameters and observe the resulting differences in performance. The Commission further recommends that member states provide mechanisms for building owners and tenants to query or object to EPC results where observed performance diverges from the asset rating.

4 GOV.UK. 2024. Social Housing Decarbonisation Fund Wave 2.1: process evaluation report. [Source](#)

5 GOV.UK. 2025. Energy Company Obligation 4 and the Great British Insulation Scheme: mid-scheme changes – consultation. [Source](#)

6 Energy performance certificates (Articles 19-21, Annex V) and independent control systems (Annex VI). [Source](#)

WHAT ARE SMETERs?

SMETER is an approach developed to improve the accuracy of building performance evaluation by using real-world data from smart meters. The idea behind SMETER is to move beyond purely model-based assessments, which often rely on assumptions and default values, and instead use actual energy consumption patterns to estimate a building's thermal performance. By analysing heating energy use alongside factors such as internal temperature and external weather conditions, SMETER aims to provide a more reliable measure of heat loss and overall efficiency.

Ongoing developments relating to SMETERs, HTCs and performance measurement	
<i>British Standard (BS) 40101:2025</i>	An updated edition of BS40101 (2022) currently in development, providing a clear specification for carrying out building performance evaluation.
<i>International Energy Agency (IEA) EBC Annex 94</i>	Extending on the work previously undertaken in: - Annex 58: Reliable Building Energy Performance Characterisation Based on Full Scale Dynamic Measurements and, - Annex 71: Building Energy Performance Assessment Based on In-situ Measurements. Key outcomes: - Advancing the practical application and technical standards for in-situ building energy measurement. - Enhancing the accuracy and applicability of heat loss measurement methods across diverse buildings and climates. - Establishing a co-developed framework for verifying and validating these techniques. - Pioneering new research to diagnose and explain the heat loss performance gap. - Curating open-access datasets to provide a lasting resource and drive industry innovation.
<i>CIBSE – Technical Memorandum</i>	‘Measuring the heat transfer coefficient of buildings’ – <i>what is a SMETER HTC measurement</i> - The development of an industry standard for those in the assessment, specification, regulation and delivery of building thermal performance. Audience: - Regulatory and oversight bodies. - Standards and safety agencies. - Accreditation schemes. - Local authorities (for housing, retrofit, and planning).
DESNZ SMETER Validation and Quality Assurance system	- The system is still in development (anticipated by the end of 2026) with final design decisions later this year, but current design work is considering the following: - o Validation system - to validate accuracy of commercial SMETER technologies - o Verification - to verify a SMETER measurement has been conducted correctly and produced a reliable result - o Process controls - to ensure SMETER measurements are conducted robustly and appropriately in different homes and conditions

MAKING THE CASE FOR MEASURED PERFORMANCE

Measured performance presents clear opportunities to strengthen practices at every stage of the retrofit process. By enabling more accurate measurement and prediction of outcomes, it has the potential to transform the way retrofit programmes and construction are designed, managed, and assessed.

Fabric

Better targeting of retrofit and advice

Understanding how an individual property – or the wider building stock – performs is essential for determining what improvements are needed. With limited government funding and the need to deploy both public and private capital effectively, accurate targeting is critical. Pinpointing those most in need, such as fuel-poor households, or properties requiring multiple upgrades before electrification becomes viable, depends on reliable data on building performance.

Accurate targeting ensures funds are allocated appropriately, with interventions prioritised for those in greatest need. This approach helps tackle fuel poverty, reduce associated health risks, and, fundamentally, ensure that spending delivers maximum impact.

Incentivising outcomes, not inputs

There is growing recognition that future retrofit programmes must move away from a model focused on the number of measures installed and towards one where a set of outcomes are guaranteed. Performance measurement makes this shift possible, while also opening up opportunities to incentivising innovation in retrofit methods

Under a pay-for-performance model, payments are linked to the actual outcomes achieved rather than simply paying upfront for inputs. This change has important implications: installations must meet high standards at the point of install and maintain those standards over time, ensuring promised performance and benefits are delivered – particularly where longer-term payments or guarantees are involved.

For further details on the SEA's own take on how SMETERs could be introduced into Government policy – refer to our *Energy Efficiency Incentive* [here](#). Further ideas are explored in the *considerations for policy makers* document.

Identifying hidden defects and invisible problems

Design-stage expectations often differ from actual in-situ performance. This gap isn't just down to poor workmanship; buildings and materials naturally degrade over time, even when installed correctly.

Measuring performance helps uncover hidden issues such as thermal bridging, defective insulation, or poor airtightness. Where remediation isn't needed, funds can be redirected elsewhere. Where problems are found, they can be addressed promptly, ensuring appropriate solutions without placing financial burdens on tenants.

For retrofit to scale beyond government grant schemes, it must be financially viable for consumers. Building trust will therefore be central to this process. Introducing cost-effective monitoring tools that support informed decisions, and ensure defects are resolved, should be a key lever for government in driving high-quality retrofit and consumer confidence

Quality assurance and consumer protection

Measuring how the building fabric, or the property more broadly, performs creates an opportunity to better protect consumers. Quality assurance is fundamental to any investment, whether funded by government or private capital.

If measures are not installed correctly, they will fail to deliver the intended benefits. Defects may not appear immediately but can develop over time, while some installations may remain effective for many years. For the everyday consumer, without measuring outcomes before and after retrofit, it is almost impossible to know what is happening until fuel bills rise, tenants experience discomfort, or issues such as damp and mould emerge – as highlighted in the recent NAO audit.

Performance monitoring enables greater scrutiny and accountability for installers, while opening new avenues to safeguard consumers. Importantly, installer awareness that performance measurement is taking place – alongside enhanced consumer protections soon to be introduced by Minister McCluskey⁷ – means that any problems can be traced back to their source, ensuring poor workmanship is identified and addressed.

Heating Systems

Better advice and suitability checks

As recognised by government, not all homes will be suitable for a heat pump. Suitability is often assumed based on archetypes, but the most appropriate solution varies by property.

By introducing performance measurement and understanding how a building performs in situ, accurate data – such as measured heat transfer coefficients – can inform decisions about heating system suitability. For some homes, this may narrow options; for others, it could expand choices that might otherwise have been overlooked. Ultimately, this data-driven approach supports both consumers and installers in selecting the most appropriate heating system for each home.

Importantly, this benefit is not limited to heating systems. More detailed retrofit advice can also be derived from measured HTC's and other tools that assess a home's overall performance.

Improved sizing and cost prediction

Correct sizing of a heating system represents an opportunity to reduce capital costs, improve system efficiency, and protect consumers from unnecessarily high bills. Conversely, heating systems risk being undersized if accurate heatloss data is not available. Evidence suggests heatloss calculations are frequently inaccurate, with one study indicating they are correct in only around 30% of cases. As lowcarbon heating is rolled out at scale, this makes accurate system sizing critical⁸

Applied across the UK building stock, this could deliver substantial savings – both in terms of the heating system itself and the ancillary replacements often associated with certain systems.

Performance monitoring and guarantees

Alongside monitoring the building fabric, a growing range of heating system monitoring solutions is emerging. These tools create opportunities to ensure systems perform as intended over the long term, offering performance guarantees – an increasingly attractive proposition for consumers and something some companies are now incorporating into bundled offerings.

Innovative approaches that protect consumers, drive up quality, and accelerate the rollout of low-carbon heating systems are fundamental to the sustained growth of the market.

Fundamentally, this helps to de-risk the adoption of technologies such as heat pumps. At the same time, long-term monitoring provides protection and clear oversight of system performance, whether issues arise from installation or from the product itself.

Green Finance

De-risking finance offers

Access to green finance is often constrained by uncertainty around actual energy savings and system performance. Verified, measured performance data significantly reduces this uncertainty for lenders and investors. By providing clear evidence that a heating system or retrofit delivers the promised efficiency and cost savings, financial institutions can confidently offer lower interest rates, longer repayment terms, and tailored green mortgage products.

For homeowners, this translates into more affordable financing options and increased trust in low-carbon technologies. For lenders, it mitigates risk by ensuring that projected energy savings – which underpin repayment capacity – are real and measurable. This transparency also enables the development of performance-linked finance models, where repayments can be tied to actual energy savings, further incentivising high-quality installations and ongoing monitoring.

Better customer engagement

Clear, evidence-based information is essential for empowering consumers to make informed decisions about retrofit programmes and low-carbon technologies. When homeowners have access to verified data on expected performance, cost savings, and long-term benefits, it reduces uncertainty and builds confidence in their investment.

This transparency not only helps consumers choose the right solutions for their property but also strengthens trust in installers, manufacturers, and policy initiatives. By demonstrating real-world outcomes rather than theoretical projections, retrofit programmes can overcome scepticism and accelerate adoption. Ongoing performance monitoring adds further reassurance, ensuring systems continue to deliver as promised and creating a positive feedback loop that boosts customer satisfaction and word-of-mouth advocacy.

Accounting for actual carbon emissions

Meeting Net Zero targets requires more than theoretical models – it demands verified, real-world data. Measured performance in buildings, supported by technologies such as SMETERs, provides a robust foundation for accurate carbon accounting.

This approach ensures that reported carbon savings are genuine rather than hypothetical, which is critical for compliance with regulatory frameworks and maintaining credibility in sustainability reporting. For policymakers, SMETER-driven insights enable better-targeted incentives and more effective decarbonisation strategies.

Health

Mould / Moisture	Mould growth is often linked to excess moisture, poor ventilation, and inadequate thermal performance within a property. Traditional assessments rely on visual inspections or assumptions about building condition, which can miss underlying issues. Performance measurement changes this by providing real, in-situ data on factors such as surface temperatures, humidity levels, and heat loss. By monitoring these indicators over time, it becomes possible to identify conditions that promote mould growth before it becomes visible
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Considerations for policy makers

The ideas presented here provide an initial set of considerations for policymakers assessing potential pathways for SMETER integration into UK policy. They illustrate early, exploratory options for incorporating for example measured HTC's in a way that enhances policy effectiveness while maintaining a balanced and proportionate approach.

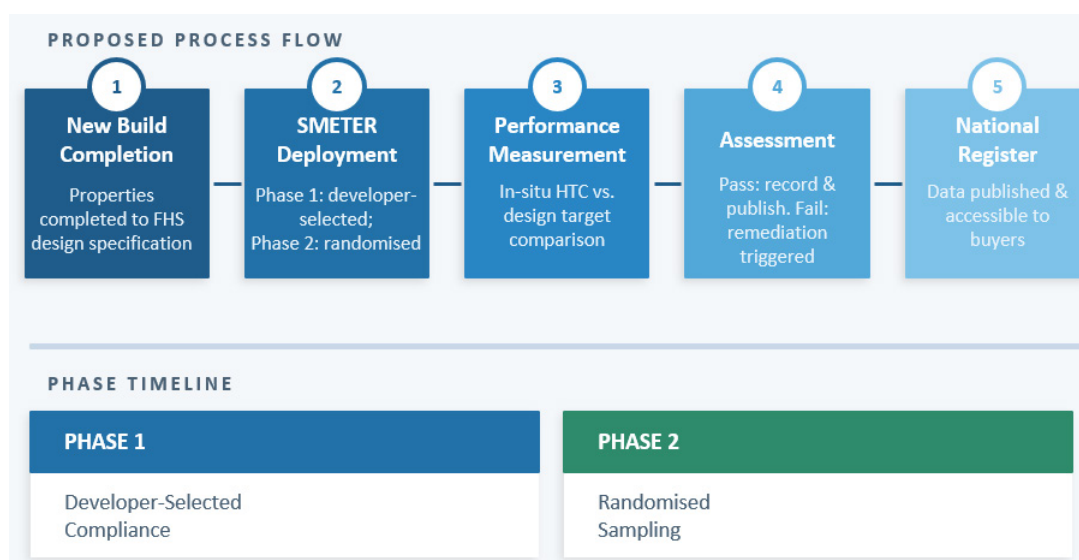
FUTURE HOMES STANDARD

The Future Homes Standard offers a generational opportunity to reset expectations for housing delivery in England. New homes built under the Standard should not simply meet design targets on paper—they should be demonstrated to meet them, and to sustain that performance over time. A home requiring significant retrofit within a decade of construction falls short of what a future-focused standard should deliver.

SMETERs offer a route to stronger accountability in newbuild delivery. We propose a phased approach that builds industry confidence while generating meaningful evidence:

- **Phase 1 – Selfselected compliance:** Government could invite housebuilders to deploy SMETERs in a proportion of new homes—around 10%—with builders initially selecting which properties are monitored and audited. Where monitored properties fall short of minimum thresholds, a remediation framework could outline expectations for addressing shortfalls.
- **Phase 2 – Random sampling:** As familiarity grows, government could transition to independently randomised sampling, generating a more representative picture of sectorwide delivery quality.
- **Phase 3 – Owner requested assessment** Once a new home is sold, a homeowner or landlord will be able to commission a SMETER assessment on request.

Results would be submitted to a national newbuild performance register accessible to the public. Parallels exist with platforms such as heatpumpmonitor.org, where monitored installations demonstrate higher seasonal performance than the 'average' install⁹, suggesting that transparent reporting could drive higher quality newbuild delivery. Making SMETER data available to purchasers at point of sale could strengthen market incentives and empower buyers.



ALTERNATIVE POLICY OPTIONS

- **Performance bonds:** Developers could be required to lodge a bond - set per dwelling, held in escrow - as a condition of planning consent or building regulations sign-off.
 - The bond is released once SMETER monitoring confirms the property meets its design HTC within an agreed tolerance. Where it falls short, the bond is retained pending remediation; if the developer fails to act, proceeds fund corrective works on behalf of the homeowner.
 - The bond value could scale with the degree of underperformance to create a direct commercial incentive for quality.
 - A dispute resolution process and independent data verification would be needed to make the scheme workable.
 - Government may wish to pilot this through the Phase 1 self-selected compliance pathway before considering wider mandate.

BUYING & SELLING PROPERTY

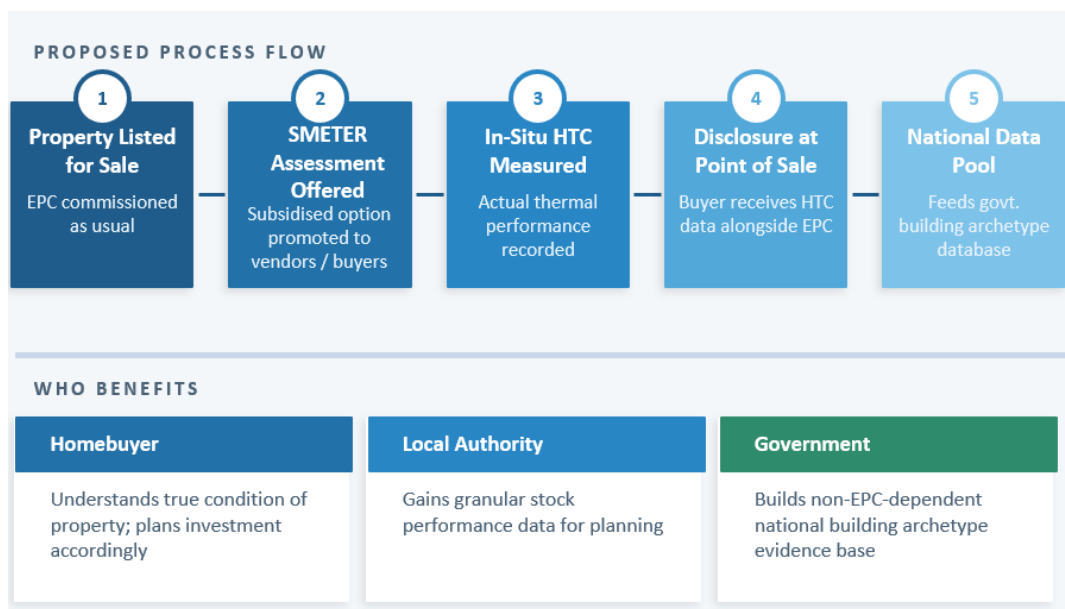
At the point of sale, Energy Performance Certificates are currently the primary means of informing prospective buyers about a property's energy characteristics. However, EPCs have wellknown limitations: they are modelled rather than measured and provide limited insight into realworld thermal performance.

Introducing SMETER measurement at the point of sale-either as an extension of current arrangements or as a subsidised, promoted option-could meaningfully improve consumer information and market transparency. For a fraction of the cost of many subsequent works, a measured HTC value would give buyers a robust, evidencebased picture of what they are purchasing: likely bills, possible improvement measures, and how the property compares to similar archetypes.

For government, the data opportunity is also substantial. A transaction dataset enriched with insitu performance data would support analysis of underperforming archetypes, identification of priority retrofit geographies, and the localised evidence that authorities will increasingly need as they assume greater coordination responsibilities.

ALTERNATIVE POLICY OPTIONS

- **Stamp duty incentive:** A partial reduction for buyers commissioning a SMETER assessment prior to completion could drive uptake without creating mandatory requirements.
- **Estate agent signposting:** Encourage estate agents to present SMETER data alongside EPCs where available and to signpost buyers to subsidised assessment options.



BOILER UPGRADE SCHEME

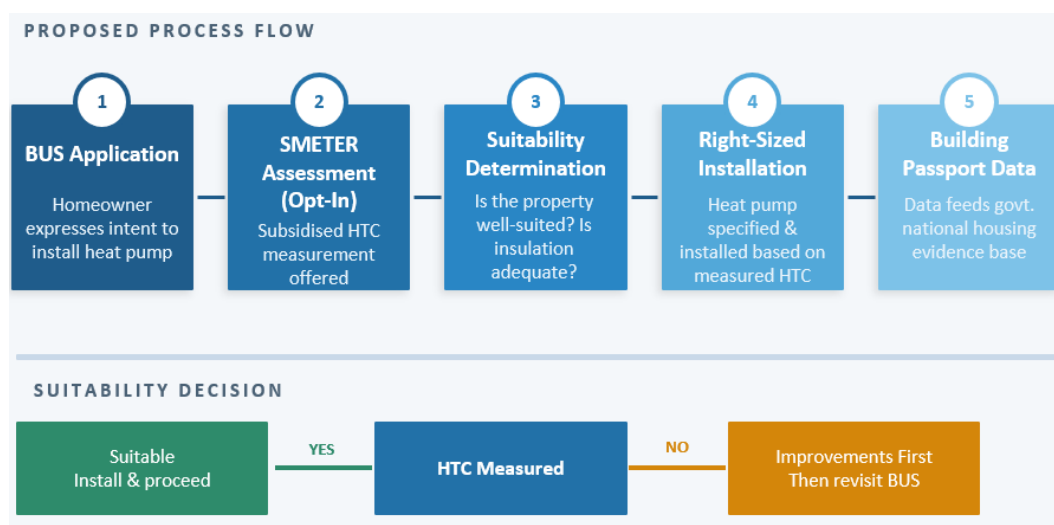
The Boiler Upgrade Scheme is the largest demandside driver of heat pump deployment in England and Wales. Without careful management, however, poor installation quality risks undermining confidence in the wider heat pump market. Heat pumps that are poorly installed or installed in homes that are poorly insulated or otherwise unsuitable, are far more likely to underperform - raising bills, reducing comfort, and undermining public confidence in the technology.

We propose:

- **A pre-installation optin pathway:** BUS applicants could opt in to a subsidised SMETER/HTC or equivalent assessment before installation, providing performance data to inform system sizing and suitability, with results feeding into the emerging building passport system.
- **A promoted EPC alternative:** Where EPCs are no longer a BUS requirement, government could actively promote HTC measurement as a more informative alternative for installers and homeowners

ALTERNATIVE POLICY OPTIONS

- **Installer competency:** Incorporating SMETER literacy into MCS accreditation to ensure installers can interpret and apply performance data.



SOCIAL HOUSING

Social housing tenants are disproportionately exposed to the consequences of poor building performance, and often least able to advocate when retrofit falls short or lowcarbon systems produce unexpected costs. Ensuring retrofit investment genuinely delivers is both a social equity priority and a matter of policy effectiveness.

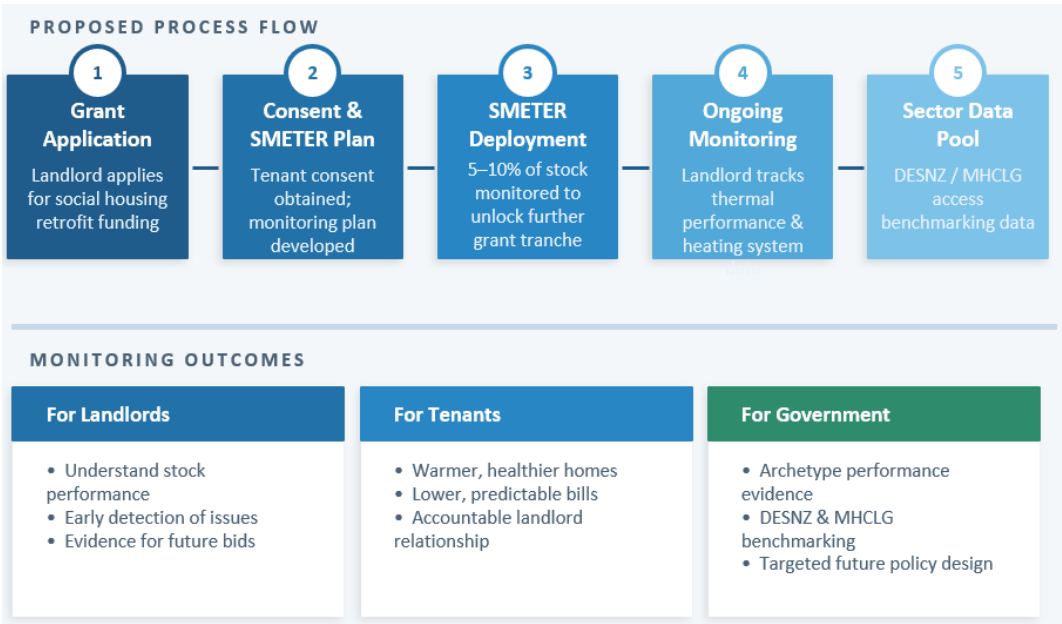
A durable performancemonitoring system-one that helps landlords understand their stock, detect underperformance early, and respond appropriately-would protect public investment and tenant welfare.

We propose making SMETER deployment eligible for capital funding under social housing programmes. To support this, government might consider:

- **Proportionate installation targets:** For example, requiring SMETER deployment across 10% of funded stock to unlock further tranches of grant.
- **Tenant consent as a core principle:** With landlords developing clear, accessible consent processes.
- **A sectorwide dataset:** Aggregated SMETER data could support benchmarking and help surface systemic issues across archetypes and geographies, informing DESNZ, MHCLG, local authorities and others.
- **Tenant data access:** Tenants could be enabled to request SMETER performance data for their home, supporting transparency and informed engagement.

ALTERNATIVE POLICY OPTIONS

- **Crosstenure data sharing:** A shared national SMETER dataset spanning social housing, private rental, and owneroccupied properties could offer government an increasingly representative view of stock performance over time.



PRIVATE RENTED SECTOR

The Private Rented Sector presents some of the most persistent challenges in housing energy performance, shaped by split incentives and a concentration of hardertotreat stock¹⁰. MEES sets a regulatory floor, but EPCs are an imperfect mechanism for determining whether that floor is met in practice. SMETERs could provide a more credible and robust tool for verifying realworld performance in the PRS.

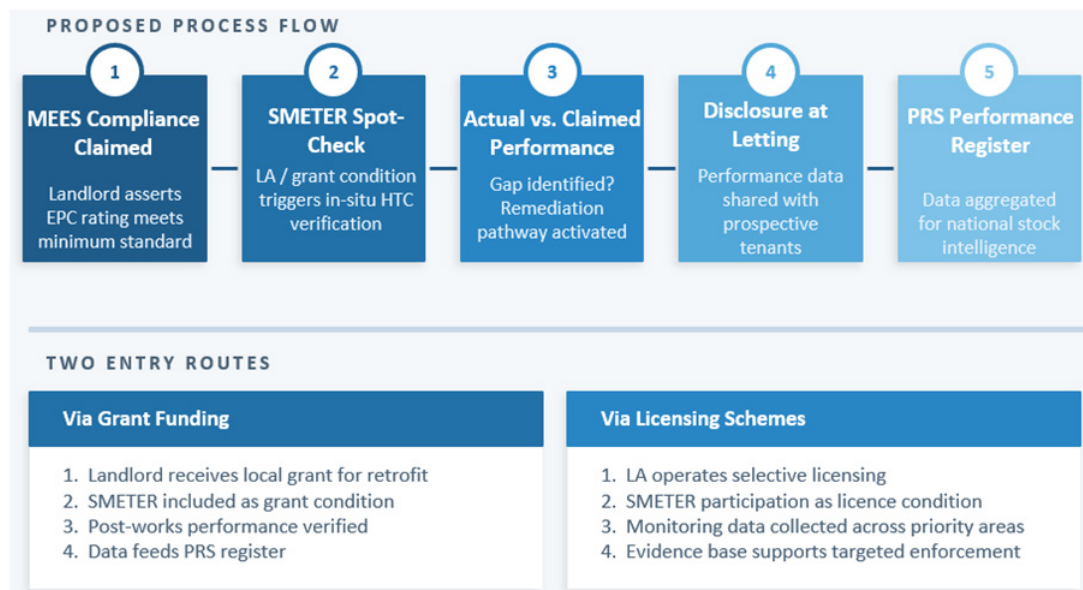
Government may wish to explore:

- **A PRS performance register:** Drawing on SMETER data gathered through local authority compliance activity to identify and target the worstperforming properties.
- **Embedding SMETERs in retrofit support:** Where landlords receive grant funding, requiring them to make measured performance data available to prospective tenants could support a more transparent rental market.

ALTERNATIVE POLICY OPTIONS

- **Licensing scheme integration:** Incorporating SMETER participation into selective or additional licensing schemes, using existing local regulatory levers to encourage uptake.
- **Tenant requested assessments:** A mechanism enabling tenants to request a SMETER assessment where thermal performance concerns arise-costs potentially contributing to the PRS MEES cap or being subsidised.

Retrofit assurance certification: A voluntary postretrofit certification scheme in which SMETERverified HTC improvements unlock a quality mark, providing reputational incentives for landlord



EMPTY AND VACANT PROPERTIES

England has around 265,000 long-term empty homes - properties that have been unoccupied and unfurnished for more than six months (In 2024 720,000 homes were unfurnished and standing empty¹¹). Standard SMETER assessment is not feasible while a property is unheated and disconnected, but reoccupation offers a practical window to establish a thermal baseline before or alongside refurbishment works. Government may wish to consider:

Post-reconnection assessment trigger. Where a long-term empty property is brought back into use through local authority intervention, a subsidised SMETER assessment could be offered once utilities are reconnected and the property is actively heated - generating a baseline HTC to inform subsequent retrofit investment.

Integration with empty homes grant funding. Making SMETER assessment an eligible use of empty homes grant funding would help direct refurbishment towards the most significant thermal deficiencies and begin to build a dataset of reoccupied stock performance that currently does not exist.

11 BBC. 2024. Empty homes are on the rise. So why aren't they being used to solve the housing shortage?. [Source](#)

EPC REFORM – MEASURED U-VALUES:

Energy Performance Certificates are the primary tool through which government, landlords, buyers, and tenants understand a building's energy characteristics. Yet the fabric inputs that underpin them - U-values for walls, roofs, and floors - are derived almost entirely from lookup tables based on a visual assessment of construction type and age. Analysis of past field trials shows that the uncertainty in estimating a U-value for a known construction type is at least 45%, and for some constructions exceeds 100% - sufficient to move a property from one EPC band to another in nearly all cases studied.

The SEA welcomes the white paper by Build Test Solutions, the University of Salford, and Elmhurst Energy¹² proposing the formal inclusion of in-situ U-value measurements as an allowable input to energy models including RdSAP, HEM, SAP, and BS EN12831. Where retrofit funding, heat pump sizing, MEES compliance, and EPC-linked financial products all flow from modelled fabric assumptions, inaccuracy in those assumptions propagates systemic error across the entire policy stack. The case for reform is reinforced by the European Commission's guidance accompanying the recast EPBD (EU 2024/1275), which explicitly recommends that member states introduce tools allowing building users to override assumed EPC inputs with measured values - recognising that divergence between calculated and actual performance is a systemic issue requiring a structural response, not merely better communication..

The SEA proposes:

- **Updating RdSAP conventions** to formally allow U-value measurements carried out in line with ISO 9869, with appropriate quality assurance requirements attached. This is a short-term action requiring only minor alterations to the existing conventions, and the SEA sees no justification for further delay.
- **Establishing a competent persons scheme** for in-situ U-value measurement, or expanding existing schemes, to provide the governance framework needed for measured data to be accepted with confidence across the industry.
- **Integrating measured U-values into retrofit programmes:** where grant funding is being deployed through the Warm Homes Plan, BUS, or MEES compliance activity - measured fabric data should be an eligible and promoted input to both pre-works assessment and post-works verification.

ALTERNATIVE POLICY OPTIONS

- **Lodging measured data alongside assumed values:** The SEA recommends requiring or incentivising assessors to submit measured U-values to a central register where available, rapidly building a national evidence base and supporting progressive refinement of lookup table defaults.
- **Dispute resolution:** Measured U-values can provide clear, objective evidence of underperformance to support dispute resolution and guide remedial works. Government should formalise this by recognising measured U-values as admissible evidence in MEES enforcement and retrofit warranty claims. The European Commission's guidance¹³ similarly recommends that member states provide mechanisms for building owners and tenants to query or object to EPC results where observed performance diverges from the asset rating - a principle the UK would do well to embed in its own reform.
- **EPC reform:** As government reviews the EPC framework, the SEA's position is that measured U-values should be recognised as a higher-evidential-tier input, with ratings derived from measured data clearly distinguished from those based on assumed values.

¹² Build Test Solutions, University of Salford and Elmhurst Energy. 2026. Better Data, Better Buildings: Using Measured U-Values to Drive Performance and Compliance. [Source](#)

¹³ European Commission. Energy performance certificates (Articles 19-21, Annex V) and independent control systems (Annex VI). [Source](#)

WALES:

OPTIMISED RETROFIT PROGRAMME

Wales is leading the way among the UK nations: the Optimised Retrofit Programme represents the first national policy requiring performance monitoring across a social housing stock. However, while the programme's current monitoring infrastructure is encouraging, it has so far captured predominantly environmental data; thermal and heatrelated performance metrics remain largely absent. As Wales seeks to build its national building databank, this gap represents a clear opportunity - one that the country is wellpositioned to act on, with the infrastructure already in place to support rapid and effective rollout.

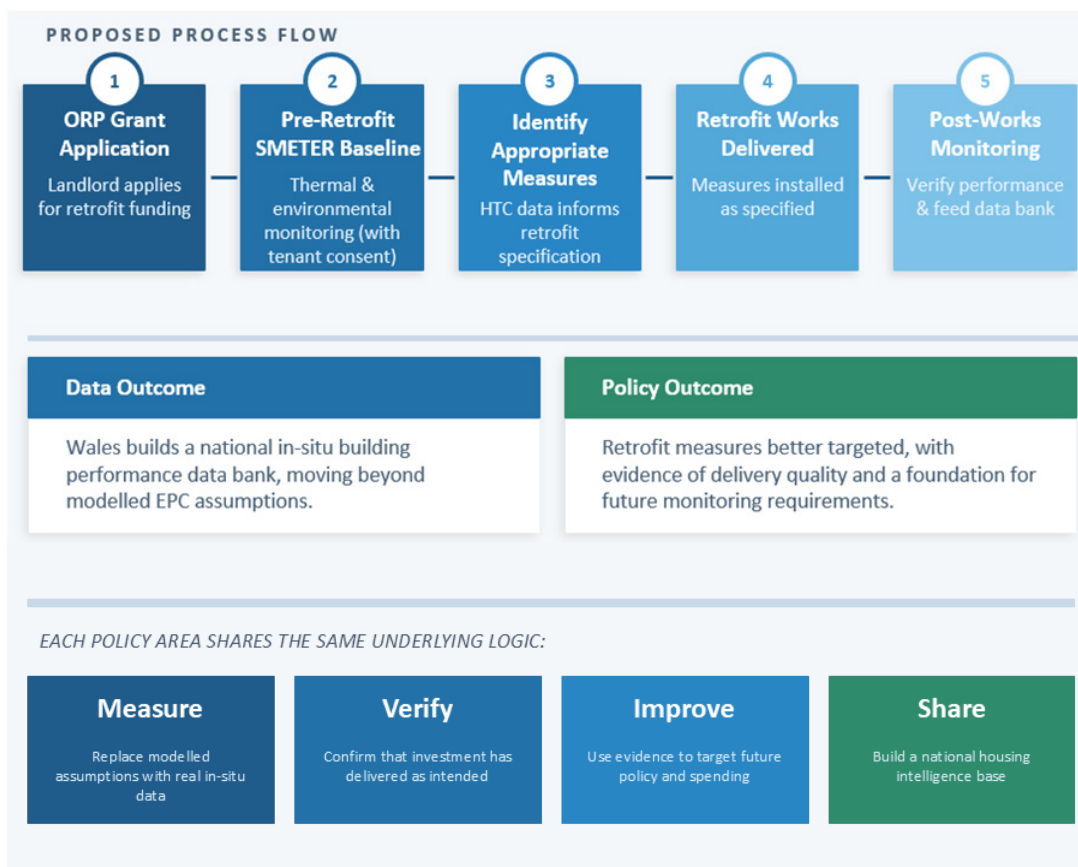
Where measures are delivered under the ORP, SMETER deployment could be funded within the existing 10% discretionary envelope (Test & Learn). This would be a targeted and proportionate first step: not a blanket requirement, but a pragmatic use of existing flexibility to start capturing the performance data Wales needs to understand whether its retrofit investment is delivering as intended.

FROM A POLICY DESIGN PERSPECTIVE, GOVERNMENT MAY WISH TO EXPLORE:

- **Pre-retrofit baselining:** With tenant consent, SMETER measurements could provide a preretrofit performance baseline for a proportion of social housing stock, generating the insitu evidence needed to inform the most appropriate measures for individual properties.
- **Lighttouch incentives:** Attaching modest incentives to pre-retrofit monitoring participation could support voluntary uptake and help build a pipeline of qualityassured data ahead of intervention.
- **Random sampling:** Introducing a random sampling approach for a subset of ORP-funded properties could provide a statistically useful dataset without creating undue administrative burden.

ALTERNATIVE POLICY OPTIONS

- **Tiered data requirements:** A model in which monitoring depth scales with the size and value of the grant - smaller grants supporting energy monitoring, larger grants requiring SMETER deployment.
- **Landlord data portals:** Requiring or inviting social landlords receiving ORP funding to submit SMETER data to a central Welsh Government portal to enable crossportfolio analysis and longitudinal tracking.
- **Retrofit assurance certification:** A voluntary postretrofit certification scheme in which SMETERverified HTC improvements unlock a quality mark, providing reputational incentives for landlords.



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