

Email to: buildingstandards@gov.scot

26 November 2021

Scottish Building Regulations: Proposed changes to Energy Standards and associated topics: Consultation Response

Scottish Renewables is the voice of Scotland's renewable energy industry, working to grow the sector and sustain its position at the forefront of the global clean energy transition. We represent around 260 organisations across the full range of renewable energy technologies in Scotland and around the world, ranging from energy suppliers, operators and manufacturers to small developers, installers, and community groups, as well as companies throughout the supply chain.

Scottish Renewables welcomes the opportunity to provide our views on the proposed changes to the Energy Standards and associated topics, as set out in the consultation document.

In responding, we would like to highlight the following points:

- Given the objective of net zero by 2045, we see no reason why we should not move to the advanced standard from the outset, given that timescales are short.
- We are concerned that these energy standards after review should contain a step forward to get to the point of no gas boilers in new builds after 2024, which is stated in the 2024 Heat Standard. Continuing to use gas (with solar) is not in line with decarbonisation targets.
- We also noted that there is an emphasis on individual buildings as opposed to wider developments or networks.
- We query the fact that there is no specific provision for the use of solar thermal heating or solar PV as a direct or indirect top up for partial hot water provision from a heat pump – either directly or via battery storage.

Scottish Renewables would be keen to engage further with this agenda and would be happy to discuss our response in more detail.

Yours sincerely,



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Consultation Questions

Part 2 – Energy, new buildings

Question 1 –

Do you support the extension of standard 6.1 to introduce an energy target in addition to the current emissions target? If yes, do you have a view on the metric applied – primary or delivered energy?

Yes, a primary energy target

Yes, a delivered energy target

No

Please provide a summary of the reason for your view below.

We believe that it important to consider not only the amount of energy delivered at point of use, but also how that energy is produced, and the total energy consumed prior to delivery. In terms of viability of alternative fuels sources, it is important to have a full and clear picture.

Question 2 –

What level of uplift to the 2015 standard for new dwellings do you consider should be introduced as an outcome of this review?

Option 1: 'Improved' standard (32% emissions reduction)

Option 2: 'Advanced' standard (57% emissions reduction)

Another level of uplift

Please provide a summary of the reason for your view.

Given the objective of net zero by 2045, the overall reduction in emissions reductions for Option 1 when factoring in anticipated changes to emissions factors from 2021 to 2045, and the fact that the capital cost uplift is marginal we see no reason why we should not move to the advanced standard from the outset, given that timescales are short. Not to do so will merely increase pressure further down the line but also in a fairly short timescale.

The more difficult standards are to meet, the more efficient buildings will be. The more challenging the notional building is, the further developers will be pushed to try and meet those criteria.

One caveat might be that there is mention of a reduced positive impact if building integrated renewable energy is exported to the grid. We would advocate a move to encourage on-site use and storage to minimise impacts on grid stability.

In addition, while there may be no carbon reduction benefit in going to the higher standard if operating from a net zero carbon fuel base, there is nonetheless a running cost / fuel poverty risk implication at the moment, given the high unit cost of electricity and gas subsidies. This should also be addressed as there will be an impact on capital as well as running costs depending on which solution is adopted. If fuel costs are equalised and net zero carbon solutions identified, the pressure to reduce running costs is, to an extent, abated and the question moves to one of embodied carbon.

Question 3 –

What level of uplift to the 2015 standard for new non-domestic buildings do you consider should be introduced as an outcome of this review?

Option 1: ‘Medium’ standard (16% emissions reduction)

Option 2: ‘High’ standard (25% emissions reduction)

Another level of uplift

Please provide a summary of the reason for your view.

As above - Given the objective of net zero by 2045, the overall reduction in emissions for Option 1 when factoring in anticipated changes to emissions factors from 2021 to 2045, and the fact that the capital cost uplift is marginal we see no reason why we should not move to the advanced standard from the outset, given that timescales are short. Not to do so will merely increase pressure further down the line but also in a fairly short timescale.

One caveat might be that there is mention of a reduced positive impact if building integrated renewable energy is exported to the grid. We would advocate a move to encourage on-site use and storage to minimise impacts on grid stability

In addition, while there may be no carbon reduction benefit in going to the higher standard if operating from a net zero carbon fuel base, there is nonetheless a running cost implication at the moment, given the high unit cost of electricity and gas subsidies. This should also be addressed as there will be an impact on capital as well as running costs depending on which solution is adopted. If fuel costs are equalised and net zero carbon solutions identified, the pressure to reduce running costs is, to an extent, abated and the question moves to one of embodied carbon.

Question 4 –

Do you have any comments or concerns on the values identified for the elements which make up the Domestic notional building specification for either option, e.g. in terms of their viability/level of challenge?

Yes

No

If yes, please provide your comments.

The standard (apart from windows) is close to Passive House and should be achievable – however this is not our area of expertise in terms of detailed specification.

However, there should be only one notional building specification and that should have a heat pump, there should be no gas boilers going forward. This one notional building specification should also have photovoltaics. There were concerns with the proposed approach in that a property could have virtually no insulation but because it has a heat pump it then meets the standard.

Comments on the solar requirements e.g., 40% of the building's foundation area for domestic buildings. We would raise a concern about the solar requirements for new builds as it can result in just 3 panels, and this is inefficient. With the amount of infrastructure that needs to be put in place to achieve these requirements, we think that measures should be put in that suit that building. A possible way that this could be made simpler, for example, was through one kilowatt hour per bedroom or, alternatively, a mechanism that is sized based on the number of occupants.

Issues with PV that are relevant here is that it depends on the building's usage, as to how much is used on-site. If this is private property such a house where people are out all day when it is generating contrasted with a place of work where people are in all day then they will be using the power on-site. This makes it difficult to assess what is a suitable size to put on people's properties. At the moment, the way to get a tick in the box is to put a few panels on, so this proposal sounds as if this will be increased to a sensible amount.

We do not support that the notional building specification should include any source of fossil fuel supply to the building (e.g., natural gas). The question to us seems quite misleading. It suggests developers have a choice between a gas heated building with some 'token' photovoltaic panels or use of a heat pump heated building. This is disingenuous and inconsistent with a climate emergency as it allows developers to continue with 'business as usual' approach by continuing to seek and develop properties on the gas network.

As a general principle, we support that the photovoltaic element should be included in the calculation of the notional building but would like to see a higher target of 60% for the

domestic buildings and 70% of the roof space for non-domestic buildings with no allowance for gross internal floor area.

Question 5 –

Do you have any comments or concerns on the values identified for the elements which make up the Non-domestic notional building specification for either option, e.g. in terms of their viability/level of challenge?

Yes

No

If yes, please provide your comments.

This is not our area of expertise in terms of detailed specification.

Question 6 –

Do you have any comments on the simplified two-specification approach to defining the Domestic notional building from 2022?

Yes

No

If yes, please provide your comments.

We understand that the current proposal is to offer an alternative to a heat pump solution, however, given that from 2024 (according to the 2024 Heat Standard) the intention is to stop installing gas boilers in new homes (and oil / solid fuel in off gas grid areas), we question the appropriateness of considering natural gas /oil as the alternative fuel sources for the non-heat pump solutions, (unless this option takes into account situations such as major refurbishment/ alternative fuel sources such as Renewable Energy Heat Networks, 4th and 5th Generation District Heating and waste heat sources and/ or the use of hydrogen boilers (although these are included in the 'no gas' from 2024 as far as we are aware).

We also noted that there is an emphasis on individual buildings as opposed to wider developments or networks. There is also no consideration of buildings that do not have a heat pump or a gas boiler e.g., a heat interface unit, for example. We would seek clarity on how does SAP, for example, treat heat networks.

We would also query why only 'air source' heat pumps are used here; it should say 'heat pump' and be agnostic as to the type. Again, there were questions around individual buildings opposed to wider developments or networks and how the seasonal CoPs would fit into that. The SCoPs in Table 2 look quite high if it is part of a wider development.

The objective is to make sure the target is challenging enough, that what goes into buildings achieve what is needed for net zero but does not negatively impact technologies like heat networks.

With regards to the challenge of decarbonising older buildings, it the best option may be a network running at a higher temperature. However, there will not be the same level of efficiency, as the network will not be running at 55 degrees. If this is viewed from a heat network point of view (for example, operating at 65 degrees with a heat pump and pumping costs, and have losses in the distribution network, have heating plans) – this could all bring the SCoP down. We are concerned that this will result in clusters of building level only solutions which would lose many of the benefits that would have been gained from having a whole system heat network.

It was noted that the SAP calculation for a heat network has a different primary energy multiplier (BEIS consultation just closed on this). The mechanism needs to be improved but the challenge here is the CoP proposed is for an air source heat pump. This is problematic because if you had a heat network with a ground source heat pump driving it, then it would be limiting to compare that to an air source heat pump. We suggest specifying the CoP of the heat pump only and not limiting to one specific type.

So the first paragraph should say: the co-efficient of performance of the heat pump in domestic buildings will be..... and not assume any particular technology.

Question 7 –

Do you have any comments on the simplified two-specification approach to defining the Non-domestic notional building from 2022?

Yes

No

If yes, please provide your comments.

As above - We understand that the current proposal is to offer an alternative to a heat pump solution, however, given that from 2024 (according to the 2024 Heat Standard) the intention is to stop installing gas boilers in new buildings (and oil / solid fuel in off gas grid areas), we question the appropriateness of considering natural gas /oil as the alternative fuel sources for the non-heat pump solutions (unless this option takes into account situations such as major refurbishment/ alternative fuel sources such as Renewable Energy Heat Networks, 4th and 5th Generation District Heating and waste heat sources and / or the use of hydrogen boilers

(although these are included in the 'no gas' from 2024 as far as we are aware). Additional comments as per the above.

General Points Q 6 and Q 7

It was noted that on a non-domestic building with ground source heat pumps, there would be both heating and cooling and, in that case, that SCoP would be highly viable. There is a question over how would that then translate out to a heat pump driven heat network and whether that has a cooling circuit as well as a heating circuit. Existing buildings may not currently have a big cooling demand, but climate change will likely alter this and so cooling should be considered in future.

There was also concern, as mentioned above, that these energy standards after review should contain a step forward to get to the point of no gas boilers in new builds after 2024, which is stated in the 2024 Heat Standard. Continuing to use gas (with solar) is not in line with decarbonisation targets. Within the context of the Heat in Buildings Strategy, there is still a focus on keeping the gas network as a potential asset.

It is our view that if there is cause to have two notional building specifications, then one should be an allowance for retrofit that cannot for whatever reason be upgraded to a heat pump and the other should be for new builds. The new build standard should be a future standard.

As mentioned above, there is concern about how the building standards treat heat networks. If buildings are to be 'heat network ready' and 'ready to connect to these heat networks' then there should be some recognition of this in the building standards.

Question 8 –

Do you have any comments on the proposal to separate and provide a more demand-based approach to assignment of domestic hot water heating within the Non-domestic notional building specification from 2022?

Yes

No

If yes, please provide your comments.

Our key comment is to query the fact that there is no specific provision for the use of solar thermal heating or solar PV as a direct or indirect top up for partial hot water provision from a heat pump – either directly or via battery storage.

Question 9 –

Do you support this change in application of targets for supplied heat connections to new buildings, focussed on delivering a consistent high level of energy performance at a building level?

Yes

No

Please provide a summary of the reason for your view.

We welcome this as a fair and equitable approach – although as stated under Q6 and Q7 this should be explicit throughout as should clarification of why gas remains an option.

Question 10 –

Do you agree with the principle set out, that the benefit from on-site generation within the compliance calculation should be limited by a practical assessment of the extent that generated energy can be used onsite?

Yes

No

Please provide a summary of the reason for your view.

In principle, this sounds quite sensible, but it actually means developers could potentially put in less PV as it cannot be proven it is consumed on site or at the building. If only counting what is used in the building, that will be much less than if it is meeting a wider target per building, because it cannot be guaranteed that the same amount of power will be consumed. That should only apply if gas is taken out of the equation in the notional building.

We would like to see in the heat pump notional building specification, if PV is added, then more would be used on site, there would be more electric consumption. This would automatically spur more PV.

Broadly, we agree that exported electricity should not be counted, but where a heat pump is used, the onsite energy usage would be different where there is no heat pump, so this should be taken into account. This would result in more PV on a building that's using a heat pump than a building that is using a gas boiler, for example.

Are there any particular concerns you have over this approach, e.g. with regards particular technologies or solutions?

We would mainly agree with this change, but while there is a concern that increased export of building generated power to the grid can be disruptive to the grid, there are times at which

the grid (and the building in questions) can benefit from being able to draw on energy stored in batteries (or otherwise) as stated in the response to Q8. Microgeneration technologies can act co-operatively with the network to improve its operation. For power producing technologies (e.g. PV) these technologies can:

- provide power when the local network is heavily loaded (positive participation);
- stop operation at times of low loading (negative participation).

And for power absorbing technologies (e.g. heat pumps):

- absorb power at times of high renewables/ microgeneration production;
- stop operation at time of heavy network loading.

However, we do agree that random grid export is not desirable.

Question 11 –

Do you agree with the proposal that new buildings where heat demand is met only by ‘zero direct emissions’ sources should be exempt from the need for a calculation to demonstrate compliance with the Target Emissions Rate?

Yes

No

Please provide a summary of the reason for your view.

There should be no requirement to report on emissions if none exist. However, there is a question around hydrogen as hydrogen is not (yet) confirmed as a long term solution to heating in Scotland (ref 2024 Heat Standard).

Question 12 –

Do you support the need for new buildings to be designed to enable simple future adaptation to use of a zero direct emissions heat source where one is not initially installed on construction. And for information setting out the work necessary for such change to be provided to the building owner?

Yes

No

Please provide a summary of the reason for your view.

To deliver net zero by 2045, it is critical that we do not build any more new buildings or refurbish any existing buildings in a way that inhibits future adaptation to zero emissions energy solutions.

Do you have any comments on the level of information needed to support such action in practice or on the extent to which alterations other than those at, or very close to, the heat generator can be justified?

Energy system should be selected and designed in such a way that facilitates the changing of the heat source with minimal impact on the heating / cooling system installed. e.g. emitter sizes should pre-empt a switch to low temperature heat sources for example. Facades should be designed and buildings orientated in such a way that renewable energy solutions can be retrofitted, provision should be made for optimal location of battery and thermal storage devices – ideally for use from the outset but if not for immediate hook up to updated systems. Building should be designed, insulated and ventilated to minimise future energy requirements regardless of the system in place.

Question 13 –

Do you support the retention of the current elemental approach to setting minimum standards for fabric performance in new dwellings, supported by the option to take an alternate approach via calculation of the total space heating demand for the dwelling (as described)?

Yes

No

Please provide a summary of the reason for your view.

The proposed standards approach (improved) or exceed (advanced) Passive House standards (apart from windows) and can be achieved using current capacity and experience within the sector. They offer options deliverable through MMC and off-site manufacture and are therefore a step in the right direction. The advanced standard would, in our opinion, be required, to move at the pace required to reach net zero by 2045. The next step will depend on the balance between fuel sources, availability of renewable solutions and embodied energy implications of increasing insulation levels further.

In the context of the proposed approach, If you have any comments on the maximum U-values proposed for elements of fabric, in relation to their level of challenge and achievability at a national level, please set them out below.

No further comments.

Question 14 –

Do you support the move to airtightness testing of all new dwellings, by registered members of an appropriate testing organisation?

Yes

No

Please provide a summary of the reason for your view.

On the grounds of both ensuring adequate ventilation and avoiding the unintended health risks associated with overly tight construction.

Question 15 –

Do you support the move to increased airtightness testing of all new non-domestic buildings, by registered members of an appropriate testing organisation?

Yes

No

Please provide a summary of the reason for your view.

If it is the intention to test all homes – for this to be meaningful the competency of the testers should not be in any doubt.

Question 16 –

Do you support the adoption of CIBSE TM 23 as the basis for airtightness testing in Scotland?

Yes

No

Please provide a summary of the reason for your view.

This is the accepted industry standard.

Question 17 –

Do you support the introduction of the pulse test method of airtightness testing as a further means to testing and reporting on the performance of new buildings?

Yes

No

Please provide a summary of the reason for your view.

We have no experience of this test and therefore cannot comment.

Are there any particular benefits, risks or limitations you would seek to identify?

N/A.

Question 18 –

Do you consider this amended provision provides an appropriate balance between:

- **the requirement to improve building energy performance in new buildings;**
- **enabling the reuse of better performing modular elements; and**
- **enabling use of small units for short term use at short notice?**

Yes

No

Please provide a summary of the reason for your view.

This seems to be a reasonable compromise.

Question 19 –

We welcome any other comments you wish to make on the proposed changes to the setting of performance targets for new buildings or the application of other amended provisions within Section 6 (energy) which apply to the delivery of new buildings.

Where practical, please with a reference to any particular issue in the context of the Domestic or Non-domestic Handbook (or both if applicable) and cite any standard or revised guidance clause relevant to the topic.

As mentioned earlier, in the SR response to the Scottish Government new build heat standard scoping consultation, we asked for clarification around what 2024 actually means – is it the final date when the building is handed over to new owners or is it the date when there are no more buildings consented unless they have low-carbon heating solutions. To meet our 2030 targets, there cannot be gas boilers installed in new builds if it is the latter. If 2024 is the last date for planning applications, there will still be buildings being built with high carbon heating systems three/four years later to the old standards.

There is also a question whether the 2024 date was the final date that applications for building warrants could be made, in which case this is a matter of concern as it would be difficult to change standards halfway through a build and expect compliance. There are questions too about the method in which this target will be implemented, and we hope that further detail will be forthcoming. There is also the need to consider that many developers

are making decisions now about the business case for buying land and this policy has the potential to have a significant impact on this. Companies in the market need clarity soon to allow for advance planning.

So, in view of the lag time for developers and the potential delay between securing planning consent and building homes, **we recommend setting an additional earlier deadline whereby no new planning consents or planning applications can be submitted for new homes with heating systems based on the combustion of fossil fuel after 2021.** This is to avoid the situation where developers see new rules coming in in a few years and submit pre-applications using fossil fuel heating systems (e.g., houses are still being built today with out-of-date insulation systems from standards set years ago).

It is unfortunate then to see that this review of the energy section of the building standards does not preclude gas boilers, especially in the context of climate change where we are heading for a no gas future.

1) The draft heat strategy proposes to reform the energy assessment certificate (EPC) into three new portions:

- a. an indicator or for energy efficiency
- b. an indicator for heating emissions
- c. an indicator for cost of heating

In general, we support this new format. We wish to go further to suggest that minimum regulatory standards should be set across all three of the sectors when developing new buildings.

2) As previously noted, we strongly object to the inclusion of fossil fuels as a basis for the notional building specification in the calculation of the SBEM model. We suggest that the notional building specification should only consider non-fossil fuel derived energy sources, with the single exception to this being the electrical supply to the building (which is derived from a mix of sources, some of which are fossil).

3) We believe the 2021 guidance should be updated now to enforce a notional building specification without fossil derived energy standards, in order that any new developments coming forward in 2024 would be close to zero carbon.

Part 3 – Energy, all buildings

Question 20 –

Do you agree with the proposed introduction of the term ‘major renovation’ as defined above as an additional means of identifying when aspects of building regulations shall be applied to an existing building?

Yes

No

Please provide a summary of the reason for your view.

The 25% threshold is low enough and significant enough to apply to most major works. We are aware that other thresholds/ triggers will apply in terms of energy efficiency improvements through the Energy Efficiency Strategy, HEEPs and ABS, etc., to ensure that other major works reach an agreed standard and so we feel that this proposal is proportionate.

Question 21 –

Do you support the improvement in maximum U-values for elements of building fabric for Domestic buildings, as set out above?

Yes

No

Please provide a summary of the reason for your view.

We welcome the clarification provided on this and that a mandatory single standard is proposed.

We would also welcome your views on the proposed simplification achieved by setting of a single set of values for all building work to new and existing buildings.

As above – clarification and simplification are overdue and much welcomed.

Question 22 –

Do you support the improvement in maximum U-values for elements of building fabric for Non Domestic buildings, as set out above?

Yes

No

Please provide a summary of the reason for your view.

We welcome the clarification provided on this and that a mandatory single standard is proposed.

We would also welcome your views on the proposed simplification achieved by setting of a single set of values for all building work to new and existing buildings.

As above – clarification and simplification are overdue and much welcomed. We note and approve the recommendations of shell buildings.

Question 23 –

Do you support the standardisation of values and approach for conversions, extensions and shell buildings, as set out above and in sections 3.2.2 and 3.2.3?

Yes

No

Please provide a summary of the reason for your view.

Conversions

We welcome the introduction of a more evidence-led assessment to optimise improvement for conversions, to align with the intent set out within the draft Heat in Buildings Strategy and the Building Standards Compliance Plan approach where standards can be met as far as is 'reasonably practicable', particularly where avoidance of technical risk from improvement is an issue.

Extensions

We welcome the proposal that work to extend a building shall be subject to the same limiting U values for building fabric as noted in Table 6 and 7 in Section 3.2.2 and 3.2.3 and this provides greater clarity and simplification.

Question 24 –

If you have a view on the preferred format for presentation of information on compliance of building services, what would be your preference?

Retain current separate Compliance Guides

Move Compliance Guides into Section 6 as an Annex.

Re-integrate into guidance to the relevant standard

Other (please specify in summary box below)

Please provide a summary of the reason for your view.

While re-integration of the guidance into the relevant standard may seem logical it would mean that services information is spread across the standards. Integration into section 6 as an Annex seems a natural fit, and ensures that they will be accessible and revisited simultaneously next time the energy standards are reviewed.

Question 25 –

Do you support the continued alignment of minimum provisions for fixed building services at a UK level within the Domestic Building Services Compliance Guide?

Yes ?

No

Please provide a summary of the reason for your view.

Broadly support this but as many of these services seem to relate to fossil fuel systems, they may become redundant or obsolete within the next few years. All of this will require regular updating over the next few years.

Are there any issues you wish to raise in relation to the amended or retained specifications set out within the draft Guide?

As above.

Question 26 –

Do you support the continued alignment of minimum provisions for fixed building services at a UK level within the Non-domestic Building Services Compliance Guide?

Yes ?

No

Please provide a summary of the reason for your view.

Broadly support this but as many of these services seem to relate to fossil fuel systems, they may become redundant or obsolete within the next few years. All of this will require regular updating over the next few years.

Are there any issues you wish to raise in relation to the amended specifications set out within the draft Guide?

As above.

Question 27 –

Do you agree with the proposal that the option of installing a less efficient heat generator and compensating for this using heating efficiency credits in existing buildings should be withdrawn from the Non-domestic Building Services Compliance Guide?

Yes

No

Please provide a summary of the reason for your view.

This will encourage system upgrading and innovation rather than complacency. It will escalate the issue of energy efficiency in situations where it has previously been avoidable.

Question 28 –

Do you agree with the proposal to limit distribution temperatures in wet central heating systems to support effective implementation of low and zero carbon heat solutions and optimise the efficiency of heat generation and use?

Yes

No

Please provide a summary of the reason for your view.

Not only will this mean that systems operate more efficiently, it will also mean that systems are installed ready to transfer to low carbon alternatives and are sized accordingly. This will avoid a two staged approach to upgrade in situations where a new building is not low carbon ready.

Question 29 –

Do you agree with the proposed extension to the provision of self-regulating devices to include when replacing a heat generator?

Yes

No

Please provide a summary of the reason for your view.

We welcome this step and agree that the addition of such devices on replacement of a heat generator is an appropriate intervention point, to enable a cost-effective means of further improving the performance and controllability of a heating system.

Do you have any comment on issues of technical feasibility or determining when installation should be at a room/zone level?

There may be issues in a domestic situation - in particular, where radiator tails are short – particularly in the case of microbore and minibore systems – but this will in most cases not be insurmountable and will undoubtedly make it much easier to control systems and save energy. In a non-domestic situation this could offer significant energy saving potential.

Question 30 –

Do you agree with the proposed introduction of a requirement for building automation control systems, of the type specified, in larger non-domestic buildings with systems with an effective rated output over 290kW

Yes

No

Please provide a summary of the reason for your view.

Agree although we would seek clarity on the origin of the 290W limit – we were unable to find this in the compliance guide.

Question 31 –

We welcome any other comments you wish to make on the above topics and broader changes to the setting of minimum standards for all buildings.

Where practical, please with a reference to any particular issue in the context of the Domestic or Non-domestic Handbook (or both if applicable) and cite any standard or revised guidance clause relevant to the topic.

No further comments.

Part 4 – Ventilation

Question 32 –

Do you support the proposed revisions to the presentation of guidance on ventilation and the incorporation of the ‘domestic ventilation guide’ into the Technical Handbooks?

Yes

No

Please provide a summary of the reason for your view.

The new proposals provide greater clarity on what should be achieved, why and how.

Question 33 –

Do you agree with the revision of guidance to clarify the function of purge ventilation and increase provision to align with that applied elsewhere in the UK?

Yes

No

Please provide a summary of the reason for your view.

Support moving into line with the rest of the UK on this. The importance of purge ventilation has been highlighted by COVID 19, in particular the ability to ensure good levels of ventilation as numbers of people gathering in one space begin to increase – even where social distancing is maintained.

Question 34 –

Do you support reference to a single option for continuous mechanical extract ventilation which can have centralised or decentralised fans, with the same design parameters being applied to the system in each case?

Yes

No

Please provide a summary of the reason for your view.

We support the provision of continuous mechanical extract ventilation as a whole house solution in principle, but it could be argued that this provision should be unilateral rather than on a case by case basis in order to guarantee adequate levels of ventilation generally in all new dwellings.

If you have any further views on the use of continuous mechanical extract to deliver effective ventilation in both low infiltration (3-5 m³) or higher infiltration (5 m³+) buildings, we would also welcome your comments.

Given the direction of travel it seems inevitable that we will go down the route of whole house ventilation in all new homes. Evidence from recent work in social housing supports the view that dMEV and cMEV must be applied and controlled to the dwelling as a whole to be effective. There is a risk of some rooms being by-passed even in a small dwelling.

Question 35 –

Do you support introduction of proposed guidance on default minimum size of background ventilator for continuous mechanical extract systems?

Yes

No

Please provide a summary of the reason for your view and on any specific concerns which may arise from the proposed level of background ventilation or its application in the design of systems.

Support for this links to reasoning given above. This appears to be the direction of travel and is linked to healthier indoor environments. Given recent COVID pandemic experiences it seems logical to take this step sooner than later.

Question 36 –

Should continuous mechanical extract systems be considered a viable solution in very low infiltration dwellings and, if so, under what circumstances?

Yes

No

Please provide a summary of the reason for your view.

As above – reasoning relates to health and safety concerns and direction of travel. We are of the view that this should be a requirement in all very low infiltration dwellings in all circumstances – it is not viable to rely on natural or extract ventilation only due to the risk of very low ventilation rates.

We would also like to hear your views on whether heat recovery should be mandated for packaged supply/extract systems

We would recommend the use of a heat recovery option in all cases, potentially with a summer bypass to ensure freshness of air in warmer weather.

Question 37 –

Do you support the incorporating of this additional guidance into the Technical Handbooks?

Yes

No

We would be grateful for comment on the content of the proposed Annex and whether there are elements absent from guidance or which would be better presented within guidance to standard 3.14 itself.

We welcome the additional clarity proposed in order to address the fragmentation of guidance on ventilation. This accords with the comments above – in particular in relation to the need for domestic ventilation to be designed in, due to other changes in building standards such as improvements to insulation and air tightness and the fact that room sizes and personal space in modern dwelling mean that mean age of air and CO₂ levels are likely to impact on indoor air quality to a greater extent than was the case in the past.

Question 38 –

Are there other elements of the commissioning of ventilation systems that you consider are both practical to implement and useful in providing additional assurance of performance in practice?

Yes

No – nothing to add here.

If yes, please provide a summary of the topics which should also be considered.

Question 39 –

We welcome your thoughts on these or broader topics which would merit consideration as part of the planned review. Please set out your thoughts below, including citation of relevant supporting evidence, where relevant.

We support continued use of CO₂ monitoring provisions as introduced in 2015.

We regard to the risks from indoor pollutants in poorly ventilated spaces to be a greater risk (generally) than external pollutants, hence why we consider the need for controlled, adequate ventilation systems to be paramount in new homes – notwithstanding the need for appropriate and regular maintenance.

Consideration of guidance, post-COVID, on evolving good practice on enhanced ventilation provision and use of air recirculation in non-domestic buildings.

Question 40 –

We welcome any other comments you wish to make on proposed changes to ventilation standards for domestic buildings.

Where practical, please with a reference to any particular issue in the context of the Domestic or Non-domestic Handbook (or both if applicable) and cite any standard or revised guidance clause relevant to the topic.

No further comments.

Part 5 – Overheating risk in new dwellings and other new residential buildings

Question 41 –

Do you agree with the proposed introduction of a requirement to assess and mitigate summertime overheating risk in new homes and new non-domestic buildings offering similar accommodation?

Yes

No

Please provide a summary of the reason for your view.

As insulation levels increase and as controlled ventilation in new dwellings becomes the norm, there is an increased likelihood of lightweight materials predominating in domestic construction that did not exist in the past. This coupled with global temperature rises, however small, increases the risk of general overheating in homes.

While the 'simple method' may be adequate in the short – medium term this may be short lived as shading and ventilation alone may not be adequate. There may be a need to look at provision of thermal mass and the use of the dynamic modelling approach depending on the extent of the problem.

If you consider that proposals should be extended to non-domestic buildings which provide other forms of residential accommodation (which are not 'self-contained residential units'), we welcome your views on such provisions, including if the same or an alternate approach to assessment is recommended?

The risk goes beyond general discomfort and a lack of ability to dissipate that heat, but extends to health risks for vulnerable people, unused to this situation. Particularly in the case of care homes and residential hospital care where staff may not pick up on the problem routinely as they are moving from space to space where conditions may vary. This issue was the subject of a study by BRE for the Climate Exchange in 2018 -

<https://www.climateexchange.org.uk/media/3008/overheating-risk-in-buildings-housing-vulnerable-people-in-scotland-scoping-study.pdf>

Question 42 –

Do you agree with the proposal that an initial assessment of dwelling characteristics should be undertaken to help inform design choices and the delivery of new homes which provide better thermal comfort in the summer months?

Yes

No

Please provide a summary of the reason for your view.

Agree with criteria and the location should not be considered a factor.

We would also seek the views of respondents on other sources of good practice guidance which have been implemented by developers and the outcome (no reports of significant summertime overheating) evidenced through feedback from residents.

No additional comments.

Question 43 –

Are there circumstances where you consider specific characteristics of a dwelling should trigger a need for TM59 assessment rather than application of a simple elemental approach?

Yes

No

Please provide a summary of the reason for your view.

We would expect this to eventually be the route for most buildings, but initially TM59 assessment should be considered for detached single storey properties with high levels of unprotected south, west and (to an extent) east facing glazing, particularly lightweight constructions. Buildings in exposed locations where solar access is part of the design intent. Possibly buildings with larger footprints – e.g. large building, single storey, exposed roof.

Question 44 –

Recognising the level of risk identified in the published research paper, do you agree with the above proposals as a suitable means of mitigating summertime overheating in new homes through prescriptive actions?

Yes

No

Please provide a summary of the reason for your view.

Consider these provisions to be acceptable at this point in time.

Question 45 –

Do you consider that such an approach will provide adequate assurance that ventilation measures provided to mitigate summer overheating can be used safely and conveniently in practice?

Yes

No

Please provide a summary of the reason for your view.

This approach seems proportionate at this point in time as it requires demonstration that these issues have been considered. This provides opportunity for further dialogue if measures do not seem adequate.

Question 46 –

We welcome any other comments you wish to make on these proposals to introduce provisions to mitigate the risk of summer overheating new homes and new residential buildings.

No further comments.

Part 6 – Improving and Demonstrating Compliance

Question 47 –

Do you have any experience of successful design or construction quality assurance regimes which you consider may be useful to consider in the context of this 'Compliance Plan manual' work for section 6 (energy)?

Yes But not directly in terms of testing implementation.

No

If yes, please share any relevant information.

The research project mentioned in 6.1.5 plus many other projects have highlighted the unintended consequences of 'improving' building performance through retrofitting of insulation and new energy systems. This has allowed the gathering of insights and observations. Experience shows that despite huge efforts to develop a range of solutions to avoid non-compliance: from detailed drawings, to CPD training e.g. using VR headsets to

onsite 'hand holding' it is notoriously difficult to deliver on site the quality that can be achieved in a training or laboratory situation. Even if delivery of guidance is appropriate, supervision of outputs is even more challenging as time pressures, weather and even variances in materials delivered to site compared with those specified all get in the way. A permanent onsite presence of a Compliance Plan Manager would be required in order to deliver the required outcomes – even then, on a large site this will be extremely difficult.

Guidance documents that may provide support include: the Zero Carbon Hub Builders' book; BR262 Thermal Insulation Avoiding Risks, 2002 Edition (ISBN 1 86081 515 4) and on airtightness testing in chapter 5 of the BSD publication 'Sound and Airtightness Testing', 2015 Edition SAP 2012 [<http://www.scotland.gov.uk/Topics/Built-Environment/Building/Building-standards/techbooks/techhandbooks/ast2015>]. Airtightness tests should be in accordance with BS EN 13829: 2001 – 'Thermal performance of buildings - determination of air permeability of buildings - fan pressurization method' [<http://shop.bsigroup.com/>] and in Designed to Perform – an illustrated guide to delivering Energy Efficient Homes – by Tom Dollard (RIBA Publishing) ISBN978-1-85946-996-5.

Question 48 –

Do you have any comments on the above themes and any other actions you consider would be useful in supporting improved compliance with requirements for energy and emission performance.

Yes

No

If yes, please provide a summary of your views.

As we strive to achieve very low energy buildings and given the risk of overheating stated above. We need to keep solutions as simple as possible. As standards move forward it would be beneficial from a house-building perspective in particular, to develop high, medium and low thermal mass 'solutions' and associated standard details to guide the direction of travel – bearing in mind how much further we can go in terms of reducing fabric heat loss. In addition, it is likely that as we reach the limits of what can be achieved through performance improvements – we will develop standards for embodied energy. Any recommendations should bear this in mind and keep an eye on probable future developments.

This could be extended to recommended solutions for retrofitting buildings and in particular those that are hard to treat and to energy system 'matching' with fabric thermal mass and performance, alongside consideration of on-site storage of energy generated by renewables rather than exporting to the grid.

Question 49 –

Are there particular aspect so building design and construction which you consider should be prioritised as part of the development of a detailed compliance manual for section 6 (energy)?

Yes

No

No view

If yes, please provide further details, including any evidence you are aware of that supports such emphasis.

Airtightness testing and insulation checks. Gaps around incoming and outgoing service connections and electrical routes – in particular, making good any breaches on insulation and vapour barriers. Encouraging the use of bespoke service routes and offsite construction of bathroom and kitchen pods (for example) to minimise risks.

Question 50 –

We welcome any other comments you wish to make on these topic of improving compliance of building work with the provisions within section 6 (energy) to better align designed and as-built performance.

No further comments other than keeping things as easy to understand and operate as possible as lack of engagement with users is often as big a problem as non-compliance. Consideration of a move towards DSM rather than current NCMs.

Part 7 – Electric Vehicle Charging Infrastructure

Question 51 –

What are your views on our policy goal to enable the installation of Electric Vehicle (EV) charge points and ducting infrastructure (to facilitate the future installation of EV charge points) for parking spaces in new residential and non-residential buildings parking?

Agree. This seems achievable and practicable.

Question 52 –

What are your views on our preferred options for EV provision in new and existing buildings?:

Agree in principle with options suggested. However, with reference to the suggestion above regarding use of PV for battery charging, suggest exploring potential for PV canopies over public and private car parks as this could allow more rapid expansion of the options put forward. See Glasgow Ruggedised Project – in particular, Smart Solutions G2 and G3 <https://ruggedised.eu/cities/glasgow/>

Question 53 –

Do you agree with the Scottish Governments preferred options for the exemptions as set out in section 7.6.1?

Yes

No

If you disagree, please explain why?

N/A

Question 54 –

What are your views on how our preferred option relating to existing non-residential buildings with car parks with more than 20 spaces could be properly monitored and enforced, given that the Building (Scotland) Regulations will not apply?

Nothing to add here other than that pressure will begin to be applied on building owners as the number of EVs increases, and uptake is increasing.

Question 55 –

What are your views on the proposed provision for charge points for accessible parking spaces? Do you have examples of current best practice for the provision of charge points for accessible parking spaces?

No examples available – as things stand the provision seems appropriate, but EVs may soon have particular added benefits for people with accessibility issues – e.g. transmission systems leaving floors clearer and now that a complimentary charging solution is included with every electric car leased through the Motability Scheme, it may be that the demand vs the proportion of spaces compared with the rest of the population may be higher.

Question 56 –

Do you have any other views that you wish to provide on the EV section of the consultation (e.g. the minimum standard of EV charge point or safety within the built environment)?

No