

MHCLG Consultation on Future Buildings Standard 2021



Interim uplift to Part L standards for non-domestic buildings

02/04/2021

Question 9

We would welcome any further suggestions, beyond those provided in this consultation, for improving the modelling process; Part L and Part F compliance; and the actual energy performance of non-domestic buildings. Please provide related evidence.

The Building Performance Network UK has evidence from the Innovate UK Building Performance Evaluation programme (2010-2015) that Post-Occupancy Evaluation measurement identifies the gap between predicted and actual building performance, and can help to identify how to close this gap with appropriate interventions. This programme evaluated approximately 100 domestic and non-domestic new building developments in the UK. Indeed, MHCLG quote POE evidence from this programme in this Consultation on Future Building Standards to demonstrate the performance gap that exists.

Without mandated POE measurement in place for Part F and L mandated predicted performance requirements in the regulatory process, it is impossible to verify whether or not the regulations are working, and difficult for industry to identify how to improve buildings.

We therefore ask that MHCLG:

- *Introduce absolute Energy Use Intensity (EUI) targets for non-domestic buildings. This provides a measure of energy “at the meter” which is influenced by efficient design and energy supply agnostic*
- *Include unregulated energy*
- *No notional building, etc. The way the notional building works means that some essential decisions are not rewarded (e.g. improvement in form factor, decision to adopt a heat pumps in nondomestic buildings, etc.). These decisions should be rewarded.*

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- *Energy data disclosure and Post occupancy evaluation should be mandatory - see statement below.*

We ask that the following POE measures are included in Part L and F – these two Parts of the regulatory framework cannot be considered separately as energy use is intimately bounded up with ventilation, humidity and indoor air quality.

Scope for inclusion of POE methods in Part L and F with rationale:

Building Area: *Over 1000 sqm' for non-domestic buildings*

Sampling: *All schemes above 5 homes have to report data. 1 home should be covered as a minimum per development up to 20 homes, and 10% of homes above that. Monitoring should include different typologies.*

Period of monitoring: *Monitoring and reporting should be carried out within the first year defects period - 9 months of monitoring.*

Energy Use: *Energy Use Intensity (kWh/m²/pa)*

- *Total building energy use as a minimum.*

Water Use: *Litres /Per Person/Per Day*

Adequate Ventilation related to indoor air quality:

- *Check ventilation rates in ventilation services via commissioning checks*
- *Monitoring Humidity levels*
- *Monitor Indoor Air Quality levels - Part L wants this ready by 2025 - we demand it now.*
- *Monitoring Carbon Monoxide levels - this comes under new regulations elsewhere*
- *Monitoring Nitrous Oxide levels - checks are already required measurement for boilers, but this should be widened to include the indoor air quality in the home, given outside pollution levels in inner cities.*
- *Monitoring of TVOC, Formaldehyde for all buildings and Ozone for non-domestic buildings*
- *Monitoring of Particulates PM 2.5 in all cases where mechanical ventilation is required.*

Acoustics: *Noise is the number one complaint about the built environment in the EU and attracts highest complaints in new homes. Use CIBSE TM60 for noise from services, and building regulations for airborne/impact. Noise measurements should be carried out during commissioning checks for energy using equipment related to heating, cooling and ventilation.*

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Overheating: It is highly recommended that MHCLG give itself the provision to put together a programme of monitoring at random to check the consequences of using a new simplified method for calculating overheating

Thermal bridging check and thermography: A thermographic survey should be carried out to check for any thermal bridging that may lead to excessive moisture and mould issues.

Heat Transfer Coefficient: Measurement of the heat transfer coefficient (e.g. via smart meters, subject to SMETER trial conclusions). Note the FEES is not directly verifiable, as it is a notional artificial metric. However, the HTC together with the airtightness test would more or less verify the as-built FEES.

Airtightness: Airtightness testing is already covered for new homes. We strongly recommend that it should be required for new non-domestic buildings and retrofit work carried out on existing homes to inform a whole building approach according to PAS2035 and PAS2038. This is particularly so, given that MHCLG have approved pulse tests and could be done pre-retrofit to inform the works and post-retrofit to check compliance with Part L & F.

Commissioning checks: The existing mandatory requirement for commissioning certificates should be backed up by a sampling of re-commissioning checks carried on random basis Part L 2010 already covers 'testing and adjusting' but the main problem is enforcement. There should be a % penalty in Part L calculations on all systems until performance is evidenced by commission checks. This would also help with Part F compliance too.

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Summary of requirements, approved documents and what BPN is asking for.

	Current regulations	Draft 2021 Approved Documents (i.e. <u>guidance</u> on regs, not requirements as such)	What we can ask for now	What we could ask - ideally / next revision
Air quality	Part F: “adequate means of ventilation”	<p>NEW buildings - Performance criteria: All buildings: NO₂, CO, no visible mould</p> <p>Non-domestic: TVOC, ozone, formaldehyde Dwellings: RH + formaldehyde & TVOC</p> <p>On existing dwellings / buildings “The works themselves should comply with the requirements, and “the provision of ventilation should not be made less satisfactory than before the work was carried out”</p>	<p>All buildings: see commissioning of ventilation systems.</p> <p>Non-domestic buildings above 1000sqm and sample homes in large developments : Monitoring of humidity and pollutants covered by Approved Document performance requirements + Ability for building control to request monitoring data at random / if concerns are raised.</p> <p>Existing homes & non-domestic buildings: Upgrade the Approved Documents to make it clear that appropriate ventilation is required; many existing homes and buildings are not suitably ventilated currently, so the Approved Documents perpetuates potentially unhealthy conditions. This should be treated in a similar way to, for example, fire, where upgrade works are required to bring the building up to standard when other works are carried out.</p>	<p>Upgrade Part F requirement to cover indoor air quality, not just ventilation, and introduce monitoring & disclosure accordingly . A key pollutant type NOT currently covered in the AD but a prominent health concern is particulate matters. At the very least, where mechanical ventilation is provided and outdoor air is polluted, filters should be required .</p> <p>Also require monitoring of CO₂, rather than or in addition to ventilation rates.</p> <p>User surveys</p>
Acoustics	<p>Part E: Dwellings / rooms for residential purposes: sound from other parts of the building and adjoining buildings, and within dwelling/room + reverberation</p> <p>Schools: acoustic conditions and insulation against disturbance</p>	AD F: guidance on noise levels from ventilation systems	<p>Homes: - Sound insulation testing (i.e. building envelope): as currently - Noise from services: noise testing of ventilation systems to check that guidance levels are achieved, to be tested as part of commissioning - see below</p> <p>Schools: testing of overall acoustic conditions, to check they meet regs</p>	<p>Introduce noise requirements from systems in occupied spaces e.g. ventilation</p> <p>User surveys</p>
Thermal comfort	None currently, but draft new requirement to limit overheating risk	Draft AD to limit overheating risk - no temperature requirement as such, especially under the simplified method	<p>MHCLG monitoring programme to feed back into the new requirement and incorporate lessons at the next iteration (= part of good policy making)</p> <p>Ability for Building Control to require temperature monitoring and/or user surveys, if concerns are raised and at random.</p>	<p>Modified AD using lessons from MHCLG monitoring programme</p> <p>Temperature monitoring against the AD requirements - using the criteria from the detailed method</p> <p>User surveys</p>
Thermal bridging	Part C: interstitial and surface condensation		Ability for building control to require thermography surveys to be submitted in all sample cases.	

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	Part L (indirectly): thermal bridging values used in calculations			
Airtightness	Regulation 42: pressure testing on erection of a building	•	New build: as currently proposed i.e. every building / home tested. Existing homes and non-domestic buildings where works are carried out: Introduce requirement for airtightness testing , to inform whole-house approach to energy & ventilation. Update calculation methodologies to require input of airtightness, not default value.	
Energy	"Fuel and power", carbon emissions	Annual carbon emissions	For all non-dom buildings above 1000sqm, and as aggregate for all developments of 5 homes and more ? Annual energy use , into fuels if relevant. Initial monitoring of 9 months period, so info is provided before end of defects period.	Energy use information to be submitted annually User surveys (e.g. affordability)
		FEES	Dwellings: Measurement of the heat transfer coefficient (e.g. via smart meters, subject to SMETER trial conclusions). Note the FEES is not directly verifiable, as it is a notional artificial metric. However, the HTC together with the airtightness test would more or less verify the as-built FEES.	As-built HTC AND change fabric metric to one that is verifiable e.g. HTC, or one that is all-encompassing e.g. space heating & cooling demand in non-domestic
Water use	Part G - dwellings newly built or through change of use: reasonable provision for fittings and fixed appliances that use water efficiently for the prevention of undue consumption of water	New dwellings: Annual water use per person per day	Dwellings: Annual water use per person per day	Non-domestic buildings: annual water use performance requirement in regs + associated disclosure requirement in use
All systems	Regulation 44: Commissioning of all fixed building services (except where they cannot be tested / adjusted)	•	Better enforcement by Building Control. More incentives e.g. penalty in Part L calcs for all systems until commissioning (performance tests) results are provided (note: this would follow a similar approach to airtightness results in Part L when only sample testing was carried out)	Ability for Building Control to request random commissioning checks in use, and re-commissioning if required

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