

Response to MHLG Consultation on the Future Buildings Standard

April 2021

Introduction

The UK Green Building Council (UKGBC) is an industry network with a mission to radically improve the sustainability of the built environment, by transforming the way it is planned, designed, constructed, maintained and operated. As a charity with over 500 member organisations spanning the entire sector, we represent the voice of the industry's current and future leaders who are striving for transformational change.

UK buildings' emissions have largely flatlined since 2015 – so improved Building Regulations have a vital role to play in starting to drive down new buildings' emissions and to set us on a path towards achieving our 2050 net zero target. In this context, we welcome the stated intention of this consultation, i.e. that from 2025 buildings should not need to be retrofitted to be zero carbon in 2050. However, as will become clear below, we are concerned both that the proposals do not go far enough and also that there are a number of key omissions that need urgently to be remedied to put us on that path to net zero.

Responses to individual questions:

Question 1: Our aim is that buildings constructed to the Future Buildings Standard will be capable of becoming carbon neutral over time as the electricity grid and heat networks decarbonise. Do you agree that the outline of the Future Buildings Standard in this chapter meets this aim?

a) Yes

b) No

Please explain your reasoning and provide supporting evidence or alternative suggestions.

While we welcome the Government's overall intentions, we are concerned that the proposals do not go far enough to deliver on them. We will describe these concerns in our responses to specific questions below, but in summary they are as follows:

- If we are to decarbonise at pace to achieve net zero, then we must move away from the current compliance methodology, which is based on modelled improvement over a theoretical notional building. We should instead set absolute energy targets, which will encourage good building design.
- Following on from this, we believe that primary energy should not be the principal metric. Calculation of primary energy requires the multiplication of energy use by a factor, which varies over time and can mask the actual energy consumption of a building. Instead, we recommend that energy use intensity (measured in kWh/m²/yr) be the principal metric, to ensure that compliance is based on actual in-use performance, rather than theoretical models, and to allow us to understand the scale of renewable generation required. EUI targets should be developed rapidly for each building type – work which should be done in parallel with developing rating scales for the BEIS mandatory performance-based rating scheme.

We would also point out that building occupancy should be factored into an EUI metric. By way of illustration, let us consider two identical 12-storey buildings, one of which is only used for one month of the year, while the other is in use constantly throughout the year. If both buildings have the same annual energy use per m², then it is clear that the one that is only in use for one month is far less efficient.

However, this is currently not captured in a /m² metric. Government and industry should therefore look to develop occupancy-related EUI metrics for buildings.

- We cannot achieve net zero carbon buildings without tackling embodied carbon, about which the consultation is silent, but which can account for up to half of a building's emissions during its lifetime. Government should therefore:
 - phase in requirements from 2021 for assessment of whole life carbon, starting with larger developments;
 - introduce requirements from 2025 for all developments to assess and disclose whole life carbon impacts, and phase in targets for reductions, starting with larger developments;
 - introduce targets from 2030 for all developments for reductions in whole life carbon (in line with the RIBA 2030 Climate Challenge).
- Although the consultation rightly acknowledges the importance of measuring the in-use performance of buildings – and proposes a number of steps to address the 'performance gap' – the proposals do not go far enough. We should transition towards in-use performance as the basis of compliance with Building Regulations. This should start with the next uplift with the phasing in of requirements (starting with buildings over 1000m²) to measure and disclose in-use performance (through post-occupancy evaluation) and the introduction of options for alternative compliance with Part L based on in-use performance. In 2025 regulatory requirements should be introduced to assure performance in-use for regulated energy.
- In order to encourage the industry to innovate and deliver early savings, the Government should indicate the levels of energy use and carbon reductions it expects the Future Buildings Standard to deliver. We appreciate that non-domestic buildings are much more diverse than residential ones – and that a single number will therefore mask differing performances – but if it is possible to do it for the 2021 uplift, it must surely be possible to do it for 2025?
- Looking beyond 2025, the Government should set out a roadmap to 2050. Without this perspective, it is difficult to know whether the current proposals really put us on the right path to meet our 2050 net zero target.

Question 2: We believe that developers will typically deploy heat pumps and heat networks to deliver the low carbon heating requirement of the Future Buildings Standard where practical. What are your views on this and in what circumstances should other low carbon technologies, such as direct electric heating or hydrogen, be used?

We agree that heat pumps are likely to be the dominant solution for delivering low carbon heat.

Heat networks may also have a role to play, but only if they are truly low carbon, which is currently unlikely to be the case (with over 80% of heat networks currently fired by gas or gas CHP). A number of our members have also highlighted the issue whereby some development projects are being required to connect to heat networks which are both higher carbon and more expensive. Until heat networks decarbonise, reductions in carbon emissions can be better achieved through a building-level solution.

As regards hydrogen, we agree with the conclusion reached by LETI's recent paper – to the effect that it is unlikely that zero carbon hydrogen will be available for the vast majority of buildings for the foreseeable future.¹

Direct electric heating should only be used exceptionally in hard-to-heat spaces, in which energy efficiency has been maximised through building and process design, and heating demand is therefore minimal. An example would be the use of electric radiant heating controlled on occupancy within an intermittently occupied, highly insulated building.

¹ LETI, *Hydrogen: A decarbonisation route for heat in buildings?*, February 2021

Question 3: Do you agree that some non-domestic building types are more suitable for low carbon heating and hot water, and that some non-domestic building types are more challenging?

a) Yes. However, heat pump-based solutions already exist for some buildings with high hot water demand (Type 2 buildings), particularly where a thermal store is used alongside the heat pump. Rapid technical progress is also being made in the performance of high temperature heat pumps. We also do not agree that Type 3 space heating demand is less suitable for heat pumps in buildings with high internal gains. Opportunities around utilising waste heat streams should be encouraged.

b) No

If you answered no, please explain your reasoning.

Question 4: Do you agree with the allocation of building types to space and water heating demand types, as presented in Table 2.1 of this consultation document?

a) Yes

b) No

If you answered no, please explain your reasoning, including how different building types should be allocated.

In light of our response to Q. 3, we suggest that only the largest Type 2 buildings be retained in Type 2. Restaurants, smaller healthcare units and smaller hotels should be considered as Type 1 buildings.

It should also be noted that typology outlined in the consultation focuses only on heating of space and water. Consideration should also be given to the cooling and lighting requirements of the various building types.

Question 5: We would like to introduce the Future Buildings Standard for all buildings as quickly as possible. When do you think the Future Buildings Standard should introduce low carbon space heating for buildings with Type 1 or Type 2 demand (buildings that have space heating demand more suitable for heat pumps)?

a) 2025 – our proposed date, at the latest. Our members are very clear that phasing is unhelpful and that the sector has proved on a number of occasions that it will adapt to challenging targets. If, however, the Government proceeds with a phased introduction, 2025 should be the end date, not the starting date.

b) Another date (please specify)

Please explain your reasoning.

Question 6: We would like to introduce the Future Buildings Standard for all buildings as quickly as possible. When do you think the Future Buildings Standard should introduce low carbon space heating for buildings with Type 3 demand (buildings that have space heating demand less suitable for heat pumps)?

a) 2025, at the latest. See our response to Q. 5.

b) Another date (please specify)

Please explain your reasoning

Question 7: We would like to introduce the Future Buildings Standard for all buildings as quickly as possible. When do you think the Future Buildings Standard should introduce low carbon water heating for buildings with Type 1 or Type 3 demand (buildings that have water heating demand more suitable for point-of-use heaters or heat pumps)?

a) 2025 – our proposed date, at the latest. See our response to Q. 5.

b) Another date (please specify)

Please explain your reasoning.

Question 8: We would like to introduce the Future Buildings Standard for all buildings as quickly as possible. When do you think the Future Buildings Standard should introduce low carbon water heating for buildings with Type 2 demand (buildings that have water heating demand less suitable for point-of-use heaters or heat pumps)?

a) 2025, at the latest. See our response to Q. 5.

b) Another date (please specify)

Please explain your reasoning.

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.

We believe that Building Regulations must move away from the notional building approach, which does not incentivise optimal building design. This should be part of a broader review of the National Calculation Methodology to render it fit for net zero.

Primary energy should not be the principal metric. Instead, energy use intensity should be the principal metric.

The Government should move towards introducing embodied carbon targets.

We need to transition towards in-use performance as the basis of compliance with Building Regulations, starting at the next Part L uplift with requirements for the monitoring and disclosure of in-use performance in all buildings over 1,000m².

[For more detail on all of the above, please see our response to Q. 1.]

Question 10: What level of uplift to the energy efficiency standards for nondomestic buildings in the Building Regulations should be introduced in 2021?

a) Option 1 – average 22% CO₂ reduction

b) Option 2 – average 27% CO₂ reduction (this is the Government’s preferred option)

c) No change

d) Other level of uplift (please specify) – at least 35%.

Please explain your reasoning and provide supporting evidence or alternative suggestions where applicable.

We have consulted extensively with our membership about this. For some years the London Plan has required at least a 35% on-site reduction beyond Part L 2013 for both non-domestic and residential developments. However, many developments, both in London and elsewhere, are achieving even greater reductions. Costs are coming down – and if national Building Regulations come into alignment with the London requirements, costs will come down even further as demand scales up. Alongside the 35% uplift, the Government should consider the introduction of incentives for developments that achieve greater reductions, e.g. through Section 106 concessions or fast-tracked planning.

Question 11: Do you agree with the way that we are proposing to apply primary energy as the principal performance metric?

a) Yes

b) No

If you answered no, please explain your reasoning.

As per our response to Q. 1, we disagree that primary energy should be the principal metric. Calculation of primary energy requires the multiplication of energy use by a factor, which varies over time and can mask the actual energy consumption of a building. Primary energy is also not familiar to building occupants and operators, which limits opportunities to engage them in understanding and managing energy use.

Instead, we recommend that energy use intensity (measured in kWh/m²/yr) be the principal metric. This metric is already widely used and understood within the sector.

Question 12: Do you agree with using CO₂ as the secondary performance metric?

a) Yes

b) No If you answered no, please explain your reasoning.

Question 13: Do you agree with the approach to calculating CO₂ and primary energy factors, referred to in paragraph 3.5.7 of this consultation document?

a) Yes

b) No

If you answered no, please explain your reasoning and provide supporting evidence or alternative suggestions.

Primary Energy

As explained in our response to Qs. 1 and 11, primary energy is not the appropriate metric for delivering the consultation's stated objectives, i.e. energy efficiency and low carbon heat.

CO₂ factors

The proposed carbon factor for electricity will be out of date very soon. Electricity grid carbon factors should instead become longer-term averages.

Question 14: Do you agree with the proposals for natural gas being assigned as the heating fuel for any fuels with a worse CO₂ emission factor than natural gas?

a) Yes

b) No

If you answered no, please explain your reasoning and provide supporting evidence or alternative suggestions.

In our view, the heating fuel type for the notional building (if the notional building approach continues) should be the best available for that building type (in other words, a low carbon heat baseline), so as to incentivise decarbonisation.

Question 15: Do you agree with our proposal of using a hybrid electric/heat pump heating system in the notional building when electricity is specified as a heating fuel?

a) Yes

b) No

If you answered no, please explain your reasoning and provide supporting evidence or alternative suggestions.

There needs to be an incentive to avoid direct electric heating. The current approach does not provide a like-for-like comparison of systems.

Question 16: Do you agree with the proposal for the treatment of domestic hot water in the notional building?

a) Yes

b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

The use of gas should be phased out in favour of heat pumps, and therefore the notional building should not use gas for domestic hot water heating. We acknowledge that the range of domestic hot water heat pumps currently available is limited, but the industry should be incentivised to meet the challenge.

Question 17: Do you agree with the proposal for connecting to an existing heat network, as presented in the draft NCM modelling guide?

a) Yes

b) No, they give too much of an advantage to heat networks

c) No, they do not give enough of an advantage to heat networks

d) No, I disagree for another reason

If you answered no (b, c or d), please explain your reasoning and provide supporting evidence or alternative suggestions.

We believe it is wrong to compare an existing network with a notional network supplied by gas-fired CHP. This is not a low carbon baseline and will not do enough to incentivise the decarbonisation of existing networks. This approach will still allow carbon emissions from network-supplied heat to be much higher than those from buildings not connected to a heat network.

Question 18: Do you agree with the proposal for connecting to a new heat network, as presented in the draft NCM modelling guide?

a) Yes

b) No, they give too much of an advantage to heat networks

c) No, they do not give enough of an advantage to heat networks

d) No, I disagree for another reason

If you answered no (b, c or d), please explain your reasoning and provide supporting evidence or alternative suggestions.

Again, more must be done to incentivise heat network decarbonisation. From 2021, Building Regulations should therefore specify a baseline network that has all or the majority of its heat delivered by a heat pump, not just the 20% proposed in the consultation. This in turn should pave the way for the Future Buildings Standard to assess networks on the basis of their actual absolute performance in kgCO₂/kWh heat delivered.

Question 19: Do you agree with the proposed changes to the National Calculation Methodology Modelling Guide and activity database?

- a) Yes
- b) Yes, but additional changes should be made

c) No

If you answered b or c, please explain your reasoning and provide alternative suggestions.

There needs to be a proper review of how heating and cooling loads are assessed in the National Calculation Methodology, as it is well known that NCM heating loads are currently underestimated.

Question 20: We would welcome any further suggestions for revising the outputs from SBEM, which would enable easier checking by building control on building completion. Please provide related evidence.

No response.

Question 21: Do you agree with the proposals for limiting heat gains in non-domestic buildings?

- a) Yes
- b) No, they go too far
- c) No, they do not go far enough

d) No, I disagree for another reason

If you answered no (b, c or d), please explain your reasoning and provide alternative suggestions.

Solar gain needs to be considered in relation to both winter and summer, rather than addressing summer heat gains only.

Question 22: Do you agree with the proposed minimum standards for fabric performance in new non-domestic buildings as presented in Table 3.2 of this consultation document?

- a) Yes
- b) No, the standards go too far

c) No, the standards do not go far enough

d) No, I disagree for another reason

If you answered no (b, c or d), please explain your reasoning and provide supporting evidence or alternative suggestions.

The minimum standard for air permeability is too high and should be reduced. A number of members have suggested that the figure should be 3m³/m².hr at 50Pa. Consideration should also be given to introducing a metric for fabric performance for both heating and cooling.

Question 23: Do you agree with the proposed minimum standards for fabric performance of new thermal elements in existing non-domestic buildings as presented in Table 3.3 of this consultation document?

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

d) No, I disagree for another reason

If you answered no (b, c or d), please explain your reasoning and provide supporting evidence or alternative suggestions.

Retrofitting the existing stock is both a big challenge and a big opportunity. The proposed u-values are not low enough to realise the decarbonisation opportunities offered by retrofit.

Question 24: Do you agree with the draft guidance in paragraph 4.15 of the draft Approved Document L, volume 2: buildings other than dwellings on reducing unwanted air infiltration when carrying out work to existing non-domestic buildings?

a) Yes

b) No

If you answered no, please explain your reasoning.

This should be a requirement, rather than just guidance. And a minimum standard should be specified.

Question 25: Do you agree that the limiting U-value for rooflights in new and existing non-domestic buildings should be based on a rooflight in a horizontal position, as detailed in paragraph 4.4 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

Question 26: Do you agree that we should adopt the latest version of BR 443 for calculating U-values in new and existing non-domestic buildings, as detailed in paragraph 4.1 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

Question 27: Do you agree with the newly proposed minimum efficiencies for natural gas, oil and LPG boiler and domestic hot water system installations in new non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

No response.

Question 28: Do you agree with the proposed set of standards for air distribution systems for new non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

No response.

Question 29: Do you agree with the proposals for self-regulating devices for new non-domestic buildings, as set out in Sections 5 and 6 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No If you answered no, please explain your reasoning.

Question 30:

Do you agree with the minimum efficacy proposals for lighting in new non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

Question 31: Do you agree with the proposals for cooling in new non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

Question 32: Do you agree with the proposals to require building automation and control systems in new non-domestic buildings, when such buildings have a heating or air-conditioning system over 290kW?

a) Yes

b) No, a different trigger point should be used

c) No, I do not agree that building automation and control systems should be required in new buildings

d) No, I disagree for another reason

If you answered no (b, c or d), please explain your reasoning and provide alternative suggestions. Please also highlight any unintended consequences that may result from setting this standard.

The currently proposed 290kW trigger point seems too high. A lower rate output should be used so that more buildings fall into the category of requiring building automation and control systems.

Question 33: Do you agree with the technical specification for new building automation and control systems as EN 15232, Class A?

a) Yes

b) No, the requirements go too far

c) No, the requirements do not go far enough

If you answered no (b or c), please explain your reasoning.

Question 34: Do you agree with the proposals for improving the commissioning guidance for new non-domestic buildings in Section 8 and 9 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

d) No, I disagree for another reason

If you answered no (b, c, or d), please explain your reasoning and provide alternative suggestions.

A more specific set of requirements would be beneficial to improve the commissioning guidance.

Question 35: Do you agree with the proposals for requirements relating to the assessment of overall energy performance of building services installations and providing information to building owners for new non-domestic buildings given in sections 8 and 9 of Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

Question 36: Do you agree with the guidance proposals for adequate sizing and controls of building services systems in new non-domestic buildings, as detailed in Sections 5 and 6 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No, I do not agree with providing guidance on this

c) No, the guidance should be improved

If you answered no (b or c), please explain your reasoning.

Question 37: Do you agree with the proposal that wet space heating systems in new buildings should be designed to operate with a flow temperature of 55°C or lower?

a) Yes, through a minimum standard set in paragraph 5.9 of the Approved Document L, volume 2: buildings other than dwellings

b) Yes, through carbon and primary energy credit in SBEM

c) Yes, by another means

d) No, the temperature should be below 55°C

e) No, this standard should not be applied to all new buildings

f) No, I disagree for another reason

Please explain your reasoning.

All low temperature hot water systems should be designed for flow temperatures below 55C to ensure condensing operation of gas-fired boilers and allow easy adoption and efficient operation of low temperature heating systems such as heat pumps.

Question 38: Do you agree with the proposals to clarify, rationalise and simplify the guidance for building services in new non-domestic buildings, and to incorporate the standards of the Non-Domestic Building Services guidance into the main body of the Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

It is not clear to us what benefit is derived from incorporating the standards of the Non-Domestic Building Services guidance into the main body of ADL2, as limited justification has been provided and the integration does not necessarily lead to clearer guidance. There is a concern that useful guidance will be lost by combining the two documents and, as practitioners are already well versed in using these documents, we see limited benefit in amalgamating the two.

Question 39: Do you agree with the proposals to simplify the requirements in the Building Regulations for the consideration of high-efficiency alternative systems in new non-domestic buildings?

a) Yes

b) No

If you answered no, please explain your reasoning.

Question 40: Do you agree with the efficiency proposals for replacement fixed building services in existing non-domestic buildings as detailed in paragraphs 5.4 to 5.7 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

The proposals appear to allow for a gas boiler to replace a gas boiler, which cannot be right. Replaced systems for existing buildings should have the same standards as new built as far as practical, and overall performance better than the service being replaced.

Question 41: Do you agree with the newly proposed minimum efficiencies for natural gas, oil and LPG boiler and domestic hot water system installations in existing non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

Replaced systems for existing buildings should have the same standards as new built as far as practical. This is to prioritise energy-saving measures such as fabric thermal insulation and replacement of high temperature terminals with larger units running at lower temperatures.

Question 42: Should minimum boiler efficiency standards in existing non-domestic buildings still benefit from relaxations through the use of heating efficiency credits?

a) Yes, boiler installations should continue to benefit from heating efficiency credits

b) No, boiler installations should no longer benefit from heating efficiency credits (the Government's proposal)

If you answered yes, please explain your reasoning.

Question 43): Do you agree with the proposed set of standards for air distribution systems for existing non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

Question 44: Do you agree with our proposed approach and guidance to mandating self-regulating controls in existing non-domestic buildings, including technical and functional feasibility, as detailed in Sections 5 and 6 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

Question 45: Do you agree with the minimum efficacy proposals for lighting in existing non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

Question 46: Do you agree with the proposals for cooling in existing non-domestic buildings in Section 6 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

Question 47: Do you agree with the proposals that when Building Automation and Control System is installed in an existing non-domestic building with a heating or air-conditioning system over 290 kW, it should meet the same minimum standards as new non-domestic buildings?

a) Yes

b) No, a different trigger point should be used

c) No, a different standard should be used

d) No, for another reason

If you answered no (b, c or d), please explain your reasoning and provide alternative suggestions.

The proposed trigger point of 290kW seems too high. This figure should be lower to allow more buildings to fall into the category of requiring building automation and control systems.

Question 48: Do you agree with the proposals for requirements relating to the assessment of overall energy performance of building services installations and providing information to building owners for existing non-domestic buildings?

a) Yes

b) No, I do not agree with providing this guidance

c) No, the guidance should be improved

If you answered no (b or c), please explain your reasoning, including any further suggestions.

Question 49: Do you agree with the guidance proposals for adequate sizing and controls of building services systems in existing non-domestic buildings, as detailed in Sections 5 and 6 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No, do not agree with providing this guidance

c) No, the guidance should be improved

If you answered no (b or c), please explain your reasoning.

Question 50: Do you agree with the proposal that when whole wet space heating systems (i.e. boiler and radiators) are replaced in existing nondomestic buildings the replacement system should be designed to operate with a flow temperature of 55°C or lower?

a) Yes, through a minimum standard set in paragraph 5.9 of Approved Document L, volume 2: buildings other than dwellings

b) Yes, through carbon and primary energy credit in SBEM

c) Yes, by another means

d) No, the temperature should be below 55°C

e) No, this standard should not be applied to all existing buildings

f) No, I disagree for another reason Please explain your reasoning.

The design water temperature should be as low as possible

Question 51): Do you agree with the proposals to restructure the guidance for building services in existing non-domestic buildings, and to incorporate the standards of the Non-Domestic Building Services guidance into the main body of the Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

We do not see any benefit in incorporating the Non-Domestic Building Services guidance into the ADL2 document. We are concerned that useful guidance may be lost in the process.

Question 52: Do you agree the Government should continue to provide guidance for minimum building services efficiencies in existing non-domestic buildings, if the standard does not go significantly further than the Ecodesign regulations?

a) Yes

b) No, the Ecodesign regulations are sufficient

c) No If you answered no (b or c), please explain your reasoning.

Question 53: Do you agree with the changes made to simplify, rationalise and clarify the guidance, and the updates to external references in Appendix E and Appendix F, in Approved Document L, volume 2: buildings other than dwellings, as outlined in paragraph 3.12.1 of the consultation document?

a) Yes

b) Yes, but not with the changes to the supplementary guidance

c) Yes, but not with the external references

d) No If you answered no, please explain your reasoning. Please do not repeat comments on the changes made to simplify, rationalise and clarify the guidance for Building Services which you have already provided under Questions 38, 51 and 52.

Question 54: Do you agree that the measures in Tables D.1 and D.2 of Appendix D of Approved Document L, volume 2: buildings other than dwellings are likely to be technically, functionally and economically feasible under normal circumstances?

a) Yes. However, the requirement for new plant should take decarbonisation into account and not just require the replacement of existing systems with newer systems. This runs the risk of locking in high carbon solutions that may not be compatible with net zero in the longer run.

b) No

If you answered no, please explain your reasoning.

Question 55: Do you agree with the proposals for relaxation factors for modular and portable buildings, as detailed in Tables 2.2 and 2.3 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No, the requirements go too far

c) No, the requirements do not go far enough

If you answered no (b or c), please explain your reasoning and provide supporting evidence or alternative suggestions.

Question 56: Do you think that the Pulse methodology should be an approved means of demonstrating airtightness for non-domestic buildings?

a) Yes

b) No

If you answered no, please explain your reasoning and provide supporting evidence.

Question 57: Do you agree that we should adopt an independent approved airtightness testing methodology such as the CIBSE draft methodology for non-domestic buildings?

a) Yes, and the CIBSE methodology is appropriate

b) Yes, but with a methodology other than CIBSE

c) No, an independent approved airtightness methodology shouldn't be adopted. If you answered no, please explain your reasoning.

Question 58: Do you agree with the proposal for guidance on the calibration of devices that carry out airtightness testing in new and existing nondomestic buildings?

a) Yes

b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

Question 59: Do you agree with the proposed approach to energy sub-metering, as detailed in Section 5 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

Question 60: Do you agree with the proposed approach to energy forecasting, as detailed in paragraph 9.4 of draft Approved Document L, volume 2: buildings other than dwellings?

a) Yes

b) No, I do not agree with the proposed approach

c) No, energy forecasting should not form part of the Building Regulations

If you answered no (b or c), please explain your reasoning and provide alternative suggestions.

Question 61: Do you agree with the proposals for transitional arrangements for buildings other than dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

Question 62: Do you agree with the proposed guidance in Section 1 and Section 2 of Approved Document F, volume 2: buildings other than dwellings on minimising the ingress of external pollutants and on the proper installation of ventilation systems in non-domestic buildings?

a) Yes

b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

The guidance on minimising the ingress of external pollutants should be strengthened by turning it into a requirement, as opposed to merely guidance. In addition, there should be a section on ensuring proper filtration standards, using EN standards as the basis.

Question 63: Do you agree with the proposed guidance for reducing noise nuisance for ventilation systems in non-domestic buildings?

a) Yes

b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

Noise testing should be required for ventilation systems, as part of commissioning requirements.

Question 64: Do you agree with the additional guidance provided in paragraphs 1.18 to 1.26 of the draft Approved Document F, volume 2: buildings other than dwellings on the installation of ventilation systems?

a) Yes

b) No

If you answered no, please explain your reasoning.

The lengths of flexible duct specified in s.1.20 are too long and should be minimised. We would also suggest omitting s.1.23 as it could encourage under-sizing of ducts.

Question 65: Do you agree that the guidance in Appendix B of the draft Approved Document F, volume 2: buildings other than dwellings provides an appropriate basis for setting minimum ventilation standards?

a) Yes

b) No

If you answered no, please explain your reasoning.

- Public Health England's 'Indoor Air Quality Guidelines for selected Volatile Organic Compounds (VOCs)' is the best source of specific evidence-based limits for VOCs for occupant health in the UK and should be used in place of the TVOC metric.
- Relative humidity should be used in place of 'surface water activity'.
- There should be a proper mechanism for verifying that standards are met.
- Recommended CO2 levels should be provided to complement the new guidance on monitoring.
- Particulate matters should be included in the table of pollutants. There is a particular concern around airborne particles from printers and photocopiers, which are becoming more of a problem with increased use of 3D printers in offices – while conversely ozone and organic compounds are often less of a problem as technologies have improved.

Question 66: Do you agree with the list of industry guidance presented in Section 1 of draft Approved Document F, volume 2: buildings other than dwellings?

a) Yes

b) Yes, but additional guidance should be provided

c) No

Please explain your reasoning and where relevant provide alternative suggestions for guidance.

No response.

Question 67: Do you agree with the list of references to industry guidance presented in Appendix C and Appendix D in the draft Approved Document F, volume 2: buildings other than dwellings?

a) Yes

b) No, the Government should amend the list of references

c) No, for another reason

If you answered no (b or c), please explain your reasoning and provide alternative suggestions.

No response.

Question 68: Do you agree with the proposals to simplify, rationalise and clarify the Approved Document guidance in Approved Document F, volume 2: buildings other than dwellings as outlined in paragraph 4.3.7 of the consultation document?

a) Yes, but with the caveat that in smaller non-domestic buildings which are not designed by CIBSE engineers, ventilation is often assumed to be via openable windows. Multi-split systems are often installed and incorrectly assumed to provide ventilation as well as space conditioning – leading to poor indoor air quality.

b) No

If you answered no, please explain your reasoning and provide alternative suggestions

Question 69: Do you agree that purge ventilation in offices should be designed to provide at least four air changes per hour?

a) Yes

b) No, this standard goes too far

c) No, this standard does not go far enough

If you answered no (b or c), please explain your reasoning and provide alternative suggestions.

While the proposed standard would be desirable, it is not feasible in buildings without openable windows. It would be better to require a given level of air changes prior to occupation in order to purge.

Question 70: Do you agree with the guidance for the ventilation of car parks and offices, as detailed in Section 1 of Approved Document F, volume 2: buildings other than dwellings?

a) Yes

b) Yes, but some improvements can be made

c) No, the guidance should be significantly changed

If you answered b or c, please explain your reasoning and provide alternative suggestions. Please note that the appropriate questions on measures to prevent the spread of infection are detailed in section 4.4 of this consultation document.

Increasing the standard by 50% would have a huge impact on the size of ventilation equipment, ductwork, risers, etc. and the cost of buildings generally, particularly when combined with other requirements related to noise, efficiency, etc. We do not believe that the consultation makes a compelling case for this increase.

Question 71: Do you agree with the proposals in Section 3 of draft Approved Document F, volume 2: buildings other than dwellings, when replacing an existing window with no background ventilators?

a) Yes

b) No, the standards do not go far enough

c) No, the standards go too far

If you answered no, please explain your reasoning and provide alternative suggestions.

Ensuring the ventilation provision in a building with replacement windows is no worse than it was before the work was carried out allows for a very leaky installation to be replicated. The criteria for ventilation provision set out in items a. and b. should be the standard to be achieved.

Question 72: Do you agree with the proposal to provide a completed commissioning sheet to the building owner and associated guidance in Section 4 of draft Approved Document F, volume 2: buildings other than dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning. 163

Question 73: Do you agree with requiring increased capacity of 50% within new ventilation systems in offices shown in paragraph 1.38 of the draft Approved Document F, volume 2: buildings other than dwellings?

a) Yes

b) Yes, but with qualifications

c) No, the standard is too high

d) No, the standard is too low

e) No, I disagree for another reason

If you answered b, c, d or e, please explain your reasoning.

A blanket requirement for 50% additional capacity seems excessive and no evidence is given to back it up. If implemented, it is likely to result in increases in operational energy usage, embodied carbon and the size of mechanical equipment, together with loss of space due to ductwork and risers.

Question 74: Do you agree with the proposed standards for provision of outdoor air for offices, shown in paragraphs 1.35 to 1.36 of draft Approved Document F, volume 2: buildings other than dwellings?

a) Yes

b) Yes, but with qualifications

c) No

If you answered b or c, please explain your reasoning.

Introducing ventilation at 1 l/s/m² in communal spaces seems excessive and would entail additional equipment with associated embodied carbon, higher energy use, drier air and the possible need for humidification and its associated equipment and energy use.

Question 75: Do you agree that extract ventilation in bathrooms, WCs, and other sanitary accommodation should be capable of operating in a continuous mode if necessary?

a) Yes

b) No

If you answered no, please explain your reasoning.

Question 76: Do you agree with the proposal for indoor air quality monitoring in offices as outlined in paragraphs 1.39 to 1.41 of draft Approved Document F, volume 2: buildings other than dwellings?

a) Yes

b) Yes, but with qualifications

c) No

If you answered b or c, please explain your reasoning and provide any suggestions for guidance if applicable.

The exclusion of rooms occupied by fewer than 15 people seems inappropriate. Any multi-occupancy room should provide good indoor air quality – and small meeting rooms designed for smaller groups of people also present transmission and air quality risks. Our view therefore is that the requirement should apply to all occupied rooms.

In addition, with regard to paragraph 1.38, it would be useful to clarify whether the requirement for increased ventilation is intended to be controllable on a room-by-room basis or is to be applied to all occupiable rooms simultaneously. And in relation to para. 1.40, there is no guidance as to what should be done with stored data. If they are not reviewed by the building operator, what purpose do they serve? The minimum logging period of 24 hours is very short. Increasing it to a minimum of, for example, 30 days would make periodic review of the data less onerous, would aid troubleshooting and be well within the capabilities of commercially available CO2 monitors.

Question 77: If applicable, please provide any suggestions for guidance for indoor air quality monitoring (e.g. CO2 monitoring) in non-domestic buildings.

No response.

Question 78: Do you agree with the proposals for systems that recirculate air as outlined in paragraph 1.46 of draft Approved Document F, volume 2: buildings other than dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

Requiring UV, HEPA filters or germicidal filters in any recirculation system would effectively rule out the use of fan coil units and make it impossible to meet SFP targets. In addition, the meaning of para. 1.46 is unclear, as it suggests that a suitably filtered recirculation system could operate with no outdoor air provision.

Question 79: Do you agree with the proposed minimum ventilation standard in occupiable rooms in all types of non-domestic buildings where singing, loud speech or aerobic exercise may take place, where low temperature and low humidity environments may exist, or where members of the public may gather in large groups? These are outlined in paragraphs 1.27 and 1.28 of draft Approved Document F, volume 2: buildings other than dwellings.

a) Yes

b) Yes, with qualifications

c) No **If you answered b or c, please explain your reasoning and provide any suggestions for guidance if applicable.**

We would like to see more evidence that increasing ventilation rates by 50% has a positive impact on reducing the spread of pathogens.

Question 80: Do you think the mitigating measures to protect against infection via aerosols would be suitable for any non-domestic buildings other than those stated in the Approved Document guidance?

a) Yes

b) No

If you answered yes, please explain your reasoning and provide evidence to support this.

Question 81: How should the Government address the overheating risk?

a) Through a new requirement in the Building Regulations and an Approved Document, as proposed in this consultation

b) Through Parts L and F of the Building Regulations

c) Through government guidance

d) I have an alternative approach

e) It isn't an issue that needs addressing

Please explain your reasoning and provide alternative suggestions where applicable.

Question 82: Do you agree with the buildings that are in scope of this new part of the Building Regulations?

a) Yes

b) Yes, but they should be expanded to include more building types and/or existing buildings

c) No, they should be reduced to only include flats and houses

d) No, I disagree for another reason Please explain your reasoning.

This requirement should be extended to cover new non-domestic buildings and extensions to existing homes.

Question 83: Do you agree that the division of England based on overheating risk detailed in paragraph 5.6.3 of this consultation document is correct?

a) Yes

b) No, there should be one area

c) No, there should be more areas

If you answered no (b or c), please explain your reasoning and provide supporting evidence.

We have received a very clear steer from our membership that dividing England into (a) Greater London and (b) everywhere else is over-simplistic, as urban areas outside London pose similar risks to those encountered in the capital. However, members are split between recommending, on the one hand, one area covering the whole country, pending further research, or, on the other, sub-dividing the country further to reflect different location-specific conditions. MHCLG need to do further work on this.

Question 84: Do you agree with the categorisation of buildings into Group A and Group B as detailed in paragraph 5.6.5 of this consultation document?

a) Yes

b) No

If you answered no, please explain how buildings should be recategorised.

Separating those buildings at higher risk of overheating from those at lower risk is sensible in principle. However, there are some anomalies in the proposed categorisations – for example, some units will fall into neither of the proposed categories, while orientation (which can have a significant effect on overheating) is not considered at all.

Question 85: Do you agree with the simplified method as a means of compliance with the proposed new requirement to reduce overheating risk?

a) Yes

b) No, the method should be more sophisticated

c) No, the method is too easy to pass

d) No, for another reason

If you answered no (b, c or d), please explain your reasoning and provide supporting evidence.

In principle we agree that a simplified method is useful, but the currently proposed method has a number of flaws that need to be remedied. Therefore, in the absence of further testing, or evidence of testing, we cannot endorse the simplified method as currently set out.

Even if the simplified method is improved, however, we believe that large scale developments should still have to follow the dynamic thermal modelling approach. This will encourage innovation in design and specification and avoid formulaic solutions.

Question 86: Do you agree with the maximum glazing area and shading standards for limiting solar gains in the simplified method as detailed in paragraphs 1.6 to 1.9 of the draft Overheating Approved Document?

a) Yes

b) No

If you answered no, please explain your reasoning and provide supporting evidence.

The standards as currently proposed will lead to perverse outcomes – under-glazing and poor daylight in some homes, along with over-glazing and overheating in others. In addition, the requirement for more glazing on the north and east facades is too simplistic and counter-productive to winter-time energy optimisation. Furthermore, we are concerned that the guidance does not consider the impact of concentrating the glazing in specific rooms. Living/dining rooms with their high internal gains are particularly high-risk when orientated between south and north-west, due to a combination of high external temperatures, internal gains and solar gains. This problem is exacerbated when combined with glazing being focused on these rooms (particularly in a single aspect dwelling). For this reason, the glazing area limits should probably be room-based, not dwelling-based, and also dependent upon window orientation.

Question 87: Do you agree with the approach to removing excess heat in the simplified method as detailed in paragraphs 1.10 to 1.13 of the draft Overheating Approved Document?

a) Yes

b) No

If you answered no, please explain your reasoning and provide supporting evidence.

We have received a very strong steer from across our membership that the proposed large areas of openable windows are excessive and unfeasible, especially at height, for security and acoustic reasons and in areas that experience high wind loads, where the force required to close windows that are opened to 60 degrees may exceed acceptable levels. The proposal is also highly questionable in a care home setting.

Question 88: Do you think that adequate levels of daylight will be provided and that homes will be acceptable to purchasers while meeting these proposed standards?

a) Yes

b) No

Please explain your reasoning.

The limitations placed on glazing sizes should ideally drive window design in a positive direction in terms of providing good daylight – however, compliance could nevertheless be achieved without good daylight design.

Question 89: Do you agree with offering dynamic thermal analysis as a means of compliance with the proposed new requirement to reduce overheating risk?

a) Yes, as described in the draft Overheating Approved Document

b) Yes, but not as described in the draft Overheating Approved Document

c) No

Please explain your reasoning and provide alternative suggestions where applicable.

The proposed changes to the standard TM59 opening profiles should be further explained. Having different profiles from TM59 will lead to unnecessary confusion within the industry. If, after further investigation and discussion, the proposed changes are agreed to be useful, then they should be made in TM59 itself.

Question 90: Please detail any information you have about the likelihood of occupants opening doors and windows at night in unoccupied rooms.

No response.

Question 91: Do you agree with the proposed acceptable strategies for shading and the removal of excess heat, when following the dynamic thermal analysis method, as found in Section 2 of the draft Overheating Approved Document?

a) Yes, I agree with both sets of acceptable strategies

b) Yes, but with amendments to the acceptable shading strategies

c) Yes, but with amendments to the acceptable strategies to remove excess heat

d) Yes, but with amendments to both sets of acceptable strategies

e) No, I do not agree with the acceptable strategies

Please explain your reasoning and provide any suggested amendments where applicable.

We have a number of points to make here.

First, MHCLG should reconsider the assumption that external shading devices are necessarily fixed and retained while internal shading devices are easily – and likely to be – removed.

Second, clarification is needed in para. 2.10 regarding using mechanical ventilation systems for removing excess heat. It should be made clear that this cannot be the boost function from a standard MVHR unit as these are not designed to operate continuously, do not deliver sufficiently increased ventilation rates and tend to be noisy. In many cases, a hybrid solution might be the best solution – so clarification as to acceptable hybrid solutions would be welcome.

Finally, ceiling fans should be mentioned as a potential aid to keeping cool - particularly when natural breezes are compromised such as in single aspect units or when acoustic vents are used.

Question 92: Do you agree that the overheating standard should not account for the effect of curtains, blinds and tree cover?

a) Yes, curtains, blinds and tree cover should be excluded

b) Yes, but only curtains and blinds should be excluded

c) Yes, but only tree cover should be excluded

d) No, none of these should be excluded

If you answered b, c or d, please explain your reasoning.

While we are enormously supportive of tree-planting, there is no guarantee that they will remain in place throughout the building's lifetime, so they should not be taken into account in the assessment. The same is true of curtains and blinds, which can be removed.

Question 93: Do you agree that the building should be constructed to meet the overheating requirement without the need for mechanical cooling?

a) Yes

b) No

If you answered no, please explain your reasoning.

As a matter of principle, it is right to exclude mechanical cooling from the overheating strategy. However, many of our members have pointed out that the likely consequence of doing so is that in future there will be some noisy or polluted built-up areas where natural ventilation is not possible and in which it will therefore be impossible to build in the future. A hybrid approach would be to require homes to demonstrate that all possible steps have been taken to minimise overheating, after which active cooling can be considered for noisy and polluted areas.

Question 94: Do you agree with limiting noise in new residential buildings when the overheating strategy is in use, and the proposed guidance in Section 3 of the draft Overheating Approved Document?

a) Yes

b) Yes, but with amendments to the guidance

c) No, I do not agree with limiting noise when the overheating strategy is in use

If you answered b or c, please explain your reasoning and provide alternative suggestions.

The guidance fails to take into account the implications of relying on heat pumps for domestic hot water. Heat pumps will be generating noise adjacent to open windows and, as more heat pumps are installed, the more this noise will increase over time.

Question 95: Do you agree with minimising the ingress of external pollutants when the overheating strategy is in use, and that the external pollutants guidance in Approved Document F, volume 1: dwellings should be followed where practicable?

a) Yes

b) Yes, but with amendments to the guidance

c) No, I do not agree with minimising the ingress of external pollutants when the overheating strategy is in use

If you answered b or c, please explain your reasoning and provide alternative suggestions.

No response.

Question 96: Do you agree with the proposals on security in Section 3 of the draft Overheating Approved Document in new residential buildings?

a) Yes

b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

It is important, however, that this is consistent with other Approved Documents in relation to means of escape.

Question 97: Do you agree with the protection from falling guidance proposed in Section 3 of the draft Overheating Approved Document?

a) Yes

b) No

If you answered no, please explain your reasoning and provide alternative suggestions. **Question 98: Do you agree with the guidance on protection from entrapment proposed in Section 3 of the draft Overheating Approved Document?**

There are too many clashes with Approved Documents B, K and M in relation to things like sightlines, restricted window widths, etc.

Question 98: Do you agree with the guidance on protection from entrapment proposed in Section 3 of the draft Overheating Approved Document?

a) Yes

b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

We agree with the guidance, but we do not believe that this is the right place to locate it. It would be better placed in Approved Documents K and Q.

Question 99: Are there any further issues which affect usability that should be included in the Overheating Approved Document?

a) Yes

b) No

Please explain your reasoning and provide supporting evidence.

Question 100: Do you agree with the proposed requirement to provide information on the overheating strategy to the building owner?

a) Yes, I agree with the requirement, the list provided and that this should be within a Home User Guide

b) Yes, I agree with the requirement, but think that the list provided should be changed or that this should not be provided within a Home User Guide

c) No, I do not agree with providing information

Please explain your reasoning and provide alternative suggestions where applicable.

Question 101: How do you see this new Building Regulation interacting with policies in local plans?

We believe that local authorities should be able to require the TM59 approach in relation to key building typologies and heating systems, where there is a higher risk to occupants of overheating.

Question 102: Do you agree that this guidance on limiting the effects of heat gains in summer, in both Approved Document L guidance for new dwellings and SAP Appendix P, can be removed?

a) Yes, provided that the simplified method is made more robust. Also, there must be full integration between this Approved Document and Approved Document L.

b) No

If you answered no, please explain your reasoning.

Question 103: Should the transitional arrangements that apply to the overheating requirements align with the proposed transitional arrangements for Part L and F 2021 for new dwellings, as described in paragraph 5.10.2 of this consultation document?

a) Yes

b) No

Please explain your reasoning and provide alternative suggestions where applicable. If you answered no, please also propose an alternative reasonable period that could apply.

Question 104: Do you agree with the proposed minimum fabric standards for existing domestic buildings set out in Table 6.1 of this consultation document?

a) Yes

b) No

If you answered no, please explain your reasoning and provide supporting evidence.

The Welsh Government recently consulted on standards for existing dwellings and, in the case of both roofs and floors proposed more ambitious standards:

- 0.13 for roofs, compared with the 0.15 proposed in this consultation;
- 0.15 for floors, compared with the 0.18 proposed in this consultation.

In light of this, we would urge that the standards proposed in the consultation be reviewed and brought into line with the proposed Welsh ones.

On a broader point, we are disappointed that the proposed standards do not address airtightness. This must be rectified.

Question 105: Do you agree with the draft guidance in section 4 of the draft Approved Document L, volume 1: dwellings on reducing unwanted air infiltration when carrying out work to existing homes?

a) Yes

b) No

If you answered no, please explain your reasoning.

We welcome the intention to reduce unwanted air infiltration. However, we have the following concerns:

- The guidance should be strengthened to become a requirement.
- A minimum standard (coupled with testing) should be introduced, at least when substantial works are carried out.
- The guidance only applies to elements being installed or renovated, not the whole building. This misses an important opportunity to improve airtightness throughout.

Question 106: Do you agree that we should control the primary energy and fabric energy efficiency of new extensions to existing homes when using the SAP method of compliance?

a) Yes

b) No

If you answered no, please explain your reasoning.

As per our responses to Qs. 1, 9 and 11, we do not believe that primary energy is the right metric to support heat decarbonisation, promote energy efficiency, track progress in home performance or provide clear information to consumers to engage them with the energy performance of and possible improvements to their home.

Question 107: Do you agree that the limiting U-value for rooflights in existing domestic buildings should be based on a rooflight in a horizontal position, as detailed in Section 4 of draft Approved Document L, volume 1: dwellings?

a) Yes. However, the limiting u-value should at least be consistent with that being adopted under the Future Homes Standard.

b) No

If you answered no, please explain your reasoning.

Question 108: Do you agree that we should adopt the latest version of BR 443 for calculating U-values in existing domestic buildings, as detailed in Section 4 of draft Approved Document L, volume 1: dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

Question 109:

Do you agree with the proposed minimum fabric standards set out in Table 6.2 of this consultation document, and Sections 4 and 11 of draft Approved Document L, volume 1: dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning provide supporting evidence.

As per our response to Q. 104, we believe that fabric standards must include airtightness. In addition, S.4 must refer to the assessment and management of moisture risk when improving thermal elements.

A number of our members felt that the standards (especially that for cavity walls) lack the requisite level of ambition to put us on the path to net zero carbon. It is also felt that more attention should be given to thermal bridging.

Question 110: What level of FEES should be used for Part L 2021?

a) Option 1, full fabric specification

b) Option 2, fabric specification x1.15

c) Neither, it should be higher (i.e. the ambition should be higher and the u-values therefore lower)

d) Neither, it should be lower

Please explain your reasoning and provide supporting evidence, including whether you think a higher level of FEES will make it more or less likely for a home to be built with low carbon heat.

In particular, the minimum air permeability standard is too high and should be reduced to at least 3m³/m².h at 50Pa.

Question 111: Do you agree that we have adequately covered matters which are currently in the Domestic Building Services Compliance Guide in draft Approved Document L, volume 1: dwellings for existing homes?

a) Yes

b) No

If you answered no, please explain which matters are not adequately covered.

Reference must be made to relevant guidances, e.g. Approved Document Part F Section 3; PAS205; and the management of moisture risk set out in BS 5250.

Question 112: Do you agree with the proposed minimum standards for building services in existing homes, as detailed in Sections 5 and 6 of draft Approved Document L, volume 1: dwellings?

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

The minimum standards should be more ambitious in order to obviate the need for expensive energy retrofit at a later date.

Question 113: Do you agree with the proposals for replacement fixed building services in existing homes, as detailed in Section 5 of draft Approved Document L, volume 1: dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

We are concerned that these proposals do not do enough to encourage upgrades to more efficient and low carbon systems, as opposed to merely replacing outgoing systems with broadly equivalent ones.

Question 114: Do you agree with our proposed approach to mandating self-regulating controls in existing domestic buildings, including technical and economic feasibility, as detailed in Sections 5 and 6 of draft Approved Document L, volume 1: dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

Question 115: Do you agree with the proposed specifications for building automation and control systems installed in a new or existing home, as detailed in Section 6 of draft Approved Document L, volume 1: dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

No response.

Question 116: Do you agree with the proposals for extending commissioning requirements to Building Automation and Control Systems and on-site electricity generation systems, as detailed in Sections 8 and 9 of draft Approved Document L, volume 1: dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning.

Question 117: Do you agree with the proposals for requirements relating to the assessment of overall energy performance of building services installations and providing information to homeowners, as detailed in Sections 8 and 9 of draft Approved Document L, volume 1: dwellings?

a) Yes

b) No, I do not agree with providing this guidance

c) No, the guidance should be improved

If you answered no (b or c), please explain your reasoning.

We warmly welcome the provision of information to homeowners. However, we think the proposals should additionally cover the following:

- Any on-site generation and design-stage space heating demand;
- Overheating mitigation strategies;
- The operation of shading devices and the use of thermal mass.

Also, in existing dwellings, homeowners should be provided with a prediction of energy performance under a range of scenarios along with a whole-house retrofit plan to net zero.

Question 118: Do you agree with the proposed changes to water treatment guidance and removing formal guidance on water softening?

a) Yes

b) No

If you answered no, please explain your reasoning.

Hard water and limescale have a negative effect on the efficiency of boilers and heat pumps – so this proposal would appear to be a step in the wrong direction.

Question 119: Do you agree with the guidance proposals for adequate sizing and controls of building services systems in domestic buildings, as detailed in Sections 5 and 6 of draft Approved Document L, volume 1: dwellings?

a) Yes

b) No, I do not agree with providing this guidance

c) No, the guidance should be improved

If you answered no (b or c), please explain your reasoning.

No response.

Question 120: Do you agree with the guidance proposals on sizing a system to run at 55°C when a whole heating system is replaced, as detailed in Section 5 of draft Approved Document L, volume 1: dwellings?

a) Yes

b) No, I do not agree with providing this guidance

c) No, the guidance should be improved

If you answered no (b or c), please explain your reasoning.

The temperature should depend on the heating system installed, in order to maximise efficiency and carbon savings from heat pumps and reduce demand on the grid at times of cold weather (as air source heat pumps, in particular, would otherwise operate at very low efficiencies). We would recommend:

- 55°C may be appropriate for homes connected to low carbon heating networks;
- 45°C for dwellings with ground or water source heat pumps;

- 40°C for other cases, including dwellings with air source heat pumps.

If this is not considered feasible now, then we would suggest that the temperature should be 45°C, as this is feasible for low temperature radiators and would allow conversion to heat pumps in the future.

Question 121: Do you agree with the proposed changes to the supplementary guidance and the external references in Appendix D and Appendix E, in the draft Approved Document L, volume 1: dwellings as outlined in paragraph 6.8.2.?

- a) Yes
- b) Yes, but not with the changes to the supplementary guidance
- c) Yes, but not with the external references

d) No

If you answered b, c or d, please explain your reasoning.

It is important to retain guidance and standards on thermal bridging.

Question 122: Do you agree with the proposal for guidance on the calibration of devices that carry out airtightness testing in new and existing domestic buildings?

- a) Yes
- b) No

If you answered no, please explain your reasoning and provide alternative suggestions. Part F standards for existing domestic buildings in 2021

No response.

Question 123: Do you agree that we have adequately covered matters for existing dwellings which are currently in the Domestic Ventilation Compliance Guide in draft Approved Document F, volume 1: dwellings?

- a) Yes
- b) No**

If you answered no, please explain your reasoning and provide alternative suggestions.

It is important to undertake surveys in accordance with PAS 2035 to assess infiltration, and these should be submitted as evidence.

Question 124: Do you agree with the proposed changes to supplementary guidance and the external references used in Appendix E and Appendix F, for existing domestic buildings from the draft Approved Document F, volume 1: dwellings?

- a) Yes
- b) Yes, but not with the changes to the supplementary guidance
- c) Yes, but not with the external references

d) No

If you answered b, c or d, please explain your reasoning.

The guidance should refer in more detail to PAS2035 and to the AVO Guide produced by the Association of Noise Consultants.

Question 125: Do you agree with the proposal to align the guidance and standards for work to existing homes to that outlined in Chapter 4 of the Government Response to the Future Homes Standard consultation?

a) Yes

b) No

If you answered no, please explain your reasoning and provide supporting evidence.

While we agree that the guidance and standards for work to existing homes should be aligned with those for new homes, the standards outlined in Chapter 4 of the Government response to the Future Homes Standard need to be more robust, especially in relation to airtightness and ventilation.

Question 126: Do you agree with the proposed guidance for installing energy efficiency measures in existing homes, as detailed in Section 3 of draft Approved Document F, volume 1: dwellings.

a) Yes

b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

We are concerned about the assumption that underpins the simplified method – i.e. that a dwelling is ‘assumed to have adequate means of ventilation through a combination of purpose-provided ventilation and advantageous infiltration’. We do not believe that such an assumption can or should be made, and that a requirement for verification should therefore be introduced (including guidance on how this verification should be undertaken).

In addition to these issues about ventilation, we believe that the simplified method also contains inherent uncertainties about the starting level of airtightness and the effect of measures carried out. This could lead to energy efficiency opportunities being missed or carbon lock-ins being introduced (e.g. through additional trickle vents or ventilators where not required) or poor air quality (if the starting point was poorer than assumed and/or the impact of measures greater than estimated). For these reasons, we recommend that where ‘major’ measures are proposed, the more sophisticated method should be adopted.

Question 127: Do you agree with the content of the proposed checklist for ventilation provision detailed in Appendix D of draft Approved Document F, volume 1: dwellings?

a) Yes

b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

We do not agree with this proposal because it would be impractical to estimate ventilation through trickle vents. This method should refer to the ventilation requirements in PAS2035.

Question 128: Do you agree with the guidance in Section 3 of draft Approved Document F, volume 1: dwellings when replacing an existing window with no background ventilators?

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning.

The proposed approach defaults to the provision of additional ventilators without this being informed by an assessment of the building's airtightness, its current ventilation provision and the most suitable ventilation and energy efficiency strategy. A whole building approach should be adopted.

Question 129: Do you agree with the proposals in paragraphs 3.29 to 3.31 of draft Approved Document F, volume 1: dwellings in 7.4.11 of this consultation document on work to existing kitchens or bathrooms?

a) Yes

b) No, the standards go too far

c) No, the standards do not go far enough

If you answered no (b or c), please explain your reasoning and provide alternative suggestions.

Given that many of the UK's existing homes have inadequate ventilation, we believe that the proposals in question do not go far enough. Since Building Regulations require new kitchens and bathrooms to have extract ventilation, there should be an equivalent provision when an existing kitchen or bathroom is refurbished. This would bring the rooms up to current new build standards with knock-on positive impacts on occupants' health and wellbeing.

Question 130: Do you agree with the proposal to provide a completed commissioning sheet to the homeowner, as detailed in Section 4 of draft Approved Document F volume 1: dwellings?

a) Yes, and it is important that the information it contains should be written in plain English and easy for the layperson to understand.

b) No

If you answered no, please explain your reasoning and provide alternative suggestions.

Question 131: Please provide any feedback you have on the impact assessment here, including the assumptions made and the assessment of the potential costs and benefits of the proposed options we have made.

No response.

Question 132): Please provide any feedback you have on the potential impact of the proposals outlined in this consultation document on persons who have a protected characteristic. Please provide evidence to support your comments.

No response.

For further information, please contact:

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