

Proposed Domestic Building Environmental Standards (Scotland) Bill

Introduction

A proposal for a Bill to introduce new minimum environmental design standards for all new-build housing to meet the Passivhaus standard or a Scottish equivalent in order to improve energy efficiency and thermal performance.

The consultation runs from 4 May 2022 to 27 July 2022

All those wishing to respond to the consultation are strongly encouraged to enter their responses electronically through this survey. This makes collation of responses much simpler and quicker. However, the option also exists of sending in a separate response (in hard copy or by other electronic means such as e-mail), and details of how to do so are included in the member's consultation document.

Questions marked with an asterisk (*) require an answer.

All responses must include a name and contact details. Names will only be published if you give us permission, and contact details are never published – but we may use them to contact you if there is a query about your response. If you do not include a name and/or contact details, we may have to disregard your response.

Please note that you must complete the survey in order for your response to be accepted. If you don't wish to complete the survey in a single session, you can choose "Save and Continue later" at any point. Whilst you have the option to skip particular questions, you must continue to the end of the survey and press "Submit" to have your response fully recorded.

Please ensure you have read the consultation document before responding to any of the questions that follow. In particular, you should read the information contained in the document about how your response will be handled. The consultation document is available here:

[Consultation Document](#)

[Privacy Notice](#)

I confirm that I have read and understood the Privacy Notice which explains how my personal data will be used.

About you

Please choose whether you are responding as an individual or on behalf of an organisation.

Note: If you choose "individual" and consent to have the response published, it will appear under your own name. If you choose "on behalf of an organisation" and consent to have the response published, it will be published under the organisation's name.

an individual

Which of the following best describes you? (If you are a professional or academic, but not in a subject relevant to the consultation, please choose "Member of the public".)

Member of the public

Which of the following best describes you? (If you are a professional or academic, but not in a subject relevant to the consultation, please choose "Member of the public".)

Optional: You may wish to explain briefly what expertise or experience you have that is relevant to the subject-matter of the consultation

In the past I have built a very energy efficient home and am now an advisor to and board member of the US Passive House Institute, an advisor to the US Emerge Alliance (standards setting industry group for direct current appliances and microgrids), a member of the IEEE Smart Village (supporting the delivery of power, education and entrepreneurship in the developing world) and, here in the US, the Secure the Grid Coalition.

Please select the category which best describes your organisation

No Response

Please choose one of the following:

I am content for this response to be published and attributed to me or my organisation

Please provide your Full Name or the name of your organisation. (Only give the name of your organisation if you are submitting a response on its behalf).

(Note: the name will not be published if you have asked for the response to be anonymous or "not for publication". Otherwise this is the name that will be published with your response).

Terry Hill

Please provide details of a way in which we can contact you if there are queries regarding your response. Email is preferred but you can also provide a postal address or phone number.

We will not publish these details.

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

Q1. Which of the following best expresses your view of the proposed Bill? Please note that this question is compulsory.

Fully supportive

Please explain the reasons for your response.

In 2016 I attended a conference in the UK on covering the shortfall in homes being built by increasing factory built units. Concurrently, I visited with a friend who had recently occupied a new home which had supposedly met the existing building standards. However, after being scanned with an infra red camera, the results suggested that maybe the standard had not been met. At the conference topics such as the poor quality of homes being built in London, along with trials go The PassivHaus standard by the housing

Q1. Which of the following best expresses your view of the proposed Bill? Please note that this question is compulsory.

authorities, the retrofit proposal being promoted by the Netherlands (Stroomversnelling/Rapids) and the role of an insurance company investing in offsite home construction were brought up. Given that I had already seen the gaps in my friend's house I had no problem accepting the statement that the quality of new builds in London was poor. In subsequent discussions with one of the presenters re the PassivHaus standard I was told that, rather than just use the German standard in the UK, the UK needed to develop its own version, given that it did not have the same climate as Germany. As it turned out, PHIUS had just finished, with the help of consultants and a grant from the US DOE, adapting the PHI German standard for the 5 different US climate zones, an adaptation it could theoretically do for any place on the globe, including the UK. This potential is especially relevant today, given the heat wave that is over Europe as I write this and the fact both Europe and the UK have very little experience with added coolings in residential buildings. What also got my attention at the conference was the potential market transformation potential of the housing authorities, in particular their potential to influence the adoption of direct current (DC) into the housing efficiency mix. According to the Rocky Mountain Institute (RMI) article of 2015 on the retrofit work in the Netherlands mentioned above, the Dutch were considering using DC as an energy saving adjunct, given the fact that all electronic devices required DC, solar and batteries used DC and eliminating the conversions would save additional energy, particularly when included in the Passive House standard.

Q2. 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.

Yes, legislation is required because, from my experience builders only want to meet minimum requirements because they are averse to change, see high costs associated with such change and mortgage rates only look at first costs and don't take into account total cost of ownership. Moving to legislation that would require mortgage lenders take TCO into account when factoring risk would be another step parliament could take. This move takes on greater relevance when electric vehicle charging, city block DC microgrids, energy democracy and prosumer/transactive energy are added to the mix.

Q3. 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

Please explain the reasons for your response.

The electric grid, as we know it today after 120 years of operation is very vulnerable to disruption whether from the sun (solar flares), rogue states (EMP and physical attack), cyber threats and weather. In my opinion, it needs to be broken up into microgrids, preferably at the city block level with the DC Passive House (PHIUS climate specific) as the core component of this redesign. Not only would this redesign create multiple targets for enemies to go against it would improve the grid's resiliency by allowing islanding (where the microgrid can separate from the big grid and keep running) and providing for black start capabilities for the big grid. Of course, cyber security and electronic hardening would have to be part and parcel of any redesign.

Q4. 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

Please explain the reasons for your response.

see previous comments

Q5. 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 in the consultation document)

Partially supportive

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.

Given the current heat wave and the flexibility PHIUS has developed to model/optimize the latest iteration of its Wifi modeling tool I think Scotland should consider developing it's own PassivHause standard based on the work PHIUS has done in adapting the German standard to the US climate zones.

Q6. What could be the market effects of the introduction of this proposal?

Initially, build costs might be slightly higher than traditional builds but, as experience is gained these cost drop and become the norm. If one was to look at the whole value proposition of the city block/passive house as a valued grid asset under the umbrella of total cost of ownership, the cost issue disappears. In fact, it appears feasible that an energy income stream could be created for the city block community of prosumers.

Financial Implications

Q7. Any new law can have a financial impact which 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 reduction in costs

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.

A US Passive house design looks to reduce heating energy cost by 90% and cooling costs by 50%. Add solar PV and battery and DC appliance and maybe an additional 40% energy use might be found from plug loads. Aggregate these savings via the DC microgrid and, in addition to the ability to island, ancillary services could be provided to the big grid for a fee. In addition it might be feasible for the aggregation to supply DC fast charging to the community as well improving the national security of the larger grid. Here in the States FERC's Order 2222 might also provide an opportunity for such microgrids to participate in the wholesale electricity market providing additional community income. Finally, the potential for such a microgrid to play a dual role, being part of a virtual Power plant might also be considered.

Equalities

Q8. 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.

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

No Response

Sustainability

Q9. 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? If you do not have a view then skip to next question

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?

I feel that we eventually need to get to some form of energy democracy, where individuals willing to generate electricity should get paid. Given that EV's are well on the way and roof top solar, building integrated PV and storage are dropping in price, it won't be long before home owners will be giving serious consideration going off grid. We need to find a way to include renters in this transition.

General

Q10. 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)?

No Response