Response to Welsh Government consultation - Building Regulations (Part L) 2025 Review

Introduction

This summary document sets out the Passivhaus Trust and AECB's responses to the Welsh Government's August 2025 consultation paper ***'Building Regulations Part L 2025 Review - Changes to Part L (conservation of fuel and power), Part O (overheating) and Part F (ventilation) of the Building Regulations for dwellings and non-domestic buildings'*.**

Supporting documents are available online at https://www.gov.wales/node/69992/respond-online .

The deadline for responses is Monday 17 November 2025.

PHT + AECB Position

- Option 2 is a more ambitious and credible step towards Net Zero.
- Option 2 aligns more closely with the building performance achieved by certified Passivhaus and AECB CarbonLite projects. These standards deliver affordable warmth in climate resilient, decarbonised homes.
- Option 2 sets Wales on a meaningful trajectory towards the 2025 and 2030 carbon-reduction targets, focusing on the reduction of energy demand as the stated priority for development in Welsh Government's Energy Hierarchy for Planning (Planning Policy Wales 12).
- Option 1 delivers weaker fabric standards than AD: L (Wales) 2022, relying on additional PV as a sticking plaster to reach compliance. This could create homes with poorer fabric efficiency, higher running costs and lower resilience to energy price fluctuations and extreme weather.
- Option 2 invests in the building envelope as a lower-risk, longer-term and more equitable route to reducing energy demand, cutting bills and improving occupant comfort and health.
- A robust, fabric-first standard is critical to delivering affordable warmth and safeguarding public trust in a Just Transition to Net Zero.

PHT + AECB Consultation Responses

The Passivhaus Trust and AECB encourage members to engage with as much of the consultation as they can. If you are very time limited, we would recommend you focus on questions 1-2, 8, 10-12, 14-17, 23, 48-50, 58-59, 66 & 69.

PART L AND PART F STANDARDS FOR NEW DWELLINGS IN 2025

Uplift to the Part L performance standard

QUESTION 1

What level of uplift to the energy efficiency standards (i.e. improvements to the targets for performance metrics (see paragraph 2.42 for proposed metrics) in the Building Regulations should be introduced for the Part L 2025 standard? Please explain your reasoning.

QUESTION 1 - PHT + AECB RESPONSE

Answer: **Option 2**

The Passivhaus Trust and AECB support Option 2, as it represents a more ambitious and credible step towards genuinely net-zero-ready buildings. It aligns more closely with the performance levels achieved by verified Passivhaus and AECB CarbonLite projects, particularly in terms of energy efficiency, thermal comfort, and fabric performance. Option 2 would set Wales on a meaningful trajectory towards the 2025 and 2030 carbon-reduction targets.

We are seriously concerned that Option 1 would deliver weaker fabric standards than the 2022 regulations, relying instead on additional photovoltaic (PV) capacity to meet compliance. This approach risks PV being deemed technically unsuitable for many dwellings and therefore omitted in practice, resulting in homes with poorer fabric efficiency, higher running costs, and lower resilience.

Reliance on bolt-on technologies is inherently risky: PV systems require ongoing maintenance and have a finite lifespan, whereas high-performance fabric measures “bake in” energy efficiency for the lifetime of the building. Investing in the building envelope is therefore a lower-risk, longer-term, and fairer route to reducing energy demand, cutting bills, and improving occupant comfort. A robust, fabric-first standard is also critical to preventing fuel poverty and safeguarding public trust in the transition to net zero.

Airtightness and ventilation

A key distinction between Option 1 and Option 2 is the proposed airtightness level and ventilation approach. Experience from Passivhaus buildings demonstrates that airtightness and the use of balanced whole-house mechanical ventilation with heat recovery (MVHR) are fundamental to both achieving low energy demand and delivering healthy indoor environments.

We have seen poor performance with mechanical extract ventilation (MEV) systems in relatively leaky dwellings due to the inability to control the air intake route. We therefore recommend that the same airtightness standard ($\leq 1.5\ m^3/h{\cdot}m^2$ @ 50 Pa) is adopted across both options, alongside the use of balanced ventilation.

The currently permitted maximum air permeability of $8\ m^3/h{\cdot}m^2$ @ 50 Pa in Approved Document L is far too high. Experience from Passivhaus projects shows that tighter airtightness brings multiple benefits — improved comfort, reduced heat loss, better moisture control, and overall higher build quality — as it demands greater design care and construction discipline.

Recommendations to strengthen Option 2

To ensure Option 2 delivers its intended outcomes, we recommend the following enhancements:

• **Adopt a verified modelling methodology:** Introduce a quality assurance process for building energy modelling equivalent in rigour to the Passivhaus Planning Package (PHPP) or similar validated methodologies. Compliance models must be verified against as-built performance to close the gap between design intent and operational outcomes.

• **Introduce fabric-first performance metrics:** Specify maximum space-heating demand and airtightness targets (in kWh/m^2·yr), aligned with the proven Passivhaus approach. These provide clear, verifiable outcomes that are technology-neutral and measurable in use.

• **Support accredited training and certification routes:** Require designers and assessors to demonstrate competence in low-energy design principles, ideally through recognised qualifications such as the Certified Passivhaus Designer/Consultant programme.

• **Recognise verified Passivhaus and AECB CarbonLite projects:** Allow verified Passivhaus and AECB CarbonLite projects to be deemed to satisfy the new standard, preventing duplication of modelling while ensuring robust, independently-audited quality assurance..

QUESTION 2

Do you agree with the concerns raised in paragraph 2.7 regarding MVHR systems at this time? Please explain your reasoning or how these concerns could be overcome in the future.

QUESTION 2 - PHT + AECB RESPONSE

Answer: **No**

While the Welsh consultation expresses concern that mandating mechanical ventilation with heat recovery (MVHR) could limit flexibility, the Passivhaus Trust and AECB consider it essential that all new airtight homes provide proven, correctly designed, installed and commissioned ventilation systems that are fit for purpose. These concerns can be readily overcome through existing best practice — not in the future, but now.

<u>Focus on health and performance</u>

The non-negotiable requirement must be that ventilation systems safeguard occupant health and protect the building fabric. Energy recovery is beneficial, but secondary to ensuring indoor air quality, moisture control, and comfort. This principle should be treated as a fundamental performance requirement, comparable to safety standards in fire protection — ventilation must simply work, every time.

<u>Proven performance</u>

Passivhaus designers and practitioners have decades of experience delivering balanced mechanical ventilation systems that perform reliably, providing excellent indoor air quality, comfort, and low energy use. The technology, design guidance, and quality assurance processes are well established. Only minor updates to Approved Document F — notably around acceptable noise levels and total system pressure loss — are required to ensure consistent industry delivery.

Balanced ventilation is key

The AECB and Passivhaus Trust both agree that window ventilation with an intentionally leaky building fabric is not a reliable way to ensure sufficient ventilation for good indoor air quality. It also makes the building harder to heat, at a time when bills are high. The key is first to have an airtightness given 1.5 $m^3/h{\cdot}m^2$ @ 50 Pa for both options. Then, balanced MVHR is also preferable although the AECB does also recognise dMEV as a reasonable alternative.

Window ventilation based systems and Intermittent Extract Ventilation systems relying on trickle vents and extract fans cannot reliably achieve healthy indoor air conditions.

Evidence base

The Scottish Government's 2015 research (Research to Identify Changes to Guidance to Standard 3.14: Ventilation) evaluated several system types, including continuous mechanical extract ventilation (dMEV). While dMEV can theoretically meet air quality requirements in new homes with carefully balanced air inlets, the study found considerable performance variability in practice. MVHR systems were the only solution shown to consistently maintain acceptable indoor air quality under normal operation.

Recommendation

Regulations should adopt a performance-based approach, requiring all systems to demonstrate they can achieve verified levels of indoor air quality and moisture control. Proven, well-commissioned MVHR systems already deliver these outcomes dependably and at scale, offering a clear, practical pathway for industry adoption.

Heat networks

QUESTION 3

Do you agree that new dwellings and new non-domestic buildings should be permitted to connect to heat networks, if those networks can demonstrate they have sufficient low-carbon generation to supply the buildings' heat and hot water demand at the target CO2 levels for the Part L 2025 Standard? Please explain your reasoning.

QUESTION 3 - PHT + AECB RESPONSE

Answer: **Unsure**

While the Passivhaus Trust and AECB are not best placed to comment in detail on the design and operation of heat networks, we wish to highlight several important considerations relevant to energy efficiency and occupant outcomes:

All storage and distribution losses should be fully included in the energy performance assessment. These losses can be substantial, particularly in poorly insulated or extensive network layouts, and must not be overlooked when comparing heating options.

Evidence from Passivhaus Trust members working within the Greater London Authority (GLA) shows that when buildings are designed to the Passivhaus standard, space heating demand is so low that the justification for connecting to a communal or district system is often diminished.

In such ultra-low demand buildings, the cost of connection can represent a disproportionate investment compared to upgrading the building fabric. Moreover, high standing charges for residents can undermine affordability and fairness.

We therefore recommend that connection to heat networks should not be assumed as the default solution but evaluated against genuine energy and carbon benefits, using a whole-life and occupant-cost perspective. Investment should prioritise delivering an excellent building fabric first, ensuring efficiency and flexibility irrespective of future heat supply routes.

QUESTION 4

Do you agree that newly constructed district heating networks (i.e. those built after the Part L 2025 Standard comes into force) should also be able to connect to new buildings using the sleeving methodology?

QUESTION 4 - PHT + AECB RESPONSE

Answer: **Unsure**

QUESTION 5

Do you agree with the proposed guidance on sleeving outlined for Heat Networks included in Approved Document L, Volume 1: Dwellings and Approved Document L, Volume 2: Buildings other than dwellings?

QUESTION 5 - PHT + AECB RESPONSE

Answer: **Unsure**

QUESTION 6

Are there alternative arrangements for heat networks under the Part L 2025 Standard that you believe would better support the expansion and decarbonisation of heat networks?

QUESTION 6 - PHT + AECB RESPONSE

Answer: See our general comments on heat networks in Q3

QUESTION 7

Do you agree that new residential buildings served by communal heating systems should be compared to the proposed Part L 2025 notional standard with an individual ASHP?

QUESTION 7 - PHT + AECB RESPONSE

Answer: **Unsure**

The notional dwelling approach for homes

QUESTION 8

Should the notional dwelling heat loss calculation be based on a single weather location (Cardiff)? If you wish, please explain your reasoning and provide any evidence to support your view.

QUESTION 8 - PHT + AECB RESPONSE

Answer: **No**

The Passivhaus Trust and AECB do not support basing the notional dwelling heat-loss calculation on a single weather location. Wales encompasses a wide range of climatic conditions — from mild coastal zones to colder upland regions — and using a Cardiff-only dataset would fail to represent the diversity of heating demand across the country.

Consistency and accuracy

A single weather file risks regional bias and inconsistency with other regulatory and design methodologies. For example, both MCS heat pump sizing and overheating risk assessments already rely on localised weather data. Aligning the notional dwelling calculation with these approaches would ensure coherent, robust, and transparent compliance across Wales.

Impact on heating system design

Accurate local weather data is essential for correctly sizing low-carbon heating systems such as air source heat pumps. Peak heat loads vary significantly across Wales, and underestimating these can lead to undersized systems, reduced comfort, and loss of confidence in low-carbon technologies.

Proportionate for high-efficiency buildings

While climate variation has a relatively minor impact on heat demand in very efficient buildings — such as Passivhaus or AECB CarbonLite homes, where design robustness limits sensitivity to local weather — the same cannot be said for typical new builds. For standard dwellings with weaker fabric performance, using a single southern climate file would underestimate heating needs in colder regions, leading to a less equitable and less resilient outcome.

Recommendation

We therefore recommend adopting a zonal or location-specific approach to climate data for notional dwelling calculations. Allowing the notional dwelling to use the same local weather file as the actual dwelling would ensure fair comparison, consistency with other standards, and more reliable outcomes across Wales. This approach supports both the fabric-first principle and the effective deployment of low-carbon heating technologies.

Buildings that contain multiple dwellings

QUESTION 9

Do you agree with the revised guidance in Approved Document L, Volume 1: Dwellings for consultation no longer including the average compliance approach for terraced houses? Please provide any evidence you have on the unintended consequences that could arise as a result of these changes.

QUESTION 9 - PHT + AECB RESPONSE

Answer: The Passivhaus approach (and the usual CarbonLite approach) assesses performance block by block, focusing on the integrity and performance of the entire building envelope rather than applying averaging methods across individual dwellings. As such, this specific procedural change does not directly relate to the way compliance is demonstrated under the Passivhaus methodology.

However, we support the underlying principle that every dwelling should achieve high and verifiable fabric performance. Whether assessed individually or at block level, the emphasis should remain on ensuring consistency, airtightness, and thermal continuity across the whole development to prevent performance gaps and ensure genuine energy efficiency.

Secondary heating

QUESTION 10

Do you agree with the revised guidance in Approved Document L, Volume 1: Dwellings which states that you should not provide a chimney or flue when no secondary heating appliance is installed?.

QUESTION 10 - PHT + AECB RESPONSE

Answer: **Yes**

The Passivhaus Trust and AECB support this revision. Where no secondary heating appliance is installed, omitting chimneys and flues aligns with the goal of minimising unintended air leakage paths and improving the airtightness and overall energy efficiency of the building envelope. Airtightness is a cornerstone of low-energy design, and unnecessary penetrations can significantly increase heat loss, compromise comfort, and undermine the performance of ventilation systems.

We would, however, recommend going further: no chimney or flue should be provided where secondary heating is installed, and provision for new chimneys or flues should not be encouraged in future-ready, low-carbon homes.

Beyond the energy implications, there is now clear evidence that domestic wood-burning stoves are a major source of harmful particulate emissions, contributing to thousands of premature deaths each year in the UK. In this context, there is no justification for permitting new chimneys or flues intended for solid-fuel secondary heating appliances in new dwellings. Eliminating these features supports both public health objectives and climate resilience, while reinforcing the move towards genuinely zero-carbon homes.

Window and door u-value calculations

QUESTION 11

Do you agree with the proposed approach to determine U-values of windows and doors in new dwellings?

QUESTION 11 – PHT + AECB RESPONSE

Answer: **Yes**

The Passivhaus Trust and AECB support the intention to improve consistency in determining U-values of windows and doors but cautions that simplified or inconsistent calculation methods can significantly underestimate heat losses in practice.

Windows and doors typically represent the weakest elements of the building envelope, so accurate, whole-product U-values are essential. The calculation method should:

• Include frame effects, glazing edge losses, and installation details, not just centre-of-glass values.
• Be based on whole-window performance (Uw), calculated in accordance with BS EN 14351-1 or EN ISO 10077-1/-2.
• Reflect installed performance, not idealised manufacturer data.

Experience from the Passivhaus Planning Package (PHPP) demonstrates the benefits of this approach: U-values are calculated for each window based on its actual size and configuration, providing much greater accuracy than standard default figures. This also makes window specification a design optimisation decision, allowing teams to refine frame ratios, configurations, and installation details to improve both performance and aesthetics.

A proper understanding of how design choices affect thermal performance can lead to improvements at negative cost, enhancing daylight, comfort, heat demand, and upfront carbon without additional expenditure.

We therefore recommend that only verified whole-product U-values be accepted for compliance, and that the methodology used in tools such as the Passivhaus Planning Package (PHPP) be considered a useful reference for transparent, tested, and design-led assessment of window and door performance.

Renewable energy and the notional building

QUESTION 12

Do you consider that a Part L requirement for renewable energy (with guidance given in Approved Document L) should be implemented rather than being included in the notional dwelling specification for new dwellings?

QUESTION 12 - PHT + AECB RESPONSE

Answer: **Unsure** – not without safeguards (but this is not an option)

The Passivhaus Trust and AECB recognise the role of renewable energy in decarbonising homes but emphasises that it must not come at the expense of building efficiency. Including PV in the notional dwelling currently allows trade-offs between fabric and generation; weaker envelopes can still comply by adding PV. This undermines long-term energy efficiency, resilience, comfort, and occupant benefits.

If renewables are moved outside the notional building and treated solely as a separate Part L requirement, safeguards are essential:

• Fabric standards must remain non-negotiable, with no reduction in airtightness, insulation, or space-heating demand allowed as a result of PV installation.

• Technical guidance must clarify when PV is genuinely "unsuitable" (roof orientation, shading, design constraints), and how compliance should be calculated in such cases.

Experience from the English consultation demonstrates that leaving PV decisions entirely to building control creates practical risks: limited resources and inconsistent enforcement may allow buildings to comply with minimal fabric improvements. Conversely, keeping PV in the notional building ensures that if PV cannot be installed, compensatory improvements to fabric or services are required — maintaining a robust, fabric-first pathway.

Broader perspective:

Renewables are important for decarbonisation, but they can be considered separate from the building itself, much like food production or water supply, and could be addressed through other regulations, funding mechanisms, or taxes, rather than as a compliance offset within Part L.

Ideally, Part L should move toward absolute energy targets, where PV or other renewables are additive rather than offsetting weak envelopes. Until such a framework is in place, including PV in the notional dwelling remains the most reliable way to protect energy efficiency and occupant outcomes.

Part L performance metrics

QUESTION 14

Do you agree with the replacement of the Dwelling Energy Efficiency Rate with the Energy Use Intensity?

QUESTION 14 - PHT + AECB RESPONSE

Answer: **Yes**

The Passivhaus Trust and AECB support moving towards Energy Use Intensity (EUI) as a metric because it more directly reflects the actual energy performance of a dwelling, rather than relying on a relative efficiency rating that can obscure absolute energy demand. EUI provides clearer insight into expected energy consumption per square metre, helping policymakers, designers, and residents understand real operational performance.

However, the metric must be robust, transparent, and properly defined, including:

• Capturing both regulated and unregulated energy use.
• Using realistic assumptions for occupancy, heating patterns, and climate.

• Reflecting the impact of fabric performance and heating system efficiency, rather than allowing high-energy technologies or PV to mask poor design.
• Being verifiable at the as-built stage to help close the gap between design intent and operational outcomes.

Renewables and PV:

The consultation text is unclear on how on-site renewable energy (PV) is treated within EUI. If EUI includes PV generation as a "credit," there is a risk that poor fabric performance could be masked by energy generation, undermining the fabric-first approach. Conversely, if EUI reflects actual consumption (import plus on-site usage) minus PV, it supports a meaningful comparison of building performance and maintains incentives for high-quality fabric and systems.

Recommendation:

EUI should be defined so that it does not allow on-site renewables to offset fabric or heating inefficiency.

Clear guidance is required on whether PV generation is included or excluded from EUI, consistent with the treatment of PV in the notional building or Part L calculations.

In short, EUI is a step towards more meaningful energy performance assessment, but its effectiveness depends on strict fabric-first criteria, transparent methodology, and unambiguous treatment of renewable generation.

National Calculation Methodology for Dwellings

QUESTION 15

Do you agree that the Home Energy Model should be adopted as the approved calculation methodology to demonstrate compliance of new dwellings with the Part L 2025 Standard in Wales?

QUESTION 15 - PHT + AECB RESPONSE

Answer: **Unsure**

The Passivhaus Trust and AECB support the adoption of the Home Energy Model (HEM) only if it can be demonstrated to be as accurate as the Passivhaus Planning Package (PHPP) in predicting actual energy use, heating demand, and occupant comfort. Accuracy and reliability are critical to ensure that compliance targets are meaningful and to avoid repeating the performance gaps observed with previous building regulations.

Currently, the HEM is unproven and not widely validated, presenting a risk of unforeseen issues if adopted as the sole compliance methodology. Experience with PHPP shows that model accuracy relies on rigorous alignment with the as-built building provided assumptions and input data are robust.

The Passivhaus Trust and AECB therefore recommend that PHPP should be formally recognised as an approved compliance methodology, alongside any new tools. This would allow designers and assessors to use a quality-assured, evidence-based model, ensuring consistency with best-practice, fabric-first, net-zero-ready design. Fully certified or otherwise verified AECB CarbonLite or Passivhaus projects should be deemed to satisfy Part L, avoiding duplication of modelling.

This would align with approaches being developed by the Scottish Government as part of its Scottish Passivhaus Equivalent policy. A recent consultation on the policy found that 89% agreed that Passivhaus Certification offers a feasible alternative means of compliance with standard 6.1 (energy demand). https://www.gov.scot/publications/determining-principles-scottish-equivalent-passivhaus-standard-analysis-consultation-responses/

QUESTION 16

Do you agree that SAP should continue to be used to demonstrate compliance with Part L 2025 as an interim measure if the final version of HEM is not completed by the proposed coming into force date?

QUESTION 16 - PHT + AECB RESPONSE

Answer: **Unsure**

The Passivhaus Trust and AECB agree that SAP can be used as an interim compliance tool if the Home Energy Model (HEM) is not ready. However, the ongoing delays in HEM development are a concern, as continued reliance on SAP risks perpetuating the known inaccuracies and performance gaps associated with its predictive methodology, particularly for ultra-low-energy and fabric-first dwellings.

This situation strengthens the case for recognising PHPP as an approved compliance methodology. PHPP has a proven track record of accurately predicting energy demand, heating requirements, and occupant comfort, even in very low-energy buildings. Allowing PHPP alongside SAP would provide designers with a reliable alternative during the HEM transition, ensuring that compliance assessments remain robust and meaningful.

Minimum standards for building services in new dwellings

QUESTION 17

Do you agree with the proposed changes to minimum building services efficiencies and controls set out in Section 6 of draft Approved Document L, Volume 1: Dwellings?

QUESTION 17 - PHT + AECB RESPONSE

Answer: **No**

The PHT and AECB do not agree with the proposed minimum standards for building services efficiencies, particularly for heat pumps. The current standard appears low: for standard heat pumps, the Ecodesign SCOP works out at just 2.75 for space heating, which is unlikely to deliver running costs competitive with gas and risks undermining the decarbonisation and affordability objectives of Part L.

We recommend a higher overall SCOP, including domestic hot water, of at least 3.5 to ensure running costs are kept low and the systems perform efficiently in practice. Guidance should also encourage lower heating flow temperatures, as the current upper limit of 55 °C is unnecessarily high; an upper limit of 45 °C would better support efficiency, comfort, and integration with low-temperature distribution systems.

In addition, the Ecodesign requirements and SCOP information should be presented clearly in Approved Document L to ensure designers, assessors, and building control officers can easily understand and implement the standards.

By increasing minimum efficiency standards and aligning guidance with low-temperature operation, Wales can ensure that building services contribute effectively to fabric-first, low-energy, and low-carbon homes, while protecting occupants from high running costs.

Real-world performance of new dwellings – Part L & Part F

QUESTION 23

Do you agree with the proposed changes to Approved Document F, Volume 1: Dwellings to improve the installation and commissioning of ventilation systems?

QUESTION 23 - PHT + AECB RESPONSE

Answer: The Passivhaus Trust and AECB strongly support improvements to the installation and commissioning of ventilation systems, as proper commissioning is critical to ensuring that systems perform as intended, particularly in airtight, low-energy dwellings. Even the most efficient mechanical ventilation with heat recovery (MVHR) systems will underperform if poorly installed, balanced, or commissioned, leading to compromised thermal comfort, indoor air quality, and energy efficiency.

However, the current draft of AD F does not fully address all key issues, and some guidance is missing, particularly Section C4. The following aspects are essential:

• **Room noise levels:** Noise must be calculated in dBA SPL to ensure acceptable acoustic performance in all habitable spaces.

• **Duct pressure loss limits:** Domestic MVHRs are typically tested at 100Pa, which should serve as an effective upper limit. Proper duct sizing and air velocity design can achieve this efficiently.

• **Integrated design approach:** Calculating room noise and duct losses requires early-stage design, not just adjustment at commissioning. Over-reliance on fine-tuning during commissioning cannot compensate for inadequate design.

Experience shows that vane anemometers provide sufficient accuracy for Passivhaus or AECB CarbonLite commissioning. Powered flow hoods may offer slight convenience or "idiot-proofing," but differences are minor when systems are designed correctly.

Key principle: Ventilation systems must be fully integrated with the building fabric, with clear guidance on airtightness, ductwork design, commissioning, and verification. Correct design, sizing, and installation are as important as final commissioning for achieving energy efficiency, thermal comfort, indoor air quality, and occupant wellbeing.

PART L STANDARDS FOR NEW NON-DOMESTIC BUILDINGS IN 2025

Uplift to the Part L performance standard

QUESTION 48

What level of uplift to the energy efficiency standards in the Building Regulations should be introduced in 2025?

QUESTION 48 - PHT + AECB RESPONSE

Answer: **Option 2 – 94% CO2 reduction**

The Passivhaus Trust and AECB strongly support a substantial uplift in energy efficiency standards for 2025, consistent with the trajectory towards net-zero-ready homes. Standards should prioritise fabric-first measures—high levels of insulation, airtightness, minimised thermal bridging, and efficient windows and doors—before reliance on renewable technologies.

Experience from low-energy, AECB CarbonLite and Passivhaus projects demonstrates that investing in the building envelope delivers permanent reductions in energy demand, improved thermal comfort, and lower running costs. Weak fabric combined with reliance on on-site renewables, such as PV, is risky: PV may be technically unsuitable, may not be installed, and requires ongoing maintenance to deliver predicted savings.

To ensure meaningful outcomes and close the performance gap, the 2025 uplift should include:

• Maximum space-heating demand and airtightness targets, aligned with Passivhaus or AECB CarbonLite metrics, addressing thermal bypass and as-built performance.

• Robust compliance and verification processes, including recognition of PHPP as an approved methodology for modelling and as-built assessment.

• Fabric-first criteria that reduce the scope for trade-offs with renewable generation, ensuring that all dwellings meet verifiable efficiency standards in practice.

A strong 2025 uplift is essential to meet 2025 and 2030 carbon-reduction targets, avoid future retrofit costs, and deliver affordable, comfortable, and resilient homes across all new developments.

National Calculation Methodology for new non-domestic buildings

QUESTION 49

Do you agree with the methodology outlined in the NCM modelling guide for the Part L 2025 Standard??

QUESTION 49 - PHT + AECB RESPONSE

Answer: **No**

The Passivhaus Trust and AECB support the intention to standardise modelling through the NCM guide but emphasises that accuracy and transparency are critical. The methodology must reliably capture both fabric performance and heating system efficiency, including distribution and storage losses, and avoid assumptions that allow poor fabric to be offset by renewables or high-performance plant.

We also recommend that the methodology:

• Be validated against real-world data, including low-energy and ultra-low-energy homes, to minimise gaps between predicted and as-built performance.

• Include regulated and unregulated energy uses to give a full picture of energy consumption.

• Allow PHPP as an approved alternative for designers and assessors, given its internationally recognised track record in predicting actual energy demand.

In short, while the NCM guide is a positive step, it must be supplemented with robust QA, verification, and fabric-first principles to ensure Part L 2025 delivers genuinely low-energy, comfortable, and resilient homes.

QUESTION 50

Please provide any further comments on the cSBEM tool which demonstrates an implementation of the NCM methodology.

QUESTION 50 - PHT + AECB RESPONSE

Answer:

The Passivhaus Trust and AECB consider that cSBEM is even less accurate than SAP for predicting actual energy performance. It does not reliably capture the performance of highly insulated, airtight, low-energy, AECB CarbonLite or Passivhaus standard buildings, particularly in terms of heating demand, distribution losses, and internal gains. Like SAP, cSBEM often underestimates heating demand and overestimates the effect of renewables or high-efficiency plant, which can lead to significant gaps between design predictions and real-world outcomes.

We therefore recommend that PHPP or an equivalently robust, verified methodology should be recognised as an alternative compliance route, particularly for ultra-low-energy and fabric-first dwellings, to ensure that Part L 2025 targets are genuinely achieved in practice.

Other guidance changes

QUESTION 58

Do you have any further comments on any other changes to the proposed guidance in draft Approved Document L, Volume 2: Buildings other than dwellings?

QUESTION 58 - PHT + AECB RESPONSE

Answer:

The Passivhaus Trust and AECB support the overall aim of improving energy efficiency and reducing carbon emissions in nondomestic buildings. We emphasise that, as with dwellings, fabric-first principles should be prioritised: high levels of insulation, airtightness, minimised thermal bridging, and efficient glazing are the most reliable way to reduce operational energy use and improve occupant comfort.

We also highlight the importance of:

• Robust verification and quality assurance for modelling, design, and as-built performance. Tools such as PHPP (for dwellings) or equivalent verified methodologies for non-domestic buildings should be recognised to ensure that predicted savings are realised in practice.

• Considering distribution, storage, and system losses for heating, cooling, and ventilation systems, particularly for low-carbon and renewable technologies.

• Overheating risk in low-energy, well-insulated buildings, ensuring that summer comfort strategies—shading, natural or controlled ventilation, and passive cooling—are integrated from the outset.

In short, nondomestic guidance should mirror the fabric-first, verified, and comfort-focused approach applied to dwellings, to ensure genuine reductions in energy use and carbon emissions across all building types.

Real-world performance of new non-domestic buildings – Photographic evidence

QUESTION 59

Do you agree with the introduction of photographic evidence as a requirement for producing the as-built energy assessment for new non-domestic buildings?

QUESTION 59 - PHT + AECB RESPONSE

Answer: **Yes**

The Passivhaus Trust and AECB support the use of photographic evidence to verify as-built energy performance, as this aligns with the rigorous verification practices required for both Passivhaus and AECB CarbonLite certification. Photographic documentation helps ensure that key elements—such as airtightness, insulation installation, and thermal bridging—are correctly implemented.

However, we emphasise that sufficient resources must be available to review and interrogate this evidence, particularly where full Passivhaus or AECB CarbonLite certification is not obtained. Passivhaus projects have the strongest case to be deemed to satisfy the as-built assessment requirements, as they already undergo independent verification, reducing duplication of effort and ensuring robust quality assurance.

IMPACT ASSESSMENT

QUESTION 65

The Impact Assessment makes a number of assumptions on fabric/services/ renewables costs, new build rates, phase-in rates, learning rates, etc for new dwellings. Do you think these assumptions are fair and reasonable?

QUESTION 65 - PHT + AECB RESPONSE

Answer: **No**

The Passivhaus Trust and AECB note that assumptions on costs, learning rates, and phase-in rates in the Impact Assessment may underestimate the benefits of investing in high-performance fabric. While some cost uplifts for insulation, airtightness, and high-quality windows may appear higher initially, these measures permanently reduce operational energy demand, improve thermal comfort, and minimise long-term maintenance and heating costs.

We also caution that assumptions about renewables may be over-optimistic, particularly if PV or other add-on technologies are assumed to compensate for weaker fabric. In practice, PV may be technically unsuitable, not installed, or require ongoing maintenance to deliver expected savings.

Overall, the Trust supports assumptions that are evidence-based and aligned with fabric-first design principles, but emphasises that investing in the building envelope offers greater and more reliable returns over the life of the dwelling than reliance on services or renewables to achieve compliance.

QUESTION 66

Overall, do you think the impact assessment is a fair and reasonable assessment of the potential costs and benefits of the proposed options for new dwellings?

QUESTION 66 - PHT + AECB RESPONSE

Answer: **No**

The Passivhaus Trust and AECB consider that the Impact Assessment provides a useful overview, but it underestimates the long-term benefits of fabric-first approaches and overestimates reliance on renewable technologies to achieve compliance. While the reported upfront costs for higher-performance fabric may appear higher, these measures permanently reduce energy demand, improve thermal comfort, and minimise running costs, delivering clear benefits to occupants over the lifetime of the building.

The assessment also assumes that renewable systems will always be installed and perform as expected, which may not be the case in practice, leading to potential gaps between predicted and actual performance.

Additional considerations:

• Fabric-first approaches support health and wellbeing by maintaining consistent indoor temperatures, minimising drafts, and enabling controlled ventilation.

• Adequate ventilation, including MVHR, reduces risks of condensation, mould, and indoor air pollution, which can have measurable impacts on public health and associated costs to the NHS. Evidence from Passivhaus projects demonstrates low incidence of indoor air-quality-related health issues when ventilation is correctly designed and commissioned.

• Investing in high-quality building envelopes is therefore a more reliable and cost-effective route to net-zero-ready homes than relying on add-on renewable technologies, ensuring both energy efficiency and occupant health benefits.

We recommend that the Impact Assessment places greater weight on fabric-first strategies, considers operational performance, and explicitly recognises the health and social benefits associated with well-designed low-energy homes.

TRANSITIONAL ARRANGEMENTS

Transitional arrangements and coming into force for Part L 2025 standard

QUESTION 67

Which option describing the timescale between laying the regulations and them coming into force for the Part L 2025 Standard do you prefer?

QUESTION 67 - PHT + AECB RESPONSE

Answer: **Option 2 – 12 months**

The Passivhaus Trust and AECB recognise that a 12-month lead-in period provides developers and designers with additional time to prepare for the new Part L 2025 requirements. However, we emphasise that this extended lead-in is most valuable if accompanied by the adoption of Option 2, which represents a more ambitious, fabric-first approach to energy efficiency and net-zero-ready homes.

Sunsetting of previous transitional arrangements for new buildings

QUESTION 69

Do you agree that the 2010 and 2014 energy efficiency transitional arrangements should be closed down, meaning all new buildings that do not meet the requirements of the 2025 transitional arrangements would need to be built to the Part L 2025 standard?

QUESTION 69 - PHT + AECB RESPONSE

Answer: **Yes**