Solar Energy Scotland

Consultation Response

Scottish Building Regulations: Proposed changes to energy and environmental standards 2024

October 2024

About us

Solar Energy Scotland is the trusted industry trade body for solar energy in Scotland. Alongside Solar Energy UK, we represent a thriving member-led community of businesses and associates, ranging from ambitious and innovative SMEs to global brands.

Together with our members, Solar Energy Scotland works to shape policy to realise the potential of solar and energy storage in Scotland, and to work with Government and all stakeholders to deliver on climate change obligations and net zero greenhouse gas emissions by 2045.

Respondent details

Respondent Name: Daroon Ramadani

Email Address: dramadani@solarenergyuk.org

Contact Address: The Conduit, 6 Langley Street, London, WC2H 9JA

Organisation Name: Solar Energy Scotland

Would you like this response to remain confidential: No

Submission date: 23 October 2024

Introduction

The Scottish Passivhaus equivalent standard, which is set to have important ramifications for the New Build solar and storage landscape in Scotland, is a great opportunity to bring Scotland's delivery of an energy efficient new build stock in line with the rest of the UK and EU, if not improve upon them. The imminent Future Homes and Building Standards is expected to mandate solar on all new builds in England and Wales, while the already published EU Solar Standard has solar power required on all new commercial and public buildings by 2026 and all new residential buildings by 2029. Passivhaus is a model for energy efficient homes and buildings.

However, the current proposals for the Scottish Passivhaus equivalent standard in this consultation gives no indication that rooftop solar or battery storage will play any kind of role in the standard. Not including rooftop solar generation threatens to leave Scotland lagging behind the rest of the UK, not least the EU, where it used to lead in terms of solar on new build rooftop.

Scottish Government themselves wish to ramp up solar deployment to achieve their 4-6GW solar deployment ambition by 2030, which is set to be outlined in greater depth in the 'Solar Vision' alongside the upcoming 'Energy Strategy and Just Transition Plan', which will set out Scotland's renewable energy transition with mind to mitigate fuel poverty. Solar rooftop generation on people's homes, and battery storage, will be an essential part of this plan – homeowners of a typical new build home save between £974- £1,151 per year, and in a typical heat pump heated Scottish home, which is set to be increasingly prevalent as the housing stock becomes electrified (particularly new build), the installation of a solar system would mean heating bills reduced by £961 per year, saving 34.1 tonnes of carbon across the system's lifetime. Indeed, according to MCS, equipping homes with heat pumps, solar panels and battery storage together saves households living in a typical three-bedroom house more than £46,600 on energy bills over the course of a 25-year mortgage. These benefits are all without mentioning the important role rooftop solar and battery storage plays in ensuring a secure and flexible grid, as it reduces consumer demand side pressure on the grid and can supplement energy input to the grid through excess generation export.

Consultation Questions

2. Identifying the components of an equivalent standard

1. Do you broadly agree with the statements on what 'equivalent' should not mean, in delivery of amended building standards to address energy and environmental performance?

We are broadly in favour of higher quality, more energy efficient new build standards that will save consumers and businesses running costs and result in a more energy efficient building stock. We also agree with the approach not to strictly adhere to the rigid Passivhaus standard, and rather maintain a Scottish standard that provides a similarly energy efficient building.

There is currently a risk of the proposed new standard taking a backwards step by not including onsite generation, battery storage, and smart home energy management systems. New build rooftop solar generation and storage reduce building energy demand, while smart technologies maximise the energy efficiency of a home and mitigates for the grid load of an increasingly, and much needed, electrified building stock. The current proposals could mean Scotland falls behind the rest of the UK and the EU – the imminent Future Homes and Future Building Standards are set to mandate rooftop solar in England, while the EU Solar Standard will require solar power on all new commercial and public buildings by 2026 and all new residential buildings by 2029. Scottish Government have also announced a 4-6GW solar deployment ambition by 2030, and a standard without solar generation goes against this clear signal from government. Indeed, Passivhaus themselves have more updated "Plus" and "Premium" standards that include onsite generation. All in all, a standard without generation and storage could be outdated the moment of its release.

Rooftop solar photovoltaics must be on the notional dwelling specifications of the Passivhaus equivalent standard, else heat pumps will be installed by housebuilders to achieve minimum compliance, without solar – even if the standards in general 'allow for' or 'take into account' rooftop solar. This will result in substandard new homes of poorer efficiency, leave consumers with increased energy bills (as solar generation reduces the running costs of heat pumps, which will be highlighted in later questions), and a less flexible grid.

2. Do you broadly agree with the statements on what 'equivalent' should require consideration of, in delivery of amended building standards to address energy and environmental performance?

1. Value of New Build Solar
2. The Value of Solar Heat
3. Future Homes Savings

Point 2 refers to building on the February 2023 New Build Heat Standard (NBHS). This highlights how both the NBHS and in the current Passivhaus Equivalent proposals undervalue the contribution of solar generation and battery storage to making new electrified homes more efficient and affordable for consumers – indeed homeowners of a typical new build home save between £974- £1,151. Solar rooftop generation also makes heat pumps more economically viable for consumers, with typical homes with heat pump installs in Scotland saving nearly £1,000 a year. Equipping homes with heat pumps, solar panels and battery storage together saves households living in a typical three-bedroom house more than £46,600 on energy bills over the course of a 25-year mortgage.

Indeed, the switch from gas to electricity was accompanied by the removal of solar from the notional house, which resulted in increased energy bills, with Scottish Government's own calculations supporting this. So, for consumers to transition affordably to electrified homes, the solution is that solar must be on the notional dwelling – otherwise housebuilders will achieve minimum compliance by installing a heat pump without solar photovoltaics, resulting in less affordable homes, a less flexible grid, and less efficient homes. All this threatens Scottish Government's Net Zero targets and goes against their 4-6GW solar deployment ambition and their Just Transition plans.

Smart home energy management systems, installed with solar and storage, help maximise the efficiency of a home or building, which crucially helps mitigate the energy demand on the grid through Time of Use Tariffs. Onsite generation, storage and smart technology should all be included in equivalent requirements for energy performance of a building.

We welcome the point of ensuring that any confirmed approach should not result in any barriers to exceeding the standards.

3. Proposed components of the standard – Design

Topic - Standard 6.1 and approved calculation methodology

3. On the basis that HEM and SBEM are reviewed and shown to report representative outcomes, do you support the continued use of calculation tools which implement the UK methodologies?

We welcome the use of the HEM for domestic building and the SBEM for non-domestic buildings. This provides a baseline with the rest of the UK, which we believe is the best way to achieve an updated and modern assessment of energy usage. A Scottish Wrapper for the HEM allows for Scottish specific deviations where needed, such as climate differences, building type and size, etc.

Topic - Approach to defining overall building energy targets

4. Do you support retention of the current approach and the setting of relative performance targets for new buildings through an approved calculation methodology?

We are broadly in favour of retaining the current approach and maintaining relative performance targets. These relative standards must have a high floor, to ensure best-practice, high performance, and consistency, reducing need to retrofit in the future. A notional dwelling allows for relative rules applied to different types of buildings – size, shape, orientation, etc. This gives the industry realistic flexibility when applying the standard in practice.

However, rooftop solar photovoltaics must be on this notional dwelling. Without solar included on the notional house, housebuilders will achieve a minimum compliance position with just a heat pump or insulation, with little motivation to go beyond that and resulting in substandard homes. The growth of onsite generation is also needed to achieve our Net Zero goals and essential for Scottish Government's 4-6GW solar deployment ambition.

No rooftop solar means less efficient buildings, a less flexible grid, and crucially for consumers will be a massive step backwards in affordability, which would fly in the face of the goals of the upcoming Scottish 'Energy Strategy and Just Transition Plan', which will outline Scotland's path to affordable electrification. Indeed, the switch from gas to electricity was accompanied by the removal of solar from the notional house, which caused an increase in consumer's energy bills, with Scottish Government's own calculations supporting this.

These new Passivhaus equivalent regulations presents an opportunity to quickly rectify the issue, created by the interaction of the low carbon heating regulations with unchanged building regulations, and one notional building specification with solar, heat pump and battery storage, is the way to do this.

5. Do you agree with the proposal to retain delivered energy, covering only regulated energy use, as the main compliance metric for targets set under standard 6.1 (energy demand)?

We suggest that a primary energy approach is more suitable, as opposed to retaining the current delivered energy model. With a primary energy calculation model, the whole cost of producing energy is accounted for, both energy usage and energy offset by a building – e.g., offset through onsite generation and stored energy. This would also align Scotland with the rest of the UK, as the approaching Future Homes and Future Building Standards will use this model.

6. Do you support further consideration of the introduction of a prescriptive space heating demand limit for new buildings through building regulations?

No answer

7. Do you support the move to application of regional climate data within the approved calculation methodologies and their application within compliance targets?

No answer

Topic - Building fabric standards

8. Do you currently deliver new buildings that exceed 'backstop' values for fabric performance set under standard 6.2 or those used to define the notional building in guidance to standard 6.1?

No answer

9. Do you have any particular views on limiting fabric infiltration through the building standards?

No answer

Topic - Ventilation and occupant comfort

10. Do you have any particular views on the means by which effective ventilation of new buildings is best achieved?

No answer

11. Specifically for new homes should further guidance be given on MVHR, generally, and through the Technical Handbooks?

No answer

12. Are there areas of newbuild design and specification you would wish to highlight as potential risks to occupant comfort that should be better addressed through the building standards?

No answer

Topic - Alternative means of compliance

13. Do you consider that Passivhaus Certification offers a feasible alternative means of compliance with standard 6.1 (energy demand)?

No answer, open to views

Topic - Summary of proposals

14. Are there any other comments or observations you wish to make on the proposed components of the review which relate to building design?

We reiterate our points here that a Passivhaus equivalent standard without mandated solar rooftop generation is a step back for Scotland, jeopardising Scottish Government's tight net zero targets, the Solar Vision and Just Transition Plan, and risks the future stability of the grid.

Solar must be a part of the notional building, to ensure housebuilders deliver generation for new build homes, so we have an energy efficient housing stock that is affordable for consumers – as discussed, solar generation future-proofs homes and drives down people's energy bills both in the short and long term.

4. Proposed components of the standard - Compliance

Topic - Principles of an evidence-led approach to compliance

15. Do you currently apply an in-house or third party compliance management process to your projects which specifically addresses energy and environmental project elements?

No answer

16. From your experience of delivering very low energy buildings, what are the most common risks identified at an early design stage and how are they managed most effectively?

No answer

17. Do you consider there are practical limits to effective risk management at design stage alone and can you give examples of where management of risk is more effective at a later (construction) stage?

No answer

18. Do you currently apply a particular approach to the recording of project information during construction that can demonstrate, to a third party, that work complies with energy-related aspects of building regulations?

No answer

19. Do you currently compile and report summary information on the completed building as part of a handover record of project information that goes beyond what is currently required by building regulations?

No answer

20. Do you have experience of implementing methods to effectively de-risk the very low energy building aspects of design and construction and provide assurance that the compliant solutions are properly considered and delivered as intended?

No answer

Topic - Principles of an evidence-led approach to compliance

21. Do you consider the proposals set out present a reasonable summary of why there is a need for improvement in compliance processes to deliver very low energy buildings?

We agree with increasing emphasis on compliance in building standards to improve the quality of workmanship. This should also be matched with an emphasis on enforcing these standards too.

22. Do you consider the proposed scope of application and recommended actions are appropriate to address the effective delivery of very low energy buildings?

Without onsite generation or battery storage, homes are less energy efficient and there is a greater delivery burden on the grid to supply all of a home's energy. This could also reduce the uptake of smart home energy management systems in new build housing – a technology essential in reducing consumer energy demand, as homes are run less efficiently without them. Consumers get less money off their bills without solar and smart systems, as they cannot produce and then optimise when to sell excess energy generation to the grid (which in turn improves stability of the grid). smart tech and solar can also optimise when to send excess generation to home battery storage, which decreases grid demand in times of lower rooftop generation, e.g., in the evening, where energy will be taken from the excess built up during the day. A new build standard without consideration of solar rooftop generation and smart technology will slow the delivery of a low energy building stock.

Furthermore, with heat pump installs ramping up across the new build landscape, solar generation makes their usage far more economically viable for consumers, as well as more environmentally friendly and reducing energy demand from the grid. In a typical heat pump heated Scottish home, the installation of a solar system would mean heating bills would be reduced by £961 per year, saving 34.1 tonnes of carbon across the system's lifetime. Equipping homes with heat pumps, solar panels and battery storage together saves households living in a typical three-bedroom house more than £46,600 on energy bills over the course of a 25-year mortgage.

1. The Value of Solar Heat
2. Future Homes Savings

Thus, for all the above, solar rooftop generation must be on the notional building specifications to ensure that housebuilders deliver the onsite generation needed for affordable and efficient homes, and a resilient grid.

23. Do you support the application of provisions from an early (pre-warrant) design stage through to completion and handover of the building?

No answer

24. Do you have any views on the key areas where the verification process should focus, to be effective in responding to an enhanced compliance reporting regime?

No answer

25. Do the recommendations presented adequately describe action to affect the key roles and responsibilities of those who contribute to building compliance?

No answer

5. Call for information on current standards

Topic - February 2023 design specifications

26. Are you currently designing buildings to the February 2023 standards and have confirmed specifications which are at a stage that have been or will be used in a building warrant application, that you would be happy to share with us?

No answer

Topic - the current approach to target setting and overheating risk

27. With regards to the current approach to target setting and overheating risk, do you have experience related to either of these two issues you consider useful to inform review of the current published guidance or this review of current energy and environmental standards?

No answer

Topic - newbuild heat network connections

28. Have you undertaken any projects under the post-2023 energy standards which considered connection to a new or existing heat network, both district heat networks and communal heating systems?

No answer

29. Do you have experience of issues affecting development which you consider have arisen from application of current energy and environmental standards set under building regulations?

The new Passivhaus Equivalent standard is a great opportunity to bring Scotland's delivery of an energy efficient new build stock in line with the rest of the UK and EU, if not improve upon them. Both the UK and EU are set to mandate rooftop solar generation on new all new buildings – the imminent Future Homes and Buildings Standards in the UK, in which industry and UK government (The new Passivhaus Equivalent standard is a great opportunity to bring Scotland's delivery of an energy efficient new build stock in line with the rest of the UK and EU, if not improve upon them.) expect the mandated solar rooftop option to be selected, and the already published EU Solar Standard where solar power will be required on all new commercial and public buildings by 2026 and all new residential buildings by 2029. This will leave Scotland lagging behind if it does not take similar steps.

Furthermore, Scottish Government themselves wish to ramp up solar deployment to achieve a 4-6GW solar deployment ambition by 2030, which is set to be outlined in greater depth in the 'Solar Vision' alongside the upcoming 'Energy Strategy and Just Transition Plan', which will set out Scotland's renewable energy transition with mind to mitigate fuel poverty. Solar rooftop generation on people's homes, and battery storage, will be an essential part of this plan – homeowners of a typical new build home save between £974- £1,151 per year, and in a typical heat pump heated Scottish home, which is set to be increasingly prevalent as the housing stock becomes electrified (particularly new build), the installation of a solar system would mean heating bills reduced by £961 per year, saving 34.1 tonnes of carbon across the system's lifetime. Equipping homes with heat pumps, solar panels and battery storage together saves households living in a typical three-bedroom house more than £46,600 on energy bills over the course of a 25-year mortgage.

Therefore, as discussed in previous questions, solar rooftop generation must be on the notional building specifications to ensure that housebuilders deliver the onsite generation needed for affordable and efficient homes, and a resilient grid. Else minimum compliance will be achieved without solar photovoltaics and Scotland will fall behind. Solar being 'allowed for' within specifications but not on the notional building will not end up being delivered.

A primary energy approach, as opposed to retaining the current delivered energy model, which calculates the whole cost of producing energy (both energy usage and energy offset by a building – e.g., offset through onsite generation), would also be a crucial step in aligning with UK and EU standards, and is more suitable for gauging the impact of a home's energy usage and demand, and its impact on the grid.

1. Value of New Build Solar
2. The Value of Solar Heat
3. Future Homes Savings

Encouraging the use of smart home energy management technologies, and their inclusion in the HEM, is essential to create a new electrified housing stock that is as energy efficient as possible and that reduces energy demand on the grid system – e.g., by reducing energy consumption of a household at times of high energy demand pressure on the grid. As outlined earlier in this consultation and particularly in Question 22, they are particularly effective when paired with solar rooftop generation and battery storage, and can help consumers take more money off their bills by optimising when they sell excess generation to the grid, which in turn improves flexibility of the grid and consistency of generation.

6. Proposed delivery programme

30. Do you agree with the proposal to mandate the standard in 2028, introducing changes initially as a voluntary standard from 2026?

No answer, open to views