



Date: 24/11/2021

Elmhurst Energy's final response to:

Scottish Building Regulations –  
Proposed changes to Energy  
Standards and associated topics

Prepared for: Scottish Government



## Introduction

Elmhurst Energy are pleased that Scottish Government are consulting on changes to the energy standards and as such we are delighted to respond to each question in turn.

The consultation asked 56 questions and we have answered them below. We hope you find the responses considered and useful for taking energy standards forward in a progressive manner.

Elmhurst have answered the questions from a whole building approach; we are independent of fuels and technologies and therefore have abstained from direct question relating to evidence on particular technologies. We believe that all good proven technologies have a place to play in making Scotland's Buildings more energy efficient and using cleaner fuels.

## Questions and Answers

### **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?**

Elmhurst are in broad agreement that a move to using an energy based metric is positive and would recommend that this be a true energy demand for the home without deduction for renewable energy produced locally i.e. delivered energy. This will ensure a fabric first policy of reducing demand and the encouragement to generate electricity locally from green sources will be driven by the CO<sub>2</sub> limits being used as a secondary performance metric.

Our only concern is that other regions of the UK, England and Wales, have committed to using Primary Energy therefore having different metrics across borders can cause confusion for industry and could result in unintended consequences in regards to dwelling specifications needed to meet the different standards. For this reason we recommend using Primary Energy as the additional energy target for standard 6.1.

We would also like to stress that the Energy Performance Certificate should be re-presented to ensure that performance against each of the metrics is clearly stated. There is a good analogy here with food labelling presenting data on fat and salt content, all in an effort to drive consumer understanding when purchasing a new



home. We appreciate this has been advocated in the Domestic EPC Reform Consultation however believe this is vital for EPCs on all buildings.

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

After reading the impact assessment and conducting our own modelling on the iSAP package the average difference of £3110 per plot and 6 kT CO<sub>2e</sub> saving between the two options seems viable therefore we support the Option 2: 'Advanced' standard.

**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?**

After reading the impact assessment and conducting our own modelling, we support the Option 2: 'Advanced' standard.

**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?**

No strong opinion

**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?**

No strong opinion



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

Yes, we support the changes to the notional building as it should result in a progressive move away from fossil fuel heating systems. We appreciate the use of a gas option as a pragmatic approach to support the transition away from fossil fuels at this time whilst the supply chain for heat pumps gears up for the increased amount of installations that are likely to be needed from 2024.

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

Yes, we support the changes to the notional building as it should result in a progressive move away from fossil fuel heating systems. We appreciate the use of a gas option as a pragmatic approach to support the transition away from fossil fuels at this time whilst the supply chain for heat pumps gears up for the increased amount of installations that are likely to be needed from 2024.

**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, the change in grid generation mix is welcome as it now provides a more accurate representation of electricity, by ensuring that the use of electric point-of-use heaters is no longer a high-emissions solution compared to natural gas. This is important in line with the proposal, as any solution proposed that isn't a heat pump will be considered to be a gas boiler.



### **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?**

Elmhurst does not agree with this approach. We feel this is overly complicated for industry and relies on policies scheduled for the future being implemented as intended. The industry is used to the carbon emissions and energy use of a building's fuel choice being reflected fully in the calculation metrics, and this approach could mask other poor areas of building performance resulting in higher fuel bills for home owners or tenants.

By not reflecting the actual fuels and associated carbon/primary energy factors used in the heat network this would also contribute to the performance gap between compliance reports and actual energy use and carbon emissions.

Once the New Build Heat Standards are introduced we would agree with this approach being implemented.

### **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?**

Whilst we understand the reasoning behind this proposal we are concerned that as this has not been proposed in any other devolved administration it could result in unintended consequences such as significant over-specification in other areas of the building to compensate for this.

We would question if the SAP methodology is the appropriate tool for assessing how much generated energy is used onsite. For example the energy requirement for cooking and appliances is not part of the SAP 10 methodology, but would be able to utilise onsite generated energy which would not be accounted for in this proposal. This could result in the performance gap between actual energy performance and compliance reports widening.

By limiting the amount of onsite generation the consumer could be burdened with higher fuel bills than necessary. With the proposals around EV charging also likely to

result in a higher amount of EVs being charged at the home on site PV should be encouraged to meet this uptake.

**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?**

Elmhurst does not agree with this approach as there are other sources of carbon emissions in a building that can be substantial. There could be unintended consequences where a zero direct emissions heating system allows a high carbon system to be used in another area of a building e.g. secondary or water heating. Also as building fabric standards improve space heating is becoming a smaller proportion of the overall carbon emissions of a building so to exempt a dwelling from the standards based solely on its heating system does not seem a sensible approach.

If the heating system is zero direct emissions then the dwelling should meet the TER standard comfortably anyway so we do not agree that an exemption is required here. We do not see any efficiency savings for assessors or the wider industry by adopting this approach.

Also we should point out that electricity is not yet zero carbon, and is not estimated to be zero carbon in the period before 2024.

**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, Elmhurst believe house design should be future proofed wherever possible, however unintended consequences should be considered. For example, oversized radiators needed for low temperature systems may be positioned poorly, and the increased body of water may impact on the responsiveness of the system.



**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, Elmhurst agrees with the current elemental approach to setting minimum standards as this is well understood by industry.

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

Yes, Elmhurst agree that the current sampling procedure creates anomalies where neighbouring properties may be overly air tight to achieve the "right" result and its neighbour be untested and very leaky. In practice most responsible builders test all their homes so the extra cost should be minimal. This proposal would also contribute to closing the performance gap as actual air tightness of every dwelling would be reflected in compliance reports and Energy Certificates.

**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, Elmhurst feel that by increasing the amount of air tightness tests carried out, it is ultimately aiding in the reduction of energy usage and carbon impact of buildings. By ensuring that those completing the tests meet the level of competence as well as being registered members of an appropriate testing organisation, it is ensuring the quality and reliability of these air tightness assessments.

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

Yes, whilst the previous test specification was developed without input from all stakeholders it did contain some essential requirements and guidance that air tightness testers found useful. It is hoped that the early redraft of the CIBSE guide, supported by a cross industry working group who meet regularly, can be enhanced quickly. Elmhurst will offer every support.

### **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, Building Regulations need to be prepared to adopt new method of construction, evaluation and measurement. Pulse has undergone extensive independent investigation to prove its value. The portability, speed and ease of operation will mean that more intermediate testing can be conducted ensuring that air tightness is considered at all stages of construction. Elmhurst supports new proven technology and certainly Pulse is a great British innovation, which has been proven to be an alternative to blower door technology.

### **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, by applying a modifier of 1.25, it strikes a balance between the reuse of modules and sub-assemblies that are efficient, as well as ensuring that older unit will be refurbished in line with the expected building performance for new and existing buildings.

**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.**

We feel that there are a variety of changes that would improve the modelling process, which are detailed below;

1. To move away from iSBEM as an interface with a view to invest funds spent on iSBEM to develop the SBEM methodology instead. Similarly to SAP and RdSAP.
2. Keep the methodology up-to-date and as close to the truth as possible, ensuring that new technology and its implications are accounted for and reviewed on a regular basis.
  - a. Such as the ability to add BACS as a credit towards having an effect on the actual primary energy usage.
3. Ensure accredited, competent and qualified assessors are completing new build compliance checks. This could be achieved by the requirement to lodge the compliance reports to a central government register ensuring a standardised process is carried out by competent individuals. This would allow for greater data collection for the future and improve transparency and consistency in the industry.

**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?**

We agree that major renovations should be defined and subject to standards in Building Regulations. Buildings undergoing major renovation should be subject to appropriate improvements stipulated within Building Standards. The National Calculation Methodologies should be used to verify compliance for buildings undergoing major renovation.

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

We agree with the uplift in standards for elements of fabric in existing buildings. We support using a single set of standards for building work to new and existing buildings as this is clear for industry to understand.

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

Yes, we support the improvement in maximum U-values as set out above, as long as the proposed values are achievable. With one set of standards, it becomes easier for industry to interpret the requirements and act accordingly.

**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, we support the standardisation of values, to make it clearer to industry what is required. By subjecting work to the limiting U-values detailed in earlier sections, it is ensuring that the building fabric of these buildings is improved, thus improving the energy efficiency of the building in 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?**

Yes, Elmhurst believes that the Compliance Guides should be included in the Section 6 document. Good practice guides should come from competent persons schemes, commercial organisations and trade bodies.

**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?**

We see no reason why the standards for Building Services should differ between devolved administrations. By setting the same standards across the UK this encourages consistency of build standards and reduces confusion for developers.

**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?**

We see no reason why the standards for Building Services should differ between devolved administrations. By setting the same standards across the UK this encourages consistency of build standards and reduces confusion for developers.

**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?**

With improvements in heat generator efficiency, it is now easier than before to install efficient heat generators. By removing heating efficiency credits, it is ensuring that the full impact of less efficient heat generators is considered when analysing how to improve the energy efficiency of the building.



**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, Elmhurst believe house design should be future proofed wherever possible, however unintended consequences should be considered. For example, oversized radiators needed for low temperature systems may be positioned poorly, and the increased body of water may impact on the responsiveness of the system.

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

Yes no strong opinion

**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, by introducing BACS requirements, it will aid building operators in managing usage efficiently, thus reducing energy consumption and costs. We support this proposal, as long as it is reasonably practical to install such systems.

**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.**

No strong opinion



**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, Elmhurst agrees that moving the guidance on Domestic Ventilation into the Technical Handbooks should provide greater clarity of the minimum standards for ventilation. We believe non-compliance with ventilation standards currently is an important issue for the industry to tackle, and this should help achieve an improved rate of compliance to the standards.

**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?**

We see no reason why the standards for purge ventilation should differ between devolved administrations. By setting the same standards across the UK this encourages consistency of build standards and reduces confusion for developers.

**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?**

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

Elmhurst agrees that the same standards should apply to both MEV and dMEV systems as shown in the research by MEARU.



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

Elmhurst agrees that guidance is required and support following the guidance in England for consistency.

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

Yes, Elmhurst believes that in the interests of energy efficiency and to mitigate against indoor air quality issues only a fully commissioned MVHR system should serve very low infiltration dwellings.

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

Yes, 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.

**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?**

Scottish Government should insist on the independent testing of a home's ventilation system's to ensure adequate design and functioning and this should be presented to the building owner, and the occupants. Commissioning and testing should only be completed by testers who are part of a competent persons scheme and independent of the building owner. Building Standards must ensure energy and ventilation standards are aligned to avoid unintended consequences such as inadequate ventilation provision in very airtight homes.

**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.**

No strong opinion

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

No strong opinion

**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, Elmhurst agrees that due to the magnitude of the overheating issue now and in future it is sensible that it should be covered in Building Regulations. Making this a legal requirement will ensure much greater emphasis is placed on this vital area of the industry.

We would recommend extending the guidance to residential non domestic buildings such as care homes as the residents of these are potentially at higher risk from higher internal temperatures. Other devolved administrations have adopted this approach.

**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?**

We advocate using SAP as the initial indicator of risk, and invest in the methodology to improve it. SAP 10 had already made changes in this area in an attempt to provide a better indication of the risk of overheating. We believe SAP could be used to show 'Green' and 'Red' categories. Green would have little or no risk of overheating, however if red is shown this would require dynamic simulation analysis to be used.

**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?**

To ensure consistency with other devolved administrations we recommend using the same risk criteria as proposed in England to determine where TM59 assessments are required.

**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?**

No strong opinion

**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?**

No strong opinion

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

Elmhurst believes due to the seriousness of this issue now and in the future assessments for compliance to this standard should be completed by members of a new, Government approved competent persons scheme, members of which would be appropriately trained, subject to audit and hold insurance.

See research undertaken by University of Bath which questions the competency of existing building modellers. [Click here](#).

**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)?**

No strong opinion

**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, currently there is no requirement for individuals who carry out energy assessments to produce compliance reports to be members of an approved organisation; this is only required to produce Energy Performance Certificates.

Elmhurst believes the design stage assessments completed for compliance should only be produced by members of an approved organisation who are therefore subject to quality assurance in terms of reports and CPD. This will ensure assessments are completed to a high standard by trained and qualified individuals.

Elmhurst believes that more information regarding the construction of their dwelling should be provided to the verifier and home owner. DLUHC have made some sensible proposals in terms of standardised compliance reports and photographic evidence that will be provided to both of these groups. We would recommend Scotland adopts similar policies that will ensure building owners have a greater understanding of their buildings and developers are more accountable for any build quality issues.

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

No strong opinion

**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 strong opinion

**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?**

No strong opinion

**52. What are your views on our preferred options?**

Elmhurst is in broad support of the proposals for all types of building as the uptake of electric vehicles (EVs) is integral in our journey to net zero. We would ask Scottish Government to consider how this may interact with other areas of Building Standards. For example, if EVs are to be charged in a garage overnight, does Section 2: Fire need to be reviewed to ensure buildings are suitable for this change in behaviour?

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

Elmhurst agrees with the preferred options for exemptions in 7.6.1.

**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?**

No strong opinion

**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 strong opinion

**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 strong opinion



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