

Energy Saving Trust's response to the proposed Domestic Building Environmental Standards (Scotland) Bill

Proposal for a Member's Bill from Alex Rowley, Mid Scotland and Fife, Scottish Labour
Response submitted on 22nd July 2022

Your Views on the Proposal

Note: All answers to the questions in this section may be published (unless your response is "not for publication").

Aim and approach

1. Which of the following best expresses your view of the proposed Bill? (please note that this question is compulsory)

Fully supportive

Partially supportive

Neutral (neither support nor oppose)

Partially opposed

Fully opposed

Do not wish to express a view

Please explain the reasons for your response.

Energy Saving Trust supports the introduction of standards for new homes that will deliver very high levels of energy efficiency. Our view is in line with that of the Committee on Climate Change who in their 2019 report 'UK housing: Fit for the future?' recommend that '*new homes should deliver ultra-high levels of energy efficiency as soon as possible and by 2025 at the latest, consistent with a space heat demand of 15-20 kWh/m²/yr*' and, as you will already be aware, the Passivhaus Standard energy performance requirement for space heat demand is ≤15 KWh/m²/yr.

Energy efficiency is the most effective long-term guarantee of a housing stock that uses less energy and emits less carbon. Strong fabric first standards 'lock in' energy saving and make dwellings much cheaper to heat (because less heat is needed) and more

comfortable to live in. They also reduce system costs as there is less demand (than would otherwise be the case) on the grid. The fabric of a property, unlike a property's heating system, is very unlikely to be revisited over a property's lifetime and as such getting the fabric right when a property is built is a one-off opportunity. It makes no sense to build a home now that will need to have disruptive fabric improvements made at a later date at additional cost to the homeowner.

2. Do you think legislation is required, or are there other ways in which the proposed Bill's aims could be achieved more effectively? Please explain the reasons for your response.

Energy Saving Trust thinks that legislation is required. It is unlikely that the aims of the proposed Bill could be achieved without legislation in place.

3. Which of the following best expresses your view on setting the Passivhaus standard or a Scottish equivalent as the most appropriate new build housing standards to contribute to eradicating fuel poverty?

Fully supportive

Partially supportive

Neutral (neither support nor oppose)

Partially opposed

Fully opposed

Unsure

Please explain the reasons for your response.

As noted in our response to question 1 above fabric first standards 'lock in' energy saving and make dwellings much cheaper to heat (because less heat is needed) and more comfortable to live in. The cheaper a home is to heat the less likely its occupants are to fall into fuel poverty. Dwellings built with very high levels of energy efficiency in line with Passivhaus standards will be cheaper to heat than those built to a less stringent energy efficiency standards and as such those living in them will be considerably less likely to fall into fuel poverty.

Some of the findings of research undertaken by the CCC are of relevance here. The CCC's 2019 report (referenced above) noted that when installed alongside heat pumps in a typical home, ultra-high levels of fabric efficiency can deliver average bill savings of around £85 per household per year. As you will be aware, energy prices have increased significantly since this report was published and as such the bill savings that ultra-high levels of fabric efficiency can delivery are now likely to be very much larger.

It is also worth noting that the CCC found that ultra-high levels of energy efficiency (consistent with a space heat demand of 15 kWh/m²/yr) were generally more cost-effective than less ambitious energy efficiency standards (20-30 kWh/m²/yr of space heat demand). That's because highly insulated homes need a much smaller heating system. The CCC identified an up to c.£3,300 saving in the capital cost of the radiators and heating distribution system for the most energy efficient fabric specifications.

In the context of eradicating fuel poverty it's also important to bear in mind that homes built to stringent fabric standards such as Passivhaus standards will still have some energy demand for heating and hot water, for lighting and for appliances and other electrical loads and the use of energy for these purposes will also contribute to a household's energy bills. For further information about our views on ensuring that demand for these purposes remains as low as possible see our response to question 10 below.

We are also supportive of the intention to eliminate the 'performance gap' which is the difference between the actual and anticipated performance of buildings. Closing this gap will be vital if householders are to be protected from unnecessarily large fuel bills. The CCC estimate that closing the performance gap [for homes built to existing building standards for England] could deliver annual bill savings of between £70 and £260¹. If this gap is not closed there is a real risk that people will end up paying more to heat their homes than necessary and place more people into fuel poverty. As noted above, energy prices have risen significantly since the CCC report and as such bill savings that could be delivered by eliminating the 'performance gap' are now likely to be very much larger.

4. Which of the following best expresses your view on setting the Passivhaus standard or a Scottish equivalent as the most appropriate new build housing standards to contribute to a reduction in emissions?

Fully supportive

Partially supportive

Neutral (neither support nor oppose)

Partially opposed

Fully opposed

Unsure

¹ See: <https://www.theccc.org.uk/publication/uk-housing-fit-for-the-future/>

Please explain the reasons for your response.

The energy used within every new home (operational energy) that is built in Scotland together with the energy associated with the construction of every new home (embodied energy) **adds** to Scotland's overall CO₂ emissions at a time when there is an urgent need to **reduce** emissions. As noted in our response to question 1 above energy efficiency is the most effective long-term guarantee of a housing stock that uses less energy and emits less carbon. For this reason we believe that setting standards for new homes that will deliver very high levels of energy efficiency (such as the Passivhaus standard) would make an important contribution to emissions reductions in Scotland.

5. Which of the following best expresses your view of the process set out to ensure that the new standards are met in all new build housing? (see pages 14 to 16 above)

Fully supportive

Partially supportive

Neutral (neither support nor oppose)

Partially opposed

Fully opposed

Unsure

Please explain the reasons for your response, including your views on how effective the process would be in removing the 'performance gap' and on how the proposed verification process might work in practice.

We do not have a view on how effective the process would be in removing the 'performance gap' and on how the proposed verification process might work in practice – these issues are largely outside of our area(s) of expertise. However, we would like to use our response to this question to highlight the importance of getting this process 'right'. Research continues to point to the performance gap between 'as designed' and 'as built' i.e. the gap between how homes are designed and how homes actually perform – from an energy perspective – when built. Closing this gap will be vital if householders are to be protected from unnecessarily large fuel bills. As noted in our response to question 3 above the CCC estimate that closing the performance gap [for homes built to existing building standards for England] could deliver annual bill savings of between £70 and £260². As we note earlier in this response because energy prices have risen

² See: <https://www.theccc.org.uk/publication/uk-housing-fit-for-the-future/>

significantly since the CCC report the bill savings that could be delivered by eliminating the 'performance gap' are now likely to be very much larger.

If the performance gap is not closed there is a real risk that people will end up paying more to heat their homes than necessary and more people will fall into fuel poverty.

6. What could be the market effects of the introduction of this proposal?

As a contributor to the Business, Energy and Industrial Strategy Committee's 2019 energy efficiency inquiry³ we are aware that the impact of zero carbon homes policy for England and Wales on house building rates was something that was considered as part of this work. In relation to this the final report notes the following:

"We were dismayed to hear from Persimmon that it had lobbied the Government to ditch the zero carbon homes policy. Peter Jordan, Group Planning and Strategic Land Director, defended Persimmon's position by telling us that the relaxation of standards had delivered a boost in housebuilding since 2015. But the UK's largest developer, Barratt Developments' group chief executive, David Thomas, stated that the scrapping of the standard had not been a "significant factor" in driving up their house building rates. Persimmon's own figures suggest that all of its new homes built in 2018 could have been developed to zero carbon standards for around £165 million. This is a small proportion of the £600 million paid out to its senior managers in bonuses that year."

This is not an area in which we have great depth of expertise and as such we have no further detail to add.

Financial implications

7. Any new law can have a financial impact that would affect individuals, businesses, the public sector, or others. What financial impact do you think this proposal could have if it became law?

a significant increase in costs

some increase in costs

no overall change in costs

some reduction in costs

a significant reduction in costs

³ See: [Energy efficiency: building towards net zero – Business, Energy and Industrial Strategy Committee – House of Commons \(parliament.uk\)](#)

don't know

Please explain the reasons for your answer, including whom you would expect to feel the financial impact of the proposal, and if there are any ways you think the proposal could be delivered more cost-effectively.

The price (for consumers) of not building to ultra-high levels of energy efficiency (consistent with a space heat demand of 15kWh/m²/yr) could be high: without it they risk having to pay to refit today's new homes with additional energy and carbon saving measures in ten or twenty years' time, in order to ensure national climate change targets are met. As such when thinking about the costs of a zero carbon new build homes policy, we also need to factor in the avoided costs that would otherwise have to be paid for refurbishment between now and 2050.

This issue has been recognised by the Committee on Climate Change (ccc) who, as noted in our response to question 3 above, in their 2019 report '*UK housing: Fit for the future*' found that ultra-high levels of energy efficiency (consistent with a space heat demand of 15 kWh/m²/yr) were generally more cost-effective than less ambitious energy efficiency standards (20-30 kWh/m²/yr of space heat demand). That's because highly insulated homes need a much smaller heating system. The CCC identified an up to c.£3,300 saving in the capital cost of the radiators and heating distribution system for the most energy efficient fabric specifications.

Equalities

8. Any new law can have an impact on different individuals in society, for example as a result of their age, disability, gender re-assignment, marriage and civil partnership status, pregnancy and maternity, race, religion or belief, sex or sexual orientation.

What impact could this proposal have on particular people if it became law? If you do not have a view skip to next question.

Fabric first standards will help to keep people out of fuel poverty. As noted in our response to question 3 above fabric first standards 'lock in' energy saving and make dwellings much cheaper to heat (because less heat is needed) and more comfortable to live in. The cheaper a home is to heat the less likely its occupants are to fall into fuel poverty.

Please explain the reasons for your answer and if there are any ways you think the proposal could avoid negative impacts on particular people.

N/a

Sustainability

9. Any new law can impact on work to protect and enhance the environment, achieve a sustainable economy, and create a strong, healthy, and just society for future generations.

Do you think the proposal could impact in any of these areas?

Yes, Energy Saving Trust thinks that the proposal could impact positively on all of the areas listed.

Please explain the reasons for your answer, including what you think the impact of the proposal could be, and if there are any ways you think the proposal could avoid negative impacts?

As noted in our responses above stronger fabric standards will reduce both green-house gas emissions and energy bills and result in warmer, more comfortable and affordable to heat homes for people in Scotland.

10. Do you have any other additional comments or suggestions on the proposed Bill (which have not already been covered in any of your responses to earlier questions)?

As noted in our response to question 3 above, homes built to stringent fabric standards such as Passivhaus standards will still have some energy demand for heating and hot water, for lighting and for appliances and other electrical loads and the use of energy for these purposes will also contribute to a household's energy bills. We think there could therefore be scope to consider how these sources of energy demand could be tackled in the proposed Bill, specifically consideration should be given to:

- Reducing water use in new homes. Water efficiency has a key role to play in zero carbon homes by reducing the energy demand associated with hot water. It also has the benefit of reducing impacts of new build homes on water demand in the community. The UK Government has committed to "*make regulations to introduce a mandatory water efficiency label to inform consumers and encourage the purchase of more water efficient products for both domestic and business use*"⁴, and we think this label (once introduced) should be used a basis for fixture-based efficiency standards in building regulations.
- Generating as much power as realistically possible in new build homes. This means that PV should be installed on every south facing roof where there are no grid connection constraints.

⁴ See: <https://questions-statements.parliament.uk/written-statements/detail/2021-07-01/hcws140>

However, as analysis undertaken by the Passivhaus Trust emphasises⁵ some sites and buildings may not be suitable for solar generation and many buildings will simply not have sufficient roof area to generate all the power a home requires (even a very energy efficient home heated by a low carbon heating system). Thus, without a fully decarbonised electricity grid, it is not possible in all cases for a property itself to be truly zero carbon.

- Addressing any remaining carbon emissions. If it won't be possible in all cases for a property itself to be truly zero carbon (i.e. the home's annual CO₂ emissions are greater than zero) how can any remaining emissions be tackled? The UKGBC suggest that in the first instance the developer should install or upgrade the supply of renewable energy on-site. After which they recommend the purchase of renewable energy generated off-site with the supply being '*directly attributed to the building developer...*' and that '*would otherwise have not taken place*'. Once all '*feasible measures for reducing carbon impacts have been reasonably exhausted*' the UKGBC recommend that offsets be used to '*cover any residual carbon*' (i.e. a financial contribution is made for carbon savings elsewhere) provided a recognised off-setting framework is used.

It is worthwhile noting that off-setting has been used to date by a number of local authorities including those in London. The London Plan's zero carbon standard requires Local Planning Authorities '*to set up carbon offset funds to collect carbon offset payments from developers to meet any carbon shortfall from new development*'. Offsetting should only however be considered when '*significant carbon reductions on site*' have been achieved⁶.

- Setting a timetable for introducing requirements for cutting the carbon used in the construction of new homes, and targets for reductions. Research⁷ suggests that '*the embodied emissions from construction can account for up to half of the carbon impacts associated with the building over its lifecycle*' it is therefore clear that this is an area that will need significant attention over the coming years.

The CCC, in their report '*UK housing: Fit for the future?*', recommend an improved '*focus on reducing the whole-life carbon impact of new homes, including*

⁵ See: [https://passivhaustrust.org.uk/UserFiles/File/2019.03.20-Passivhaus%20and%20Zero%20Carbon-Publication%20Version1.2\(1\).pdf](https://passivhaustrust.org.uk/UserFiles/File/2019.03.20-Passivhaus%20and%20Zero%20Carbon-Publication%20Version1.2(1).pdf)

⁶ See: https://www.london.gov.uk/sites/default/files/carbon_offsett_funds_guidance_2018.pdf

⁷ The UKGBC's framework definition for net zero carbon buildings highlights that '*the embodied emissions from construction can account for up to half of the carbon impacts associated with the building over its lifecycle*'

embodied and sequestered carbon' and note that '*using wood in construction to displace high-carbon materials such as cement and steel is one of the most effective ways to use limited biomass resources to mitigate climate change*'.

Meanwhile the UKGBC's net zero carbon buildings framework sets out definitions and principles around two approaches to net zero carbon – net zero carbon operational energy (as discussed at the start of this paper) and **net zero carbon construction** with net zero construction defined as follows: '*When the amount of carbon emissions associated with a building's product and construction stages up to practical completion is zero or negative, through the use of offsets or the net export of on-site renewable energy*'.