

Proposals for a Heat in Buildings Bill

March 2024



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Executive summary

The Royal Society of Edinburgh (RSE) welcomes the opportunity to respond to the Scottish Government's proposals for a Heat in Buildings Bill. Decarbonising buildings is an essential contribution to meeting Scotland's ambitious net zero greenhouse gas emission (GHG) targets.

We recognise that the climate crisis necessitates urgent, as well as pragmatic, action to decarbonise heating in buildings.

Overall, the RSE supports the introduction of a Heat in Buildings Bill and appreciates the accessibility of the proposals outlined in the consultation. However, the RSE is concerned about the lack of nuance and risks of over-simplification of certain issues, for example, the financial resources required.

While the RSE is supportive of decarbonising heating systems and implementing measures to make buildings more energy efficient, there should be greater transparency about the significant costs associated with this transition. Scottish Government should clearly state the expected costs and shares of responsibility for covering them. There should also be greater recognition that: costs will be particularly difficult to manage for various groups across Scotland, such as those in more remote rural communities; the challenges of transition will be compounded by the current cost of living crisis.

Garnering public support will be crucial to success. To balance the considerable costs of decarbonisation, the RSE recommends highlighting the significant benefits from this transition. The narrative must demonstrate that clean energy and building retrofit is advantageous for health, comfortable homes, workplaces, community facilities and local jobs, and essential for ensuring that Scotland does its part in creating a liveable environment for generations to come.

The RSE recommends establishing a more ambitious minimum energy efficiency standard, as more than 45% of homes in Scotland already meet the minimum energy performance certificate (EPC) band C requirement. Exemptions should not be universally granted to homeowners who have already met the requirement to install a clean heating system. Further clarification on who will be exempt, on what basis, is needed.

Regarding the ambition to implement clean heating systems across Scotland, the RSE is concerned that proposed timelines will be too slow to meet the goal of net zero by 2045. Ideally, an area-based retrofit programme would enable faster delivery. Furthermore, establishing additional dates between 2028, 2033, and 2045 would allow for review of progress and of required retrofit measures at critical periods.

The RSE also suggests that flexibility is needed in relation to clean heat and energy efficiency options outlined in the bill to allow for new developments and technical solutions. For example, it would be beneficial to have an assessment tool for homeowners which is updated in response to changes in technologies.

Additionally, the RSE recommends further development of enforcement mechanisms, as public support for reducing greenhouse gas emissions is unlikely to be a sufficient incentive.

Finally, the RSE recommends that the Scottish Government make a concerted effort to collaborate with the UK Government on clean energy strategy for buildings. This will be particularly important when dealing with complexities of reserved and devolved powers over heat in buildings, including the future of the methane gas grid, and the developments that could ensue.

Deliverability

1. The RSE commends the Scottish Government for its high-level objectives regarding the proposed transition to clean heating systems and energy efficient buildings. While acknowledging the difficulty of governing the transition, the RSE finds several areas of the proposed bill needing further development.
2. Firstly, the RSE suggests that the Scottish Government publish an evidence-based report outlining the delivery capacity of the industries and organisations that will be centrally involved in the transition. Evidence demonstrating that Scotland is capable of delivering this systemic change would ensure greater endorsement of the bill proposals.
3. The RSE is also concerned about the intended pace and methodology of the delivery. The proposed building owner-by-building owner approach is unlikely to achieve the goal of converting one million homes and 50,000 commercial buildings to zero emissions heating systems by 2030¹, nor reaching the net zero goal for the whole of Scotland by 2045.
4. Instead, the RSE commends the advantages of a more programmed, area-based approach to energy efficiency and installation of clean heating systems. This more structured approach has the potential to deliver more quickly and affordably.
5. We recognise that the current context is suboptimal, partly because of reserved energy market powers, and partly because the necessary finance partnerships and funding are not aligned. In a market where, for example, energy retailers were incentivised to provide fabric improvements to reduce demand, then this sector could lead a programme of work with built in financing. Even in current markets, however, an area-based programme could be structured around an offer to every homeowner to improve fabric efficiency and install clean heating in regions with similar building types, responsive to similar technical solutions.
6. Finance offers would need to be developed accordingly, with structured, accessible low cost 'green' loans and grants, according to household income. This would have the benefit of creating a standard funding framework, managed, for example, through Home Energy Scotland or Heat and Energy Efficiency Scotland, in partnership with lenders, and should improve public trust in the programme. The approach would support more systematic upgrades to buildings, with area-based improvements encouraging owners to join. It should reduce the average cost per building, because of economies of scale, and strengthen industry confidence, supply chains and skills by providing predictable, larger scale, contracting with work concentrated in specific neighbourhoods. It should also enable greater local accountability for the quality of retrofit work and new heat services, as neighbours could compare experiences and standards of work, and, if necessary, have access to timely resolution of any problems.
7. Furthermore, the RSE believes that more property owners would participate willingly in the transition if they had explicit guidance on how to meet the regulatory requirements for their specific building. Given the potential complexity of the installations, a tailored approach should alleviate some of the burden on homeowners.
8. Additionally, the RSE suggests that further dates should be added to the timeline of targets between 2028, 2033 and 2045. These additional time markers would allow the Scottish Government to re-evaluate priorities, assess progress and adjust policy and enforcement accordingly.
9. Finally, the RSE proposes creating a degree of flexibility over the delivery of the transition. While potential advances in technology should not hinder installation of clean heating systems and energy efficiency measures, technical options may need periodic updating. Anticipating the need for flexibility will allow Scotland to be better prepared to meet net zero GHG ambitions.
10. The RSE is broadly supportive of a 'fabric first' approach, where home energy efficiency measures are installed before or alongside upgrades to clean heating systems. Such installations are likely to

'Fabric first' approach and retrofitting

¹ Scottish Government Heat in Buildings Strategy: <https://www.gov.scot/publications/heat-buildings-strategy-achieving-net-zero-emissions-scotlands-buildings-consultation/documents/> RSE recognise proposals to modify this goal, but care is needed to avoid public and commercial cynicism and reduced willingness to act.

- have benefits beyond those of reducing carbon emissions, notably making homes more comfortable, more affordable to heat and reducing or deferring necessary investment in reinforcement of electricity networks and new power generation.
11. The RSE is however concerned that the proposals for 'one household at a time' retrofit up to a backstop date will result in: higher prices; loss of scale economies from area-based programmes; an inadequate, and insufficiently skilled, supply chain and potential mis-selling, all contributing to public disengagement.
 12. While energy efficiency upgrades are arguably a manageable aspect of the transition in many types of housing, households will need sufficient guidance to ensure that they understand the expected impacts of different measures, relative to costs, and the implications for ventilation and indoor air quality. Households also need to be equipped to challenge poor standards of work and to be confident about consumer protections and guarantees. Thus, it will be crucial to assist all Scottish households throughout this process. Among others, the social housing sector could provide a route map to assist homeowners by publishing their housing archetype retrofit solutions on a publicly available website, as proposed in the zero emissions social housing taskforce (ZEST) report.²
 13. The RSE also recommends that the Government engage and fund a project to capture a wide array of archetype U-value in-situ measurements covering the key archetypes. Collating the evidence-based data held by universities, research institutions and housing associations could improve validity in planning and assessing fabric energy efficiency measures and support timely delivery. Thus, it is recommended that the Government fund a data capture project to assemble the evidence base on fabric energy efficiency of existing housing archetypes as soon as possible.
 14. The 'fabric first' approach will require construction-specific installation of insulation and, where necessary, the incorporation of appropriate ventilation to avoid future building failures. Nevertheless, the costs of this approach will reduce the substantial financial and environmental burden of pumping green energy into leaky buildings and homes.
 15. Finally, whole lifecycle carbon emissions must be considered when balancing the costs of demolition and replacement of buildings and the retrofitting of existing buildings. While retrofitting will have associated carbon emissions, the RSE suggests reusing and adapting existing buildings be considered as a first approach wherever possible.

Heat networks

16. Heat networks are expected to play a critical role in establishing clean heating systems throughout Scotland. As per local heat and energy efficiency strategies (LHEES) analysis³, they are a valuable component of strategy, because they are a means of reducing major increases in demands on electricity generation and networks which would result from universal electrification of heat (as well as transport). This should make a transition to clean heat more affordable. Major investment in electricity generation and grids will otherwise be required to serve seasonal peaks in heat use in buildings, with corresponding increases in electricity bills. Much of the resulting power generation would be on standby for the majority of the year.
17. Prospects for timely and effective development of heat network infrastructure, sufficient to generate expected economies of scale and GHG reductions, would be improved by integration into area-based retrofit programmes, in line with plans to establish heat network zones as part of LHEES. The RSE suggests that heat network planning and development should have a more central role in the proposed bill and associated strategy.
18. Heat network development needs to be planned against a timetable to secure demand assurance, financial viability, timely connection of anchor loads, connection to 'waste' heat sources and best value from resulting heat supply services. These are coordination issues which are integral to efficiencies of any network infrastructure. As one contribution to demand assurance, measures in the bill need to minimise the risk that homeowners in designated zones proceed to install stand-alone clean heating systems. Such individual installations weaken the value from heat network development and the potential for lower overall heat prices. Therefore, the

² <https://www.gov.scot/publications/achieving-net-zero-social-housing-zero-emissions-social-housing-taskforce-report/pages/9/>

³ <https://www.gov.scot/publications/local-heat-energy-efficiency-strategies-delivery-plans-guidance/documents/>

RSE recommends greater urgency, earlier dates and a timetable for targeted development of heat networks in designated zones across Scotland, with incentives for building owners to connect promptly.

19. Households in areas not supported by heat networks (particularly rural communities) should be provided with additional guidance on technologies best suited for retrofitting their homes. Furthermore, a 'fabric first' approach is likely to be more important in areas which do not have access to heat networks, ensuring that, at a minimum, homes are more energy efficient.
20. This will not obviate the need for much more rapid development of electricity grid infrastructure. While recognising that network regulation is a matter reserved to the Westminster Parliament, the RSE supports recommendations such as those made by the UK Electricity Networks Commissioner, Nick Winser, in his report⁴ on accelerating deployment of electricity transmission infrastructure.

Non-polluting heating systems, bioenergy and waste heat

21. The RSE is concerned about the lack of choice for homeowners, social housing and the private rented sector for non-polluting heating systems. The current proposal is strongly geared towards heat pumps and district heating. However, heat pumps are not suitable for all housing types and district heating will not be available for all city and urban households. Thus, it is recommended that all electric based individual heating systems be considered as non-polluting heating systems. Imposing a strict definition on what is considered to be a non-polluting heating system limits choice for homeowners and stifles innovation.
22. Many homeowners have already installed innovative heat storage systems, such as Sunamp, or replaced gas-fired central heating with low carbon heat systems. However, the consultation does not recognise such systems. There is potential risk of dissuading building owners from engaging with lower carbon domestic heating if their previous investments are being disregarded. The RSE suggests that a formal 'points system' to the new EPC format is provided to allow for recognition of

such appliances and which can then interlink with the delivery programme.

23. Additionally, the RSE recommends that bioenergy be permitted for remote rural housing locations until 2040. This would allow such homeowners to plan ahead and prevent increased costs when such communities already face higher general living costs, on average, than those in suburban and urban areas.
24. The RSE suggests the creation of a national zero waste heat project that synthesises the best available information on prospective residual or 'waste' heat sources, and explains how these could influence local options for low-carbon heating strategy, including the potential impacts of their utilisation.
25. Regarding waste heat, the RSE supports the proposal that occupiers of non-domestic buildings be required to disclose the amount of waste heat they are producing, and to make that unused heat available to local heat network operators. The RSE acknowledges that waste heat may not be a desirable long-term heat source for district heating, as its production may be carbon-intensive. Its proposed use should however be advantageous for the transitional period covered in the bill. Furthermore, if residual or waste heat producers shift to net zero energy sources by 2045, then this heat source should continue to be connected and reused.

Public engagement

26. Given the far-reaching implications of this bill, the RSE is concerned about the lack of public engagement and national discussion about the proposals in the consultation. The success of the bill will greatly depend on how it is framed to the public. Without widespread support, the transition to clean heat systems and energy efficiency upgrades will be more arduous and face further delays. Such impediments could be costly and further damage Scotland's chances of meeting 2045 climate protection goals.
27. As such, the RSE recommends that extensive public outreach, political leadership and awareness-raising efforts be made to demonstrate how imperative the transition to clean energy systems will be in Scotland.

⁴ <https://www.gov.uk/government/publications/accelerating-electricity-transmission-network-deployment-electricity-network-commissioners-recommendations>

28. The Scottish Government must offset the substantial financial costs by emphasising the immense forthcoming benefits that the transition will bring. Garnering the existing public support for tackling issues around climate change, the Scottish Government should frame the transition as an investment in a liveable environment for the people of Scotland. The public must be incentivised to act not just for themselves, but for the generations to come. Additionally, improvements to homes and buildings should be framed as a collective benefit and an investment in Scotland's national infrastructure.
29. As such, the RSE suggests making information and expert advice readily available to the public. This will enable people to make informed decisions about installing clean heating systems and making energy efficient upgrades to their homes. Individuals will need this information to be easily accessible if they are to make changes by the proposed timelines outlined in the consultation.
30. It is suggested that, in order to support all demographics and reduce exploitation of the public by unscrupulous contractors, a network of locally-based, accredited and impartial advisors be established. Risks to existing building fabric (condensation, damp and rot) associated with poor specification and installations will also be reduced by encouragement, or in the case of grants, a requirement to involve accredited installers and advisors.
31. The proposed transition for all buildings in Scotland will require significant resources. While the consultation briefly mentions financing, the RSE recommends that the Scottish Government provides greater transparency regarding the costs associated with transitioning to clean heating systems and shares of responsibility for covering them.
32. To maintain a positive framing of the transition, the RSE recommends the introduction of financial incentives, similar to those provided to individuals buying electric vehicles.⁵ A green land value tax, "*consist[ing] of a charge on the land plus a charge on the building minus a discount depending on its energy usage*", could serve as an additional incentive for decarbonising.⁶ This would alleviate some of the financial burden and potentially lessen negative attitudes associated with the transition. The current value-added tax (VAT) system in Scotland should be reviewed by the UK Government to ensure that it is fully aligned with a 'fabric first' approach and clean fuel investment. VAT should be zero-rated on all energy saving measures and fabric-related work, whether standalone or part of a wider contract, and on necessary use of expert advice and project management.
33. Furthermore, to achieve such a large-scale transition, the Scottish Government should provide clarification on the forging of local authority partnerships with commercial and 'not for profit' third sector enterprises, and governance of the process. In principle, the Heat and Energy Efficiency Scotland⁷ agency should be a critical part of the heat transition 'ecosystem'; the Government should clearly articulate its role and responsibilities, including monitoring, review and enforcement, alongside that of other agencies. Such partnerships and agencies will be essential for the successful delivery of the bill.
34. Additionally, the RSE is concerned with the seemingly inequitable approach taken to allocating responsibility for the earliest stages of transition to homeowners and landlords. The RSE suggests that a more equitable approach would increase the legitimacy of regulations; this should include earlier deadlines for commercial sector buildings, as faster reduction of greenhouse gas emissions from these will play a significant role in meeting net zero ambitions.
35. Finally, the RSE finds that current grants and funding mechanisms to support retrofit are not sufficiently targeting low-income households. Such targeting needs to be reviewed and increased to avoid risks of reinforcing poverty and excluding people from the benefits of clean heat and energy efficient homes. Furthermore, the RSE is in favour of additional support mechanisms for higher working-income households that may be burdened by increased taxation used for transitioning low-income households. In addition to loans, this group should be offered other forms of financial support for transitioning their properties to clean heating systems and associated fabric upgrades.

Increasing transparency about costs and financial support

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⁵ <https://electriccarguide.co.uk/ev-grants-in-scotland/>

⁶ <https://www.oecd-ilibrary.org/sites/d7681f43-en/index.html?itemId=/content/component/d7681f43-en>

⁷ <https://www.mygov.scot/organisations/heat-energy-efficiency>

Monitoring and enforcement

36. In order to ensure compliance with the proposed bill, the RSE believes that it is vital to have a strong enforcement mechanism, both for the retrofit industry in relation to standards of work and consumer protections, and for ensuring compliance by property owners. This could be managed through adequately skilled and better resourced building control officers in local authorities. In addition, compliance should be fostered through developing a sense of collective responsibility for reducing greenhouse gas emissions. While this alone will be insufficient to guarantee compliance, the Scottish Government can cultivate greater societal buy-in through political leadership, including a clear strategy and an abundance of support mechanisms.

Exemptions

Question 21. Which people, businesses, or types of buildings, if any, should be eligible for a modified standard or exemptions?

37. While acknowledging the genuine need for exemptions for certain groups of people in various circumstances, the RSE is concerned with several aspects of the proposed exemptions.
38. The RSE suggests that specific reasons for exemptions should be explicitly articulated. The current proposal to *"exempt those who can't, or perhaps should not have to, meet the Heat in Buildings Standard"* is vague. This increases ambiguity about who will be granted exemptions and on what basis. It allows for considerable 'special pleading' which risks feeding public cynicism and detachment, and hampering progress.

Question 4. Do you agree with our proposal to set a minimum energy efficiency standard that can be met by either installing a straightforward list of measures, or showing a good level of energy efficiency based on a reformed EPC fabric efficiency metric?

39. The RSE is concerned about the proposed exemptions for homeowners who have met a notional requirement for clean heating systems to be installed. There should be an additional requirement to match the clean heating system with energy efficient upgrades. Without improved energy efficiency, clean energy will be wasted due to leaky buildings. This will be costly for homeowners faced with higher bills and will further increase demands on grid capacity and power generation, adding to infrastructure costs and standing charges on bills.
40. The RSE does find exemptions to be appropriate in rural communities where connecting to heat networks or installing clean heating systems may be less feasible. In these areas, a 'fabric first' approach to efficiency upgrades is recommended.
41. Overall, the RSE believes that exemptions should be granted only in specific cases, where absolutely necessary. Wide-ranging exemptions will significantly impede progress towards net zero by 2045.

Impacts on privately rented properties

42. Much of the onus for the initial decarbonisation of Scotland's buildings is placed on landlords. The RSE is particularly concerned about the lack of acknowledgement of the risks of further rent increases for tenants. Installing clean heating systems and energy efficient retrofitting will, in many cases, require significant financial investment by landlords that will likely be offset by raising the rent. Suitable support should be provided to landlords to facilitate the transition to clean energy and mitigate stranded assets which are not brought up to standard, the sell-off of such properties or steep rent increases to cover the costs over a short duration. To minimise this risk, the Scottish Government may need to implement rent controls.
43. Given the limited public guidance on how landlords should meet the heat and energy efficiency requirements for their rental properties, the proposed date of 2028 seems very challenging. Instead, the RSE suggests that landlords should be required to meet the same 2033 timeline for delivery as homeowners. This would allow time to craft tailored guidance for landlords and should align with the just transition framework by protecting tenants from rapid rent increases.⁸

⁸ <https://www.gov.scot/groups/just-transition-commission/>

44. Overall, the RSE recommends providing clarification on how the Scottish Government intends to mitigate the potential impacts of rent increases for private sector tenants.

Improving collaboration between the Scottish and UK Governments

45. A key element of achieving net zero and tackling the climate emergency is productive collaboration between the Scottish and UK Governments. As a recent RSE report from the Economic and Enterprise Committee suggests, "*achieving net zero requires genuine policy cooperation between Holyrood and Westminster*".⁹
46. Without meaningful collaboration, the Scottish Government risks pursuing a regulatory route which will be made redundant or ineffective due to UK Government changes to energy market licensing, taxation and regulation (powers reserved to Westminster). While Scotland can continue to pursue a progressive environmental agenda, effective progress will depend on a working consensus between central and devolved governments about envisaged changes to markets and infrastructure, particularly for gas. Ofgem's proposed regional energy strategic planners¹⁰ will be an important intermediary for Scottish Government to ensure the effectiveness of a Heat in Buildings Bill and legislation.
47. Additionally, the RSE is concerned about public opposition if Scotland were to impose less favourable conditions for heat transition compared to its UK counterparts. This transition will almost certainly be undermined if the four nations take differing views on impacts and costs for homeowners and occupiers. Thus, the RSE suggests the need for synchronicity between the Scottish and UK Governments.
48. Finally, the RSE recommends strong leadership in Scotland's ambitions to decarbonise buildings and meet net zero GHG emissions by 2045. This will require fierce promotion of the benefits of transitioning to clean heating systems and retrofitting Scotland's buildings.

Impacts on the housing market

49. The RSE is concerned about the housing market impacts of requirements to upgrade to clean heating systems following the purchase of a new home. Relatedly, the RSE questions whether this would result in owners choosing to stay in their current homes, instead of facing the additional costs associated with potentially expensive heating system upgrades. Such issues should be addressed through careful cross-sector engagement with experts, including housing economists, estate agents and mortgage providers.
50. If the requirement to install clean heating following house purchase has the effect of slowing housing market transactions, this will further delay progress towards net zero emissions from buildings. The RSE hence recommends adoption of a more programmed approach to decarbonising homes, rather than relying solely on housing market turnover for implementation of clean heating.

Question 10. We are proposing to give those purchasing a property a 'grace period' to end their use of polluting heating. Do you agree with this proposal?

51. Regarding the proposed grace periods, the RSE suggests a maximum two-year grace period in which the purchaser would have to replace the polluting heating system. This would strike the appropriate balance between providing adequate transition time for the purchaser and adhering to the decarbonisation agenda.
52. Furthermore, if retrofitting is required for new homeowners, it would be useful to consider potential incentives in the grace period. One mechanism would be through the land and buildings transaction tax (LBTT) paid by the new purchaser. A percentage of the LBTT could be refunded to the owner if they complete the retrofit works within the grace period.

Additional information

53. Any enquiries about this advice paper should be addressed to Gwynneth Redemann, Policy Advice Officer (gredemann@theRSE.org.uk). Responses are published on the RSE website (www.rse.org.uk).

⁹ <https://rse.org.uk/wp-content/uploads/2023/12/RSE-AP-Securing-the-economic-and-environmental-benefits-from-the-transition-to-net-zero-2023.pdf>

¹⁰ <https://www.ofgem.gov.uk/publications/ofgem-green-lights-regional-energy-planning-roles-speed-net-zero-transition>



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SCOTTISH CHARITY NO. SC000470

22–26 George Street
Edinburgh
EH2 2PQ

Telephone: +44 (0)131 240 5000
Email: info@theRSE.org.uk

Discover more at rse.org.uk