

Scottish Government Consultation on proposals for a Heat in Buildings Bill

Response - Nesta

Summary of Key Points

- The Scottish Government should **bring forward minimum energy efficiency standards for the private rented sector as soon as possible**. It should be robustly enforced to protect tenants and to provide a level playing field for landlords who fulfil their obligations.
- **An energy efficiency quality standard for homeowners** (owner-occupiers) should be applied as a core component of advice and guidance, and used to underpin other energy efficiency policy making in Scotland, such as grants and loans for energy efficiency.
- **The proposal to require new home buyers to fit a heat pump within two years of a home purchase is really important**, as the heat pump market is developing too slowly in Scotland to achieve our decarbonisation targets, and other proposed regulations will only take effect after many more years. We think this proposal is workable, and will mainly take effect through (relatively small) relative changes to property values, provided that there are appropriate plans for monitoring, enforcement, and exemptions. We have made detailed suggestions.
- While Nesta strongly supports the important role of regulation in rapidly scaling a clean heating industry in Scotland, **regulations cannot be delivered in isolation**. The next section provides more detail on the other steps that need to be taken to support the decarbonisation of homes in Scotland.
- The **Heat in Buildings Bill should be brought forward as soon as possible**, and should be completed by the end of this Scottish Parliament. The sooner that detailed plans are presented and finalised, the more time this leaves for householders and the various relevant industries to prepare and steadily readjust their ways of working.

Wider action

The proposed regulations for the Heat In Buildings Bill cannot be delivered in isolation, and need to continue to be combined with a wider range of policy actions and support mechanisms that will support the rapid scaling up of clean heating in Scotland.

The Scottish Government should:

- Maintain grants and subsidised loan support through Home Energy Scotland in the near term, to help grow the heat pump installation industry. Over time they should

become more focussed in their application, to those who need the additional support.

- Continue to develop and scale up the network of advice services available in Scotland, building on Home Energy Scotland, and considering proposals for One Stop Shops¹.
- Complete work to reform the EPC system in Scotland, and incorporate clean heating and energy efficiency policy changes in the planned update of the Scottish Home Report.
- Deliver plans for a boosted public engagement strategy. Nesta's development of a Visit a Heat Pump scheme², and our getaheatpump.org.uk website are further examples of activities being undertaken to increase public awareness and understanding of heat pumps as a clean heating solution.
- Supporting a rapid increase in the number of skilled heat pump installers, by focussing on supporting existing gas boiler installers to upskill.
- Complete the simplification of planning requirements for heat pumps, granting them permitted development rights.

A wide range of action is also required from the UK Government in crucial areas that will also take effect in Scotland. The UK Government should:

- Implement effectively the Clean Heat Market Mechanism that will require gas boiler manufacturers to sell a steadily increasing number of heat pumps or face fines.
- Take action to narrow the gap between electricity and gas prices. Electricity in the UK remains significantly more expensive than gas (a ratio around 4:1), disadvantaging heat pumps despite their much better efficiency. This should include removing or rebalancing levies from electricity bills.
- Make a decision on the future of the gas network, signalling that hydrogen, which would be an expensive heating fuel, will play no role in heating homes with individual boilers. This direction of travel is reinforced by the cancelling of the second UK Government hydrogen pilot in Redcar.
- Implement the previously proposed ban on buying new gas boilers from 2035 onwards.

Who we are

At Nesta, we design, test and scale new solutions to society's biggest problems to change millions of lives for the better.

¹ E.g. from the Existing Homes Alliance's customer journeys report: <https://existinghomesalliancescotland.co.uk/wp-content/uploads/2023/01/Custom-Journeys-to-Net-Zero-Homes-research-summary-and-recommendations-Nov-2022-Final.pdf>

² <https://app.visitaheatpump.com/>

We are working towards a Scotland where everyone has a fair start and can lead a healthy life into a sustainable future we can all share in.

Our efforts are focused on three core 'missions', including our *Sustainable Future* mission which will help people to get greener, cleaner heating in their homes as we move towards net zero.

To achieve this mission, we draw a range of in-house expertise and capabilities from designers and engineers to behavioural scientists and data scientists, as well as sector experts.

The change we are looking to make can't be achieved in isolation, which is why we work in partnership to accomplish our goals. We collaborate with government, local authorities, businesses and industry, as well as researchers and academics, to understand the issues and develop effective solutions.

An overview of current and recent projects that we've been working on, in relation to decarbonising the UK's heating, can be found at

<https://www.nesta.org.uk/sustainable-future/>

Nesta is a supporter of the work of the Existing Homes Alliance Scotland.

Question on Chapter 2: Heat in Buildings Standard

Q1. To what extent do you support our proposal to prohibit the use of polluting heating systems in all buildings after 2045?

A: Strongly support

Additional Comments:

We strongly support this proposal.

Prohibiting the use of polluting heating systems in 2045 is consistent with the net zero 2045 target legislated for in the Climate Change (Scotland) Act 2009. This target leaves only minimal space for greenhouse gas emissions - a small amount can be offset (netted-off) by natural and engineered CO₂ removals, from e.g. tree planting and DACCS (Direct Air Carbon Capture and Storage). The Scottish Government could allow some of the emissions headroom from removals to cover a small amount of ongoing emissions from heat in buildings. However, this would shift the burden of decarbonising onto sectors

which are harder to decarbonise, such as aviation or agriculture. In our view it would be prudent to have an outright ban on the use of polluting heating systems from 2045. This will minimise confusion for households, and ensure that the limited capacity provided by removals is prioritised for the sectors which need it most."

In addition to playing a vital role in ending Scotland's contribution to climate change, the electrification of home heating will increase Scotland and the UK's energy independence. It will reduce the UK's reliance on imported gas for heating, reduce our exposure to volatile international fossil fuel markets, and maximise the usage value of remaining North Sea oil and gas reserves that can be used within remaining carbon budgets.

The electrification of Scotland's home heating systems is a nation-wide infrastructure investment project that will need to be delivered rapidly to meet the demands of Scotland's climate change targets. This will require skilled tradespeople to undertake work in homes across the country, as heat pumps are installed and energy efficiency improved. Upskilling and re-deploying an existing local workforce from gas boiler installation to heat pumps, ensures significant economic and social benefits are retained within the local economy, as most of the cost of a heat pump installation is spent on the labour costs of installation.

The 2045 prohibition on polluting heat systems is necessary, but on its own will be insufficient to boost confidence in supply chain investment in the near term. Other action will be required to ensure a gradual ramping of clean heat installations to enable industries - and the workforce - to sustainably scale up. This should include other regulations that take effect in the nearer future, alongside other support, incentives and advice.

There are some challenges around the Scottish Government's proposed approach of having a single, simple Heat in Buildings Standard that applies both for this proposed 2045 regulation, but is also used in other proposed applications during the late 2020s and early 2030s (the proposals for a point-of-purchase trigger, a heat network zoning trigger, and the exemption for the owner-occupier energy efficiency standard). The clean heat market, and market for heat pump installations should look different in the 2040s compared to now. However, we think these can be overcome by using a set of exemptions (see question 21) that are applied only to the other regulations, leaving a clean heat standard that can be designed, narrowly and strictly, around a tight definition of clean heating that is consistent with net-zero in 2045.

'Main heating system' and biomass

For the application of this 2045 regulation, we think the current definition of 'main heating system' used in EPCs needs to be narrowed. In 2045 there will not be room in our carbon budget for electric/fossil-fuel hybrid heating systems. However, hybrid heating systems could have some use in the interim, and we discuss our view on this further in response to question 9.

In 2045, our view is that biomass heating should only be permitted where it is the minor component of a hybrid electric/biomass heating system. Similarly, the only sort of hybrid individual building heating systems permitted should be those using biomass as a backup - i.e. electric/biomass hybrids should be permitted, but electric/fossil fuel should not. This is to allow for wood stoves (for example) to continue to be present in rural areas, where they can be used as emergency back-up heating in the event of power cuts for example.

Gas cookers

We think that gas cookers should be included in the prohibition for 2045, subject to devolved competencies, so that unnecessary costs in maintaining the gas grid for purely this reason are avoided. This would provide a clear message to consumers and industry that they should not expect the gas network to be available for cooking devices in 2045, and to plan accordingly. There is growing evidence that gas hobs contribute to poor indoor air quality through the emission of pollutants like nitrogen dioxide. Gas cookers should not be included in earlier trigger points (e.g. point of purchase).

Q2. To what extent do you agree that we should introduce a minimum energy efficiency standard to be met by private sector landlords by the end of 2028 (even if they are already using clean heating)?

A: Strongly support.

Additional Comments:

We strongly support the introduction of minimum energy efficiency standards in the private rented sector (PRS), including when the property has clean heating installed.

The most recent Scottish Housing Condition Survey showed that properties in the PRS were more likely to have an EPC rating of E or lower (19%) compared to both socially rented (4%) and owner occupied (14%)³. Relatedly, the Scottish Government's own fuel poverty strategy highlighted that fuel poor households were more likely to be found in the rented sectors⁴. Addressing both of these issues will require regulation of the energy efficiency in the PRS. To this end we strongly support this proposed regulation,

This proposal does not come as a surprise, with detailed minimum energy efficiency standards for the Private Rented Sector having been proposed by the Scottish

³ Scottish Government (2024) *Scottish Housing Condition Survey 2022 Key Findings*.

<https://www.gov.scot/collections/scottish-house-condition-survey/>

⁴ Scottish Government (2021). *Tackling Fuel Poverty in Scotland, A Strategic Approach*.

<https://www.gov.scot/publications/tackling-fuel-poverty-scotland-strategic-approach/>

Government since at least 2017⁵, and having been discussed for setting at an equivalent level to this proposal since 2021 in the Heat in Buildings Strategy. Landlords have had a long time therefore to prepare for these standards. While in the meantime, tenants have suffered from higher energy bills and colder homes. Nevertheless, the detailed rules and regulations should be finalised as soon as possible, in order that the industry has the maximum amount of time to prepare. Work by the Resolution Foundation has shown that the PRS sector in England was able to respond rapidly to the implementation of minimum energy efficiency standards in England⁶.

Similar regulations (Energy Efficiency Standards for Social Housing) were introduced for the social rented sector in 2014 and since then have seen positive improvements in the energy efficiency of these properties. Homes in the social housing sector are now much more likely to have a good level of energy efficiency, compared to those in the owner occupied or private rented sector⁷. However, the PRS faces unique challenges regarding incentive and enforcement to drive improvements of the energy efficiency of these properties.

Research by Citizens Advice Scotland⁸ found that there were several barriers discouraging landlords from completing energy efficiency retrofit in their properties. Primarily these barriers fell into two broad categories:

- Cost - landlords considered the initial cost of installing energy efficiency measures to be too high accompanied by a slow and small return on investment.
- Lack of clarity - landlords perceived there to be a lack of clear and useful information about financial support available to the sector.

On the issue of cost, there is a split incentive for the landlord investing in the energy efficiency of the property. The landlord does not necessarily directly benefit from their investment, since it is the tenant who is experiencing and benefitting from cheaper energy bills. This split incentive can only be addressed through regulation.

Although it may be proposed that a landlord investing in their property could increase the rent as a reflection of that investment, we know that private rents in Scotland have

⁵ Scottish Government (2017) *Private rented housing energy efficiency and condition standards: consultation*.

<https://www.gov.scot/publications/energy-efficiency-condition-standards-private-rented-housing-scotland-energy-efficiency/>

⁶ Resolution Foundation (2022) *Hitting a brick wall: How the UK can upgrade its housing stock to reduce energy bills and cut carbon*.

<https://economy2030.resolutionfoundation.org/wp-content/uploads/2022/12/Hitting-a-brick-wall-report.pdf>

⁷ Scottish Government (2024) *Scottish House Condition Survey 2022 Key Findings*.

<https://www.gov.scot/collections/scottish-house-condition-survey/>

⁸ Rice and Haigh (2021). *Identifying Opportunities and Barriers to Energy Efficiency in the Private rented Housing Sector*. Citizens Advice Scotland.

https://www.cas.org.uk/system/files/publications/cas_private_rented_sector_energy_report.pdf

increased substantially (a cumulative 51.9% since 2010⁹) which continues to cause significant issues regarding the affordability of the sector and availability of suitable homes. In respect of this, the Scottish Government must take a cross policy approach to this to limit any unintended consequences. This could potentially be done through ensuring that energy efficiency is factored into forthcoming rent control legislation which may provide a useful framework to incentivise investment in energy efficiency in exchange for financial return, however within reasonable limits. As noted by CAS, this regulation must, at a minimum, guarantee that there are no rent increases above the cost of the energy efficiency measure per month, over the lifetime of the measure. No improvements that are funded by public grants should result in rent increases for tenants.

On the issue of clarity and information, It is essential that the legislation and accompanying guidance on energy efficiency measures is published as early as possible to ensure landlords have sufficient time to prepare for compliance. Whichever form this takes, it must be designed and produced in partnership with landlords to foster a collaborative approach to tackling these issues. This should involve working with partners such as the Scottish Association of Landlords and the Scottish Land and Estates.

Tenants should also be made aware of these new standards, so that they understand why improvement works may need to take place. The exact form of this information campaign should be designed in partnership with tenants through groups such as Scotland's tenants union, Living Rent and other tenant feedback mechanisms. Tenants should be able to make use of the First Tier Tribunal to raise issues.

We support the use of civil penalties as an enforcement mechanism. See questions 19 and 20 for a full response to this issue.

Generous subsidised loans are currently available to landlords through Home Energy Scotland, interest free to landlords that have less than five properties in a portfolio, and providing up to £15,000 in support for energy efficiency measures, as well as additional funding for heat pumps. This is currently a significant incentive for landlords who seek to comply early with the proposed regulations.

Legislation should allow for a tightening of the requirement in future. There must be a clear message for landlords that there will be regulatory stability until the mid 2030s, putting their focus on the energy efficiency requirements for 2028, and the clean heat triggers that could affect them from elsewhere in the consultation. Nevertheless, in order to future-proof these regulations, there should be the capability for Scottish Ministers to introduce secondary legislation that would ramp-up how efficiency standards apply in the PRS. This is because the split-incentive issue will remain, even as the sector decarbonises its heat supply. This measure could, for example, be used in the 2030s to regulate the efficiency or performance of clean heating systems, to minimise energy bills for tenants in the sector.

⁹ Scottish Government (2023) *Private Sector Rent Statistics, Scotland, 2010-2023*. Available at: <https://www.gov.scot/publications/private-sector-rent-statistics-scotland-2010-to-2023/>

Q3. To what extent do you agree that we should introduce a minimum energy efficiency standard to be met in owner occupied homes (which still have a polluting heating system) by the end of 2033?

A: Somewhat Support.

Additional Comments:

The main rationale for the introduction of this regulation is that it will help provide short-term carbon emission reductions between now and 2033, helping to meet Scotland's interim climate change emission targets. While the regulation will do this, the CCC's Sixth Carbon Budget suggests that low-carbon heating will account for 13 times more carbon savings in Scotland by 2050 than insulation¹⁰.

Nesta's broad perspective on the role of energy efficiency in decarbonisation of home heating and supporting the electrification of heating is set out in our report here - [Insulation impact: how much do UK houses really need? | Nesta](#)¹¹

Key points in the report include:

- **Heat pumps can be installed and work efficiently in less well-insulated homes.** It is often claimed that homes need to be well insulated to have a heat pump, but this is largely untrue. While better insulation is always beneficial with any kind of heating system, it is not an essential prerequisite for getting a heat pump.
- The key factors affecting a heat pump's efficiency are system design and adequately-sized radiators. **While insulation plays an important role in reducing heat demand, and can in some cases make heat pumps operate more efficiently, it is not the key factor in heat pump efficiency.** Instead, having a well-designed heating system, with correctly-sized heat emitters which enable a lower flow temperature, is the most important factor behind a heat pump's efficiency.
- Some insulation measures, such as draught proofing, loft and cavity wall insulation tend to have lower costs and offer excellent value for money. Other measures, especially solid wall insulation, are often more expensive and do not always justify their cost.
- The **rollout of improved insulation should happen alongside a clean heating rollout**, and households should not be discouraged from buying a heat pump if their home is poorly insulated.

In our view, it is better to treat this proposed energy efficiency standard as a core

¹⁰ In the Climate Change Committee's Sixth Carbon Budget, the Balanced Pathway shows residential fabric efficiency contributing 0.29MtCO₂e reductions in carbon emissions by 2050, compared to 3.93MtCO₂e of carbon emission reductions from low-carbon heat. Analysis using figures from the Sixth Carbon Budget Dataset (v2, 2021)

<https://www.theccc.org.uk/publication/sixth-carbon-budget/#supporting-information-charts-and-data>

¹¹ Nesta (2024), Insulation impact: how much do UK houses really need?

<https://www.nesta.org.uk/report/insulation-impact-how-much-do-uk-houses-really-need/>

component of advice and guidance to home owners, and to underpin other energy efficiency policy making in Scotland (such as grants and loans for energy efficiency). This would put this proposal more into a category of being a legislated standard for good quality retrofit - 'the Scottish home energy efficiency quality standard' or similar.

Assessment of success should be based on uptake (i.e. how many homes achieve it in the runup to 2033, ahead of the 'deadline'), whether the standard achieves a premium in the housing market, whether it is used by retrofit coordinators and others in the business of promoting energy efficiency measures to consumers. It should however be recognised that there are some situations where homeowners may wish to go beyond this set of energy efficiency measures, and achieve an even better standard of energy efficiency. In some circumstances, this may be a recommended approach (for example, some fuel poor homes should benefit from grants to enable solid-wall insulation, and go beyond the minimum standard created by this legislation).

This positions the standard as an equivalent to 'renewable heat ready' standards that have been developed in the Netherlands and in parts of the US. Consideration should be given to including low flow-temperature design within the standard.

Our proposed use of this as a legislation-based quality standard (rather than a regulation) also implies that there should be a different approach to compliance and enforcement compared to in the PRS and for the point-of sale regulation (See response to Question 18 and 19). The emphasis should be on making sure there is a clear process to determine which buildings have met the standard and which have not, and providing this in accessible format to homeowners and buyers. This should integrate with planned reforms to the EPC system in Scotland, and to the Scottish Home Report.

Given some of the different emphasis in purpose, rationale and enforcement, we do have some concerns about using the exact same standard for both the PRS and the owner-occupier sector. On balance, we think it is a workable solution for 2028 and 2033, allowing the Scottish Government to focus on a single set of messaging about how the standard can be achieved. However, there is scope to consider applying different standards - differentiation already occurs on the basis of tenancy/ownership for the social-rented sector, even though individual buildings will move between types of tenancy/ownership.

We agree that the standard should also be applied to short-term lets and to empty homes.

Q4. 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?

A: Somewhat Support

Additional Comments:

Our view is that the emphasis should be on a readily accessible means of the homeowner, renter or a potential buyer or tenant being able to identify whether a home meets the good energy efficiency standard or not. This ready-identification of compliance (or not) is also critical to the process of enforcement for the private rented sector, and is an effective way of ensuring that the energy efficiency standard is used correctly in the owner-occupier sector.

The mechanism and infrastructure provided by a reformed EPC system is the most practical way of providing this - a publicly accessible database, a common format, an emphasis on trying to achieve a clear and understandable consumer-friendly approach, and carried out by a professional third party. Our view is that a reformed EPC should clearly mark whether a home achieves the minimum energy efficiency standard or not, so that homeowners and tenants can clearly see whether a home meets the standard or not. There should be the equivalent of a 'large stamp of energy efficiency approval' and potentially some sort of logo that can be used to mark publicly-facing homes that have achieved the good energy efficiency standard.

This is dependent on the Scottish Government rapidly progressing the reformed EPC approach in Scotland¹², and rolling out the advice and guidance that will go with this to the retrofit assessor industry.

All homes in the PRS should have an EPC (except a very small number of cases, where there has been a very long tenancy, and in these cases it is reasonable to expect the landlord to get an updated EPC). It is also the case that accessing the existing grant and loan schemes for energy efficiency improvements requires holding an updated EPC. Moving forward, financial support should be available on targeted criteria for lower income households to meet EPC assessment costs, e.g. as part of HES grants and support.

In summary, we expect the first way that homeowners, tenants, and local government (who we expect to have a role in PRS enforcement) would check for compliance of a property is through examining a property's reformed EPC.

Role of 'straightforward list of measures'

We have some concerns, particularly in the case of the PRS, about the level of administrative burden (for both building owner and for the local authority or other compliance organisation) that might be created by allowing landlords to demonstrate compliance with the standard through, for example, showing evidence and receipts for each of the listed measures (as suggested in para 2.29 of the consultation document). The expectation, in our view, should therefore be that the list of measures is largely used to provide some flexibility for atypical and more complex-to-decarbonise homes (such as

¹² Following on from the consultation in October 2023

<https://consult.gov.scot/energy-and-climate-change-directorate/energy-performance-certificate-reform-consultation/>

old, pre-1919 solid wall properties, and for tenements).

The consultation implies that the list of measures approach is largely for the benefit of building owners, but in practice we expect it to be directly used as much by EPC assessors and professionals carrying out retrofit works. The inevitable requirements for clarifications about implementation in specific circumstances, is likely to mean that there will need to be complex guidance to go alongside the 'straightforward list of measures'. This therefore reduces some of the benefit of having the list of measures approach available in the first place.

Role of 120kWh/m²/year space heating standard

We expect the majority of homes to use the 120kWh/m²/year standard for the purposes of demonstrating compliance, because it will be easier to automatically identify this measure through the presentation of a reformed EPC certificate. Our assumption is that this space heating demand will continue to use a modelled heat demand based on the next iterations of the SAP methodology (i.e. SAP 11/Home Energy Model).

We note comments from Existing Homes Alliance that whilst the list of measures sets two standards for homes to meet, depending on the type of wall (those with cavities must insulate these, whereas solid wall homes do not), the 120kWh/m²/year applies to all homes, regardless of wall type. The 120kWh/m²/year appears to be an appropriate target for solid wall homes that are not required to fit wall insulation, but it is easy to meet for newer homes with cavity walls. It's not clear to us whether this is the Scottish Government's policy intention. In general, Nesta supports the intention of not *requiring* solid wall insulation, which can be expensive and have long payback periods. However, it's not clear to us from the Scottish Government's proposals and the available data, how the two potential routes to meeting the standard will interplay, and what this will mean for different home types. The data shows that the two standards are not aligned. Whilst we shouldn't assume that homeowners will choose the weaker (path of least resistance) of the two standards, this is clearly a risk, particularly in the case of PRS landlords. Our general sense is that the space heating demand metric should be the tighter of the two standards, since it will be a first route for most homeowners to consider, on the basis of their EPC. This suggests that a tighter space heating demand should be considered, with the list of measures providing flexibility for homes (e.g. stone built properties) that will find the 120kWh/m²/year level challenging to meet.

To support consideration of the right level to set a space heating demand threshold for the standard, Nesta analysed Scottish EPCs for the period Aug 2013 to December 2023. It should be noted that the following figures apply only to Scottish homes with a recent EPC, rather than the whole of the Scottish buildings stock. We are unaware of how/whether methodological changes to the calculation of estimated space heating demand would change these figures, under the Scottish Government's proposals:

- The mean space heating demand for an existing dwelling with an EPC is 121 kWh/m²/year. 45% of existing homes in current Scottish EPCs exceed 120 kWh/m²/year, and would need to undertake energy efficiency measures to meet

the standard. This emphasises that a very many homes in Scotland already meet the proposed energy efficiency standard, and would not need to undertake upgrades if the level is set at 120kWh/m²/year.

- More specifically for current private rented sector properties with an EPC, 46% (or just under 71,000 properties) currently exceed 120kWh/m²/year, and would need to make efficiency improvements to meet the standard.
- For both cavity walls types and solid-stone walled properties, insulation currently allows these home types to achieve a 120kWh/m²/year level. This is shown in the following two figures:

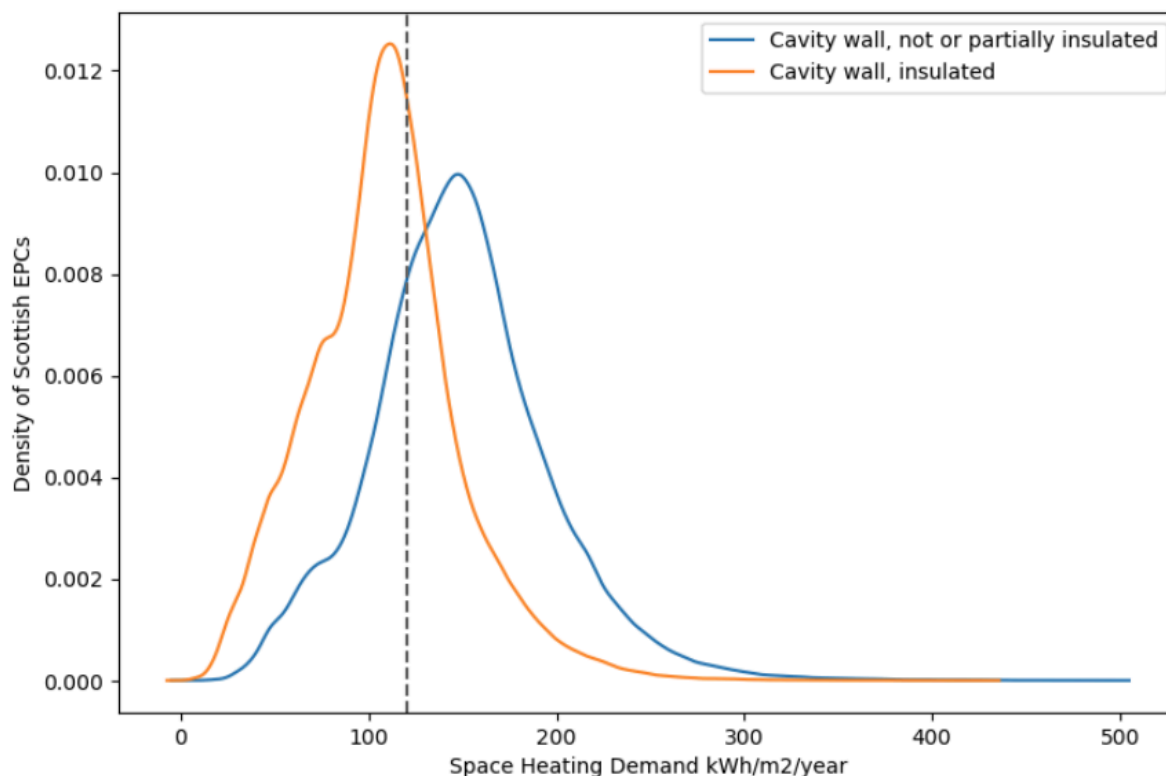


Figure 1: Space heating demand in Scottish EPC dwellings with cavity walls.

- 74% of uninsulated and partially insulated dwellings (with a current EPC) exceed 120 kWh/m²/year, while 36% of dwellings (with a current EPC) with insulated cavity walls do.

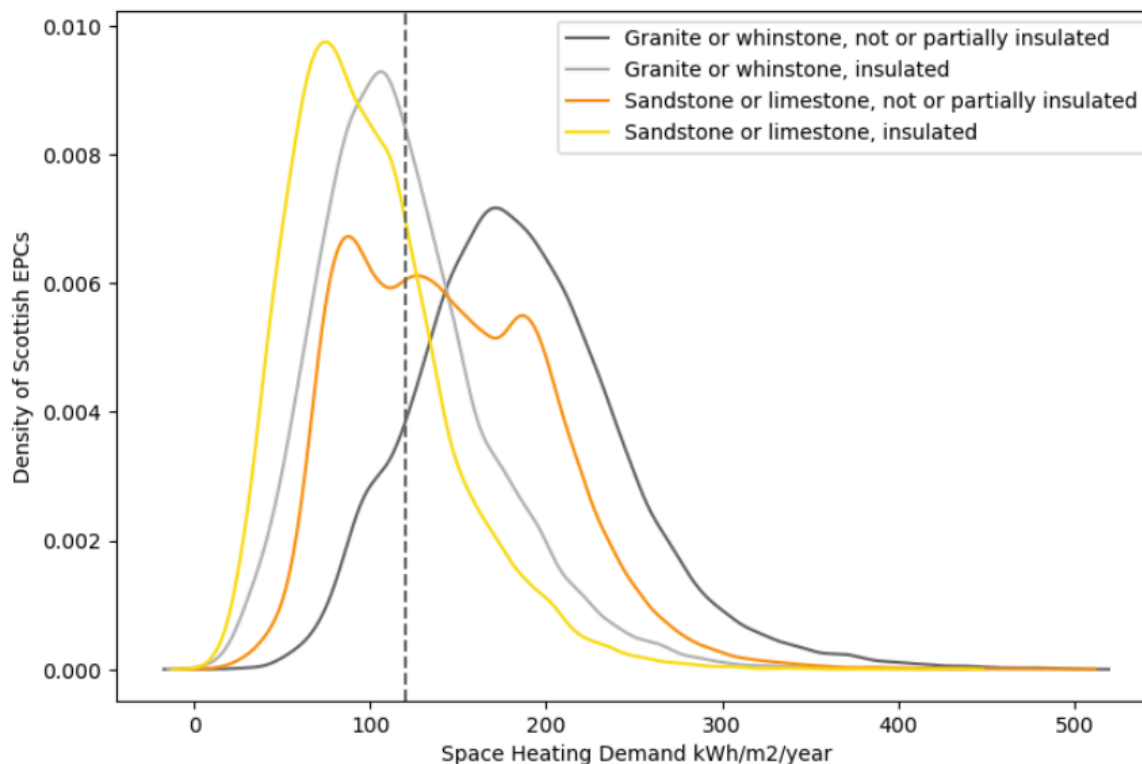


Figure 2: Space heating demand in Scottish EPC dwellings with granite or whinstone, or sandstone or limestone walls.

- Granite and whinstone walled buildings with current EPCs currently meet the 120kWh/m2/year figure in much smaller numbers, with 87% of properties with no or only partial insulation exceeding 120 kWh/m2/year, and 44% with insulation exceeding that value. Sandstone and limestone buildings fare slightly better, with 63% of properties with no or only partial insulation exceeding 120 kWh/m2/year, and 28% with insulation exceeding that value.
- Next, we examined properties by age:

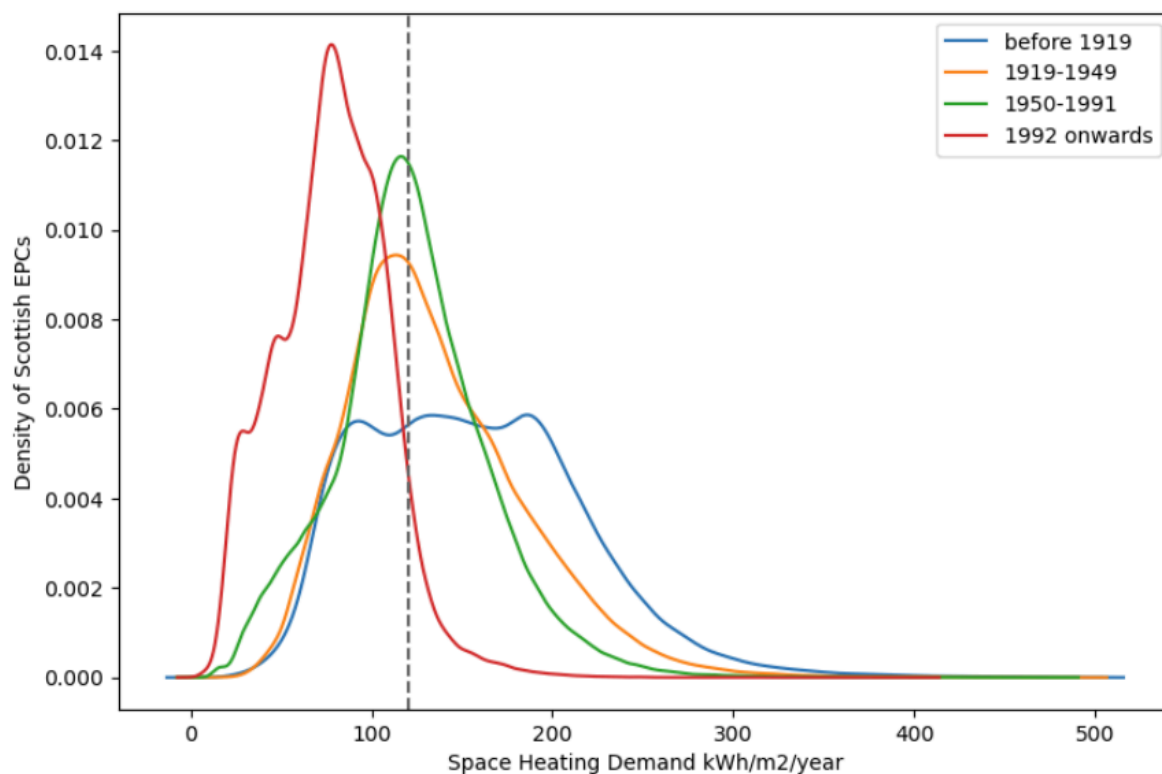


Figure 3: Space heating demand in Scottish EPC dwellings by broad construction age bands.

- This highlights that pre-1919 homes (with a current EPC) have particularly high space heating demands, and will require work in the largest numbers to meet the 120kWh/m²/year figure. Conversely, only 7% of homes built after 1992 would need to undertake works to meet the standard.
- Lastly, we examined differences between houses and flats:

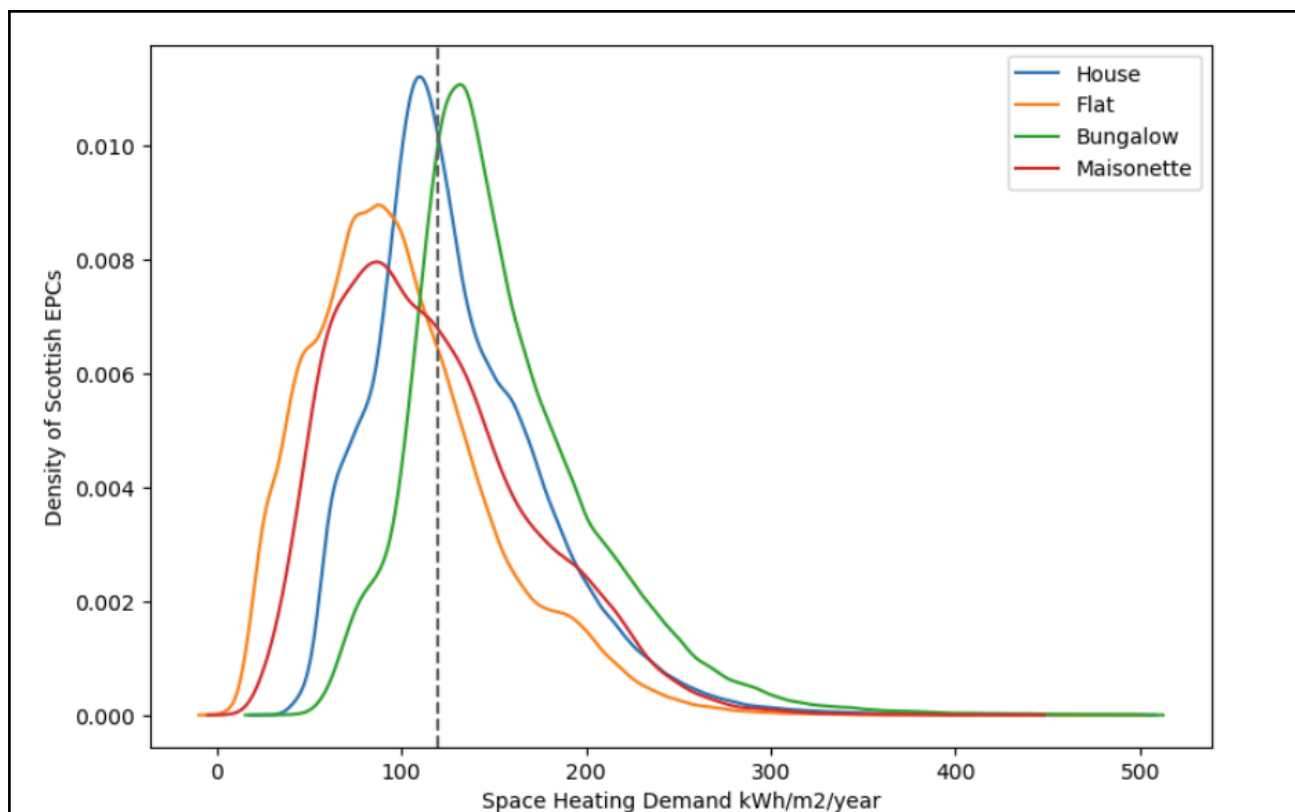


Figure 4: Space heating demand in Scottish EPC dwellings by property type.

- This shows that most flats (with a current EPC) would not need work to meet the 120kWh/m2/year standard - only 29% of flats exceed the standard. Conversely, 77% of bungalows (with a current EPC) exceed the standard, and would need work.

Q5:What is your view on the initial proposed list of measures to meet the minimum energy efficiency standard?

A:Somewhat support

Additional Comments:

We're broadly supportive of the list of measures proposed. For most homes, installing the proposed 'list of measures', where feasible, should be achievable and affordable.

In our view, the list of measures should be a secondary route for compliance, allowing reformed EPCs some flexibility to respond to some more complex homes, and allow them to demonstrate a good standard of energy efficiency, where the minimum level of fabric efficiency target is difficult to meet or complex to model. It's important to ensure that this list doesn't become a 'recommended' list of measures that is generally applicable, across all property types. Homeowners should be encouraged to use the reformed EPC and advisory schemes (like Home Energy Scotland) to identify the right energy efficiency

measures for their home.

We note a general concern that the list is less applicable to solid wall properties. Given that these are the types of properties that are more likely to find it difficult to reach a minimum standard measured in kWh/m²/year, this should rather be the other way around. More consideration of the approach for solid wall properties (particularly pre-1919) should be given, and there should potentially be another list of measures for these properties, as part of a segmented approach.

Q6: Do you think that properties for which most or all of the measures on the initial proposed list are not relevant should be required to meet an equivalent minimum energy efficiency standard?

A: <blank>

- a.** No – these properties should be considered compliant once they have installed all the measures that are appropriate for their building type, even if this is few or no measures.
- b.** Yes – they should be required to meet the standard and additional measures should be included on the list (such as solid wall insulation, solid floor insulation and flat roof insulation), and they should be required to install all of these where feasible.
- c.** Yes – they should be required to meet the standard and additional measures should be included on the list (such as solid wall insulation, solid floor insulation and flat roof insulation), but they should only be required to install some of these where feasible and cost effective.
- d.** Yes – they should be required to meet the standard and additional measures should be included on the list (such as solid wall insulation, solid floor insulation and flat roof insulation), but they should only be required to install some of these where feasible, and they should be allowed additional time to do so.

Additional Comments:

We don't support any of the question answer options provided here.

As set out in response to Question 4, the main approach to the standard should be based on using reformed EPCs to identify whether homes meet a sufficient energy standard or not. This gives flexibility to most homes to find the right combination of measures to meet the standard.

Q7: Do you think that an alternative approach to setting the minimum energy efficiency standard is required?

A: Yes

Additional Comments:

As discussed in our response to question 4, our view is that the approach to the minimum energy efficiency standard should focus on the reformed EPC. This provides the best route to rapid understanding for building owners and those responsible for compliance about whether a specific home has met the standard or not. The reformed EPC also allows for greater reflection of the specific circumstances of individual buildings.

Q8 Do you agree that the use of bioenergy should continue to be permitted in certain circumstances?

B) Yes, it should be permitted for those buildings already using it

C) Yes, it should be permitted for those buildings who have no other clean heating system available.

Our firm view is that bioenergy should not be used in the longer-term to heat homes. Sustainable biomass will be a limited resource for Scotland in 2045, and other end uses should take priority over heat. We expect that the demand for biomass in 2045 (and beyond) will make it a relatively expensive fuel source; this underscores the case against using it to heat homes.

The proposed regulation needs to send a clear signal to the public about the state of home heating in 2045. Electrification will be the default, supplemented by some waste (or other) heat distributed via networks. Ideally this regulation would make it clear that bioenergy will not be a permitted option.

However, we cannot preclude the possibility that there will be a small number of homes where there is no viable route to electrical or district heating by 2045. Potentially those in small island communities or in remote rural areas. As such, we would support exemptions for biomass in buildings which genuinely have no other route to Zero Direct Emission heating - ZDEH (Option C).

Our support for this option is contingent on the Scottish Government proving the case that these properties do exist, and in sufficient numbers to warrant an explicit exemption. The definition of an exempt home would need to be drawn narrowly. We expect that the most likely reason a home would not be able to install an alternative clean heat system is because of limited capacity in local electricity infrastructure. As grids continue to be expanded over time (past 2045) we anticipate that this limitation will diminish, and so the exemption may need to be revisited and tightened.

We also take the view that:

- any prohibition **should not** extend to the use of biomass as a fuel for heat networks. For the purposes of the Heat in Buildings Bill, district heating systems should be treated as ZDEH. The carbon emissions and sustainability of district heating systems should be dealt with under the licensing aspects of the Heat Networks (Scotland) Act 2021.
- there **should** be an ongoing exemption for homes to use biomass as the minor part

of a hybrid system.

- for the proposed 2033 owner-occupier MEES biomass systems (as the main heating systems) **should not** be classified as ZDEH.
 - Similarly, biomass heating **should not** generally be considered to meet the ZDEH standard for the point of purchase trigger or the local authority heat network zone trigger. Homes with existing biomass heating systems could be allowed more time (Option B) (see question 23).
-

Questions on Chapter 3 : Property Purchases

Q9: To what extent do you support the requirement to end the use of polluting heating following a property purchase?

A: Strongly Support

Additional Comments:

We strongly support this proposal.

The adoption of heat pumps is growing too slowly to either achieve zero emission heating by 2045 or meet the challenging interim climate targets in Scotland. The current reliance on subsidies and incentives is insufficient to deliver the market growth that is required.

Nesta analysis (forthcoming) of boiler age profiles suggests that a policy which relies solely on switching to ZDEH at the point-of-boiler replacement would also be insufficient. Our analysis shows that the real-world boiler lifetimes are often much longer than the 15 year boiler lifetime assumed in decarbonisation pathways. Without action, we would expect that some of the boilers installed in 2030 will be operational beyond 2045. Furthermore, the majority of boiler replacements are distress purchases. Given that there is a degree of complexity involved in any property when switching to a different type of heating system, this cannot be the only regulatory trigger point.

Multiple interventions are required to achieve the necessary pace of change, and to offer additional confidence needed for industry and supply chain to scale. On this basis, additional regulation from the Scottish Government is appropriate.

Point of purchase is a suitable trigger for regulation for clean heat for several reasons:

- **Reduced disruption.** A heat pump installation can be disruptive. There is more opportunity for this to take place while the property is unoccupied and free of furniture at the point of purchase, compared to during normal occupation.
- **Combination with other renovations.** Many home buyers take the opportunity to refurbish their home or make significant improvements (e.g. new bathroom, kitchen) at point of purchase. Combining these with a heat pump installation could reduce labour costs (e.g. if plumbers and electricians are already on site) and minimises disruption to the occupant.
- **Increased access to finance.** Home purchasers can use their mortgage borrowing to finance the upfront costs of improving their heating system.
- **Access to guidance/professionals.** During home purchases, multiple housing industry professionals will be engaging with the homebuyer, this provides multiple

opportunities for advice and support, and to guide the individual to reputable sources of further support and information. It also means that surveyors, for example, will be able to use their professional expertise to consider heat pump installation costs and factor that into home valuations. It also creates an opportunity for the development of a new market for professional services that integrate the process of home decarbonisation into the professionalised conveyancing process.

- Regulation at point of purchase should drive **a greater reflection of clean heating in home values**. There is some evidence¹³ that an air source heat pump may already increase the value of a home, but regulation at point of purchase would strengthen this. This would bring a clear material benefit for home sellers who had invested in decarbonising their home heating, enabling them to recoup some of their investment. Even those not immediately selling their home would have a better investment case for purchasing a heat pump, and potentially access to finance, if they expected it to increase the value of their home.
- **Straightforward monitoring and enforcement**. Because EPCs are already required for a home sale in Scotland, and all home sales must be recorded with Registers of Scotland, monitoring and enforcement at point of purchase is more straightforward than it would be for other potential trigger points.

Our overall expectation would be that relative home prices will adjust to benefit homes that already meet the clean heat standard, to reduce proportionately in reflection of the variable costs of different home types that would need to fit a heat pump, and to remain relatively stable for homes that are exempt from the standard. The majority of heat pump installations will cost between £10,000 and £15,000, although there is a great deal of variance in this¹⁴, before grants and subsidies are made use of. These figures help contextualise the amount of relative house price change that we could expect to see.

We are sceptical that there could be significant overall changes to house prices in Scotland driven by this regulation, as the overall supply and demand of homes in Scotland won't change. The multitude of other factors that influence home prices - location, size, macroeconomic factors, and so on - will continue to be the main determinants of price and valuation, and (along with new home building rates) should continue to shape overall house prices in Scotland. In our view, an optimal approach would involve the independent valuation for Scottish Home Reports taking into account whether a home for sale would need to meet the Standard, and estimated costs for doing so. This would give greatest transparency to all actors involved in the purchase and sale, and further reduce the unlikely risk of this regulation destabilising the overall housing market.

We share the view of the Existing Homes Alliance, that the regulation should be introduced as soon as possible. This should be balanced with providing a sufficient

¹³ From research by WWF and Scottish Power

<https://www.scottishpower.co.uk/blog/low-carbon-homes>

¹⁴ https://media.nesta.org.uk/documents/How_to_reduce_the_cost_of_heat_pumps_v4_1.pdf

advance notice to the market, so that the housing market adjustment that it should provoke (although limited) happens gradually, without a shock and with time for the various professionals involved in the market time to upskill and increase knowledge and systems in relation to clean heating. An implementation date between 2028 and 2030 could provide the appropriate balance.

Q10. 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?

A) Yes - the grace period should be two years

Additional Comments:

A grace period to allow time for the installation of clean heating, and associated other building fabric work (other installations such as heat emitters, hot water cylinder, energy efficiency measures) is pragmatic, but the length of time should be minimised. As stated in response to question 9, most of the benefits of the point of purchase regulation (access to finance, minimised disruption, linking to other post-purchase redecoration or renovation works, ease of enforcement) arise from the regulation being linked as closely as possible to the point of property transfer. With any grace period more than 2 years, these benefits fade away rapidly. In addition, a long grace period will only delay action to increase the pace of clean heat installations - e.g. a five year grace period from 2030, would not guarantee any additional installations for the clean heat supply chain until 2035.

Research with heat pump users by Nesta¹⁵ found that the modal length of time reported for a heat pump installation to take place in the UK is 1-2 months, from the time of agreeing to proceed with an installation. Some further time should be factored in to allow for gaining quotes, engaging with government grant schemes and so on. Some respondents to the survey did report that the installation took more than six months, and anecdotally we have heard that it can take a long time to complete a heat pump installation for a number of reasons including: delays finding available specialised contractors, seeking necessary planning permissions, getting DNO permissions, and undertaking preparatory and design works. However, most of these are currently being addressed or should become less of an issue in a scaled heat pump market. Even in current circumstances 2 years should provide ample opportunity for these delays to be overcome, provided that the installation process is commenced immediately after the point of purchase. With these issues likely to be reduced over time, a review of the grace period should be planned, with the aim of shortening it to 12 months, if that can be shown to be pragmatic.

¹⁵ https://media.nesta.org.uk/documents/Heat_pump_user_survey_report_May_2023.docx.pdf

Q11: To what extent do you support our proposal to apply a cost-cap where people are required to end their use of polluting heating following a property purchase?

A: Neither support nor oppose

Additional Comments:

In relation to point of purchase:

We can understand some rationale for the cost-cap argument in a domestic setting:

- to avoid very high cost retrofits for some properties where it is challenging to install a heat pump;
- to provide those in the housing market with a simple rule of thumb that can be used for valuations and mortgage decisions;
- and to avoid situations where financing the heat pump investment is challenging against a low value property.

In general, we share the view of the Existing Homes Alliance that the requirement for a cost-cap should be limited by targeting additional support (0% loans and continued grant support) where it is most needed to avoid disproportionate costs for some homes.

The main risk with the types of cost caps proposed is that they exempt large, expensive homes from needing to decarbonise. These more expensive homes will be bought by wealthier individuals, with more access to finance, and should be whom the government should most be seeking to leverage private investment from in order to reduce the requirement for public subsidy.

The other risk is that a cost-cap incentivises lower capital investment, higher running cost installations (e.g. electric boilers) that are not to the advantage of the homeowner. This highlights the continued importance of good advice and guidance for homeowners through existing channels, i.e. Home Energy Scotland, and for the importance of the availability of finance (i.e. through mortgages, and targeted provision of 0% subsidised government finance). We expect that private sector models (e.g. through monthly payments for the heat pump installation, heat as a service, bundling of finance for the homeowner) to largely address this risk.

In relation to minimum energy efficiency standard

We believe that the focus of the exemptions proposed allows sufficient flexibility and should avoid any home being left with disproportionate costs as a result of the proposed minimum energy efficiency standard. For example, we do not expect the proposed level of standard to *require* installation of solid-wall insulation in any properties, and the other measures are relatively low-cost, with reasonable repayment periods. We assume that grants and subsidised loans will remain in place to support homeowners in fuel poverty.

Q12: Which of the following methods of applying a cost-cap do you support?

A: None

Additional Comments:

For point of purchase regulation

We would like to propose two alternative approaches to a cost cap, that would address some of the risks present in an uncapped approach.

Firstly, an exemption for low-value home purchases. Where home values are particularly low, this removes one of the key cases for regulation at point of sale - access to finance. Homes under say £100-£150k should be exempted from the requirement, since the costs of a heat pump installation would disproportionately affect the achievable purchase price for these homes, and the buyers of these homes will have proportionally less access to finance.

Secondly, a bond alternative to the clean heat installation requirement should be considered. This would allow homeowners who felt that a clean heat installation was inappropriate in their circumstances the alternative of making a one-off payment to the government. This payment level should be slightly higher than typical heat pump installation costs, currently around £15,000. Income from the payments should be ringfenced for heat pump installations elsewhere, for example used for subsidy/grant programmes, or used to pay for heat pump installations in low-income households. It could be collected alongside LBTT. Or could be paid to the Publicly-Owned Energy Agency, in order to show it was being ringfenced for additional clean heat decarbonisation activity. The payment level would need to be kept under regular review, and could be introduced as an interim measure.

These should be considered alongside the last resort approach to cost-capping proposed by the Existing Homes Alliance - a banded cost £/m², that scales on a per kWp basis (to reflect that heat pump installations reduce in cost on a per kWp basis with size due to scale economies). The cap should be more forgiving for smaller homes, where the larger proportionate installation costs and generally lower home values makes a heat pump less likely to be cost-effective. The cap should be used to include ancillary costs such as radiators, water cylinder, pipe work and so on. We consider the main difficulty with this approach to be the complexity of identifying the cap value for each individual home. Although it is the case that m² values for internal spaces are usually provided in home reports, as part of the survey work, so the exemption value could be calculated by the independent surveyor as part of the generation of an updated Home Report for the building at point of sale.

We acknowledge that there may be different considerations for non-domestic buildings, and there may need to be a distinction in approach made for domestic and non-domestic buildings.

Q13 To what extent do you support the proposal that the Scottish Ministers should be given powers to extend the circumstances in future (beyond a property purchase) in which

people could be required to end their use of polluting heating? This could be, for example, preventing the installation of new fossil fuel boilers when replacing the heating in your home or business premises.

A: Strongly support

Additional Comments:

We strongly support enabling the use of secondary legislation to introduce further trigger points for the installation of clean heating. In particular, for boiler replacement and for major renovation.

The other regulations proposed (point of sale, 2045 backstop, and heat network zone trigger) are likely to be insufficient on their own to achieve the rates of decarbonisation of the home heating sector consistent with the Scottish Climate Change Act. Just as importantly, a wider set of incentives will be needed to support the consistent scaling up of the various supply chain industries involved in the installation of heat pumps.

Reserved-UK powers, on the Clean Heat Market Mechanism (CHMM) and on gas/electricity price ratios are also critical, but would be needed alongside and in addition to further regulation.

Planned boiler replacement

Both the current UK Government and the UK Labour Party have signalled an intent to introduce a regulation that would either end the sale of new gas boilers or forbid the replacement of gas boilers with new fossil fuel heating systems. This has been proposed to take effect from 2035. In our view this would be a powerful regulation, consistent with the rapid decarbonisation of home heating that is required. The sooner this regulation is confirmed, the longer that industry and homeowners have to prepare for it.

Given that it is uncertain how any UK legislation might be made to function, what its territorial extent might be, and how it might integrate with other legislative and non-legislative measures, we think it would be prudent for the Scottish Parliament to pass enabling powers that would enable the rapid implementation of such powers in due course, when the UK Government's plans become clearer. It is also the case that the earlier such a regulation is signalled, the longer bedding-in period there is for the industry to prepare for such a change, to develop customer offerings, and to communicate with customers about their heating decisions. This is another reason for the Scottish Government to signal their intentions in this area as early as possible, and creating enabling powers through the Heat in Buildings Bill would be an appropriate way to do so.

One valid concern that has been raised in relation to this regulation, is in relation to so-called 'distress boiler replacements', when a boiler fails and needs to be rapidly replaced. Nesta undertook a speed-testing of an interim boiler lending model¹⁶, and

¹⁶ <https://www.nesta.org.uk/interim-boilers-for-broken-heating/>

found that although there were barriers to the model being viable at present, with the backing of legislation and/or of a more advanced heat pump market, it could be attractive as a business model. We think that with sufficient advance signal of the introduction of this kind of regulation, business models would develop to offer consumers facing a sudden boiler breakdown with products and services that would ensure that they continue to have heating and hot water while a clean heating solution is found. If the Scottish Government, Ministers or MSPs are concerned about this aspect, they could fund the trialling and development of business models in this space, in the interim before regulations come into effect in the 2030s.

The Scottish Government should give consideration to how such a regulation might take earlier effect in Scotland, how it might put pressure on the next UK Government to implement such a regulation early on in its term of office (in order to maximise the advance notice to the industry), and how earlier implementation in Scotland might support the development of a domestic installer industry.

Major renovation

While the New Build Heat Standard applies to conversions involving a change in occupation or usage of the building, our understanding is that there is still a gap in some types of major renovation that require a building warrant. A trigger requiring the installation of a zero direct emission heating system, when such a renovation takes place should also be included in the Bill.

At such a time, significant disruption to the occupants and fabric of the building will be taking place anyway, and it makes sense to require the installation of clean heating in tandem with such significant changes to the property.

Questions on Chapter 4: Connecting to Heat Networks

Q14 : To what extent do you support our proposal to provide local authorities (and Scottish Ministers) with powers to require buildings within a Heat Network Zone to end their use of polluting heating systems by a given date?

A: Strongly support

Additional Comments:

We strongly support this measure. It will provide developers of heat networks with assurance that there will be demand. This reduces a key risk associated with their projects, thereby reducing their financing costs. This should make more heat networks commercially viable and reduce the requirement for government support. Ultimately this reduces costs to homeowners, landlords and tenants. To householders, particularly in more dense urban areas, flats and tenements, it provides greater likelihood that heat decarbonisation takes place cost-effectively.

This regulation also provides a framework to coordinate transitions to clean heat over wider areas. Work by Nesta has highlighted¹⁷ potential models for collective shifting to clean heating, that could be made more straightforward by the introduction of this proposal.

We believe that local authorities should have the flexibility to trigger this regulation at different times for different building types – for example, potentially requiring non-domestic or larger buildings to adopt clean heating first to ensure appropriate anchor loads for networks.

Local authorities should be encouraged to utilise this power to support licensed heat network developers who are planning to develop both 'traditional' high temperature heat networks, and those planning to develop shared ambient heat loops for ground source heat pumps ('5th generation heat networks'). We think that networked ground source heat pumps is a particularly promising model for high density housing in Scotland, particularly tenements and other dense flatted properties, and trials of this model should be supported to identify real-world costs, understand ownership/billing models, and understand interaction with the legal arrangements for tenements.

Although there is significant opportunity for making the delivery of co-ordinated clean heating easier for householders through this approach, it does require local authorities to be resourced with the capacity and capability to lead this, understand local opportunities and make the appropriate designations. This means that there should continue to be appropriate levels of funding available to local authorities so that they

¹⁷ <https://www.nesta.org.uk/data-visualisation-and-interactive/switching-streets-to-low-carbon-heat/>

can properly implement their responsibilities in this area. If, as we suggest, heat network zones have a regulatory effect, determining whether home buyers are required to implement clean heating, it's imperative that Local Heat and Energy Efficiency Strategies (LHEES) and Heat Network Zone designations are regularly updated, accurate, and detailed. They also need to be clearly communicated to the public, and it should be easy for anyone to look up whether a particular property has been designated as being in a heat network zone or not, and what stage of development that heat network zone is at.

Q15: To what extent do you support our proposal to provide powers to local authorities (or Scottish Ministers) that require developers to connect new buildings within Heat Network Zones to a heat network?

A: Strongly support

Additional Comments:

We think these powers would make more heat networks commercially viable, providing additional certainty to the developers of heat networks. Similar powers are under development by the UK Government, for application in England. These powers are a suitable augmentation to local authorities' Planning powers.

Q16: To what extent do you support our proposal to require occupiers of non-domestic properties to provide information about unused heat on their premises?

A: Strongly support

Additional Comments:

Waste heat, particularly from non-domestic buildings, can improve the commercial viability of heat networks, and open up more opportunities for heat networks to provide affordable heat to domestic and non-domestic customers. These powers would reduce the challenges for heat network developers in undertaking significant amounts of data collection, and should help reduce the costs of heat network development. Consideration should be given to other bodies that should perhaps be included in this requirement - for example infrastructure owners of e.g. grid transformers, and other non-property sources of waste heat.

Data collected this way should be made freely and openly available through Scotland's Heat Map.

Q17: To what extent do you support our proposal to potentially require buildings with unused heat to provide this to a local heat network?

No response.

Questions on Chapter 5: Monitoring and Enforcement

Q18: We will need to have a way to monitor if people are meeting the Heat in Buildings Standard, and discussed two options for this. Which do you support?

- Submitting EPCs alone
- Sampling a percentage of buildings
- A combination of the two**
- None, there should be no monitoring
- Another method, please suggest below or explain your selected answer

Additional Comments:

For the regulations to give confidence to the market that there will be an ever-greater demand for clean heating systems, the Scottish Government's approach to monitoring and enforcement needs to drive greater numbers of heat pump installations and energy efficiency retrofits. Ideally, this approach to monitoring needs to be efficient and effective, convenient, and proportionate to the impact of the regulations¹⁸.

Monitoring for the Private Rented Sector Energy Efficiency Standard

- All homes being rented in the private rented sector must have an up-to-date EPC at time of new tenancy. Given this requirement, our view is that the PRS energy efficiency standard can be monitored and enforced through an approach that combines EPCs with the landlord registration scheme.
- Reformed EPCs should clearly demonstrate whether a home is compliant with the energy efficiency standard or not (see response to Question 4), and landlords should be required to submit EPCs for each of their properties as part of their Landlord Registration.
- Local authorities should be appropriately resourced to carry out some checking of whether the correct EPCs have been submitted through this process, and whether they meet the required minimum energy efficiency standard.

Monitoring for the Point-of-Purchase Zero Direct Emission Heat Standard

We are able to address this question in relation to the domestic sector.

- All homes being sold in Scotland must have an up-to-date EPC and an independent survey undertaken by a Chartered Surveyor for the Scottish Home Report. These resources should make it clear to the seller, potential buyers, mortgage lenders and to government (for the purposes of enforcement) which homes on the market are (a) already compliant with the standard, (b) those that

¹⁸ This approach mirrors the four articles that underpin the Scottish Government's general approach to taxation: proportionate to the ability to pay; certainty for the taxpayer; convenience; efficiency

will be required to meet the standard, and (c) those that are exempt.

- In our view, the main outstanding decision is who should be responsible for monitoring compliance. The Scottish Government could undertake these compliance checks themselves, or this could be something that could be taken forward by the national energy agency.
- Since home sales are registered with Registers of Scotland, the Government can readily identify a list of homes that are affected by the regulation.
- Homes that are identified as needing to comply with the regulation can be checked after the grace period. We think that the open-access nature of the EPC register offers the best approach to monitoring compliance also at the end of the grace period.

Monitoring for the Owner-occupier Energy Efficiency Standard

We see the purpose of the owner-occupier standard as being much closer to a legislated standard for good quality retrofit, rather than a rigorously enforced market-making regulation. As such, the approach to monitoring compliance needs to be different.

- Homeowners' should be encouraged to submit EPCs, and we would expect that the proportion of homes with an EPC should continue to rise. This will be driven by home purchases, and by the use of EPCs to access grants/loans and as part of renovation works.
- We expect that there will continue to be homes that do not have an EPC, and so some sampling of buildings, as part of the Scottish House Condition Survey, should also take place.
- The levels of compliance with the standard should be used to understand whether the standard is working, is being generally adopted, and whether additional support measures are required.

Monitoring the Heat Network Zone clean heat standard

We expect that this should be the responsibility of the local authority. Local authorities will need to be appropriately resourced to carry out this function.

Monitoring the 2045 clean heat standard

We expect that by this point the local distribution gas grid will have been decommissioned. This should make monitoring of the standard relatively straight forward. However, in the meantime, it would be prudent to create some enabling powers that would allow future secondary legislation to be developed to support the monitoring of the standard, for implementation closer to 2045.

Q19: We will need to have a way to enforce the Heat in Buildings Standard. We discussed possible options to help achieve compliance. What are your views on these ideas?

A) I support relying on market and financial product mechanisms such as mortgages or home/ building insurance

B) I support extra Council Tax and Non-domestic Rates charges, in future, for those who don't comply

C) I support the introduction of civil penalties, in future, if compliance is not achieved

D) I support a mixture of the above options

E) I do not support any form of enforcement

Additional Comments:

Enforcement of the Private Rented Sector Energy Efficiency Standard

We propose that the Scottish Government should use EPCs and the Landlord Registration scheme to monitor compliance of the PRS minimum energy efficiency standard.

- Where a local authority identifies that an incorrect or fraudulent EPC has been lodged for a property, or a non-compliant EPC is in place for a rented property, the local authority should be able to trigger enforcement action.
- We foresee situations - early in implementation, when a new property is brought into the PRS etc. - where it could be appropriate in the first instance for the local authority to encourage the landlord to engage with the appropriate advice and guidance services (i.e. through Home Energy Scotland) and potentially access finance schemes. However, where landlords refuse to engage with those processes, where they have intentionally sought to evade the regulations, and when there has been plenty of time for the regulations to bed-in, then civil penalties should be used, as they would be with other infringements of landlord registration requirements. This protects tenants (from higher energy bills) and protects the majority of landlords who will seek to comply with the regulations and carry out their responsibilities in accordance with the law.

As detailed in Q2, the role of the First Tier Tribunal should be considered in how it supports tenants to raise issues regarding their landlords should there be any concerns or malpractice in relation to upgrading the energy efficiency of their homes. This may also be useful in identifying fraudulent EPC ratings where a tenant may consider the rating and condition of their home to be inaccurate when compared to their EPC rating. This should not be the primary route for enforcement, but should be available to empower tenants.

This proposed approach to enforcement does rely on local authorities being sufficiently resourced to carry out their functions fully in regard to landlord registration and the private rented sector.

Enforcement for the Point-of-Purchase Zero Direct Emission Heat Standard

We think it is important that there is a robust enforcement mechanism in place for the regulation to be effective - particularly so that the regulatory requirement is reflected in home purchase prices and in home valuations. The feed-through of the regulation into home prices is critical both for avoiding some of the potential issues that might arise for

certain types of home buyers, and for financing to be possible for home buyers.

We think that a combination of other supportive policy mechanisms that are both devolved and reserved (grants and loans, the UK Clean Heat Market Mechanism, gas:electricity price ratios) should help make heat pumps more attractive in the meantime, ahead of this policy being implemented. This, combined with good advice and guidance schemes from Scottish Government (Home Energy Scotland and so on), and with our proposal for a cash bond alternative to compliance, and appropriate exemptions (see Question 20) should help keep non-compliance low.

In the event of non-compliance, a warning notice should be served to the homeowner. A mechanism could be developed so that this is triggered during the grace period (e.g. after one year), signposting the homeowner to the advice services (Home Energy Scotland). At the end of the grace period, if the homeowner has not engaged with the regulations and with the advice services (e.g. a record of engagement with HES could be used to delay enforcement activity), fines should be issued, using the civil penalty process. This robust approach to enforcement should ensure that house values reflect whether they meet the clean heat standard or not. To help maintain public support for the regulations, the penalty levels could be linked to typical heat pump installation costs (although they should be set slightly higher so the heat pump installation remains more attractive than taking the fine) and the funds raised could be ringfenced for other clean heating schemes.

Enforcement for the Owner-occupier Energy Efficiency Standard

We agree with the Scottish Government's proposed intention to not use civil penalties for enforcement of this regulation. We agree with the Existing Homes Alliance's comments that the Scottish Government should be seeking to minimise the requirement for enforcement, through putting in place a strong programme of advice and support, and with the continuation of grant/loan, area-based and fuel poverty schemes.

Enforcement of the Heat Network Zone clean heat standard

We have not developed a proposed approach to enforcement for this standard, but it should follow the general approach we have set out for the point-of-purchase standard. Consideration will need to be given to the split of roles between local authorities and other potential enforcement bodies. Enforcement should not be left to the heat network developer, since these may often be private companies. A sufficiently robust enforcement mechanism does need to be in place, so that it gives sufficient comfort to the network developers that buildings will be likely to choose to connect.

Enforcement of the 2045 clean heat standard

Enforcement of the standard should be addressed closer to 2045. It could be prudent to create powers that allow for future secondary legislation to be introduced, closer to 2045, to put in place the approach to enforcement.

Q20: To what extent do you support our proposals to modify the Standard or exempt certain people from the need to meet the Heat in Buildings Standard?

A: Somewhat support

Additional Comments:

Point of purchase clean heat regulation

There **should** be exemptions in place for:

Flats. Many flats will benefit from communal heating systems, heat networks, or would need the permission of other tenants in the property for the optimal clean heating options (e.g. if shared roof or stairway is required for services or pipe access, or communal areas for siting of an air source heat pump). While the regulation applies only to some properties (those being bought), there is a risk that this would lead to the installation of less optimal heating systems with higher running costs (such as electric boilers).

Low-value properties. The issue of heat pump installation costs being a high proportion of a property value could be addressed with a simple exemption for properties below a certain figure (e.g. £100k). An exemption for installation costs that are a high proportion of the property figure would be more onerous to enforce, but would also work for low value properties.

Properties in heat network zones. Where the designation of a heat network zone is at an advanced stage (e.g. a Heat Network Zone Permit has been granted, or a Heat Network Consent is in place), there should be an exemption from the regulation, in order that the potential customer base for the heat network is not reduced, and so that the heat network decarbonisation option is available to the homeowner. It should not be the case that an exemption is granted where Heat Network Zone plans are at an early stage, for example the local authority has indicated a potential Heat Network Zone location in an LHEES. For houses in heat network zones it may end up still being preferable to adopt an individual home decarbonisation solution (e.g. air source heat pump), and so, when it may still take several years for a heat network to be developed, this risks a home missing the opportunity to decarbonise earlier. Our proposed general exemption for flats is a better approach to safeguarding homes that will be better served by a communal or district heating approach.

Demolition. We agree with the proposed exemption for homes that will be demolished.

Specific issues in the non-domestic sector. We have not considered specific exemptions that might be required for the non-domestic sector, but expect that there could be some (e.g. unheated buildings, buildings that have large cooling loads etc.). This suggests that there should be separate exemption regimes for the domestic and non-domestic sectors.

Hybrid heating systems. Evidence is still emerging on the value of heat pump/gas boiler

hybrid heating systems in the transition to clean heating. It is not yet clear whether the added complexity gives the homeowner more options, or if it just increases upfront costs. On balance, we think that hybrid heating systems, where the heat pump acts as the main heating source should be initially considered as compliant with the point-of-purchase regulation. This exemption should be kept under review, and should be phased out well in advance of 2045. As discussed in response to question 1, we see no role for electric/fossil fuel hybrid heating systems in 2045.

We disagree with some of the Scottish Government's proposals for exemptions from the clean heat standard at point of purchase. There **should not** be exemptions for:

First-time buyers. We generally expect to see house prices and valuations reflect whether the home meets (or not) the clean heat standard already. First-time buyers should face the same choice as other buyers - either buy a compliant home that is at the top end of their borrowing capacity, or buy a slightly cheaper home that will require a clean heat installation and take out additional finance to cover the works. To support additional access to finance, government-backed loans (i.e. the continuation of current HES interest-free loans) should be prioritised for first-time buyers, if there is a future tightening of eligibility criteria. A general exemption for flats will provide additional support for many first-time buyers that have lower incomes.

Rural properties. There are currently proportionally higher numbers of heat pump installations in rural areas of Scotland¹⁹, reflecting that even under current circumstances, heat pumps often offer greater cost benefits to rural homes, especially those in off-gas grid areas. This offsets any higher installation costs that may be faced as a result of a more limited supply of skilled tradespersons. We have also heard anecdotal evidence that this greater demand for heat pumps has resulted in heating engineers in rural areas being more likely to specialise in heat pumps, and indeed may as a result bring their expertise to carry out jobs in urban areas. With these reasons, and a higher level of grant available in remote rural and island areas, we do not see a requirement for an exemption for rural properties.

Multiple home purchases. We understand the proposed rationale for this suggestion in the consultation to be that a home buyer might be 'penalised' with the regulation if they were to buy a home soon after the regulation is implemented (e.g. in 2030), and then 'penalised' again if they moved again in say 2035. This could for example be a first time buyer that moves again to start a family. We do not see a requirement for an exemption in this circumstance. We would expect that the home buyer should see a return on the investment that they have made when they sell their first property, in the form of a higher sales price, since their home will be compliant with the regulation, and therefore worthy of a market premium, since its new buyer won't need to carry out works to install a heat pump. We would also be concerned if an exemption in this area created a loophole for investors buying multiple homes, e.g. as a rental portfolio, or for people who are 'fixer-uppers', buying rundown properties and then rapidly selling them at a higher value

¹⁹ <https://www.nesta.org.uk/blog/do-heat-pumps-work-in-rural-areas/>

having renovated the property. Both of these types of home buyers should work very well with the proposed regulation as they are, and benefit from them - heat pump installations as part of wider renovations is an ideal outcome for the regulations, and should benefit renovators with a higher sales price once they have done the works.

Private rented sector energy efficiency standards

We would agree with maintaining the following exemptions from the previous proposed regulations (2019 PRS energy efficiency standard²⁰), that provided for exemptions in the following cases:

- Tenant refusing access
- Other owners in a property or communal property refusing consent to have the work carried out (this situation also applies to owners)

The communal works exemption could be an initial one only, and removed once the energy efficiency standard is introduced for all homes in 2033.

The £5,000 approach to cost-capping **should not** be carried over from the 2019 proposed regulations.

Q21: Which people, businesses, or types of buildings, if any, should be eligible for a modified standard or exemptions?

See response to question 20.

Q22: To what extent do you support our proposals to give certain people extra time to meet the Heat in Buildings Standard?

A: Neither support nor oppose

Additional Comments:

We agree with the proposal to offer homes that are affected by power grid constraints more time to comply with the point-of-purchase standard. Grid constraints, and

²⁰ Scottish Government (2019)Energy Efficient Scotland: The Energy Efficiency (Private Rented Property) (Scotland) Regulations 2019 : Consultation on Draft Regulations and associated Draft Guidance . Available here:

<https://www.gov.scot/binaries/content/documents/govscot/publications/consultation-paper/2019/06/energy-efficient-private-rented-property-scotland-regulations-2019-consultation/documents/energy-efficient-scotland-energy-efficiency-private-rented-property-scotland-regulations-2019/energy-efficient-scotland-energy-efficiency-private-rented-property-scotland-regulations-2019/govscot%3Adocument/energy-efficient-scotland-energy-efficiency-private-rented-property-scotland-regulations-2019.pdf>

obtaining permission from the distribution grid operator can delay heat pump installations. However, we do expect that reforms to funding for the distribution network operators, and greater policy clarity about the electrification of heat, should mitigate this issue in the medium-term.

We **disagree** that a general proposal to grant extra time to “properties for which clean heating options are currently limited” is workable. In relation to the point-of-purchase clean heat trigger, we have suggested flats should be exempted. In relation to the heat zone trigger, timing for different building types in the zone should be at the discretion of the local authority.

Homes that have an existing biomass heating system could be granted additional time to meet the clean heat standard applied at point of purchase only. Caution should be used in the definition of ‘existing’ to ensure that it doesn’t incentivise the installation of new biomass heating systems immediately before homes are sold. Biomass heating systems should however, not generally be considered to be ZDEH for the purpose of the point-of-purchase regulation.

Apart from these, the grace period for the point of purchase regulation and advance notice of the PRS minimum energy efficiency standard, should already give plenty of time for all types of building owners to comply.

Q23: Which people, businesses or types of buildings, if any, should be eligible for extra time?

See response to Question 22.

Questions on Chapter 6: Public Sector Buildings

Q24: To what extent do you support our proposal to require all buildings owned by a Scottish public authority to be using clean heating systems by 2038?

A: Somewhat support

Additional Comments:

While Nesta is focussed on domestic buildings, we support this measure since:

- Public authorities will own small numbers of domestic properties
- Leadership by public authorities will help stimulate and lead the market
- Where public buildings can work as part of heat networks, this will help make the heat network more commercially viable and de-risk it by providing an anchor load.

Q25: We are considering the following further duties on public sector organisations to support planning for the transition by 2038:

- A) Placing a new duty on public sector organisations which would, from 2025, prevent them from replacing a polluting heating system with another (unless impractical)**
- B) Creating a new duty for each public body to develop and implement a plan to decarbonise their buildings**
- C) Placing a new statutory reporting duty on public sector organisations to demonstrate progress towards their 2038 objective (with the potential for the 2038 then to be non-statutory); and/or**
- D) Placing no further statutory requirements on public sector organisations (instead relying on their ability to plan alongside our delivery and funding programmes to meet the 2038 objective)

Additional Comments:

Nesta supports placing a duty on public sector organisations to prevent them from replacing a polluting system with another polluting system from 2025 (point A). This would help lead the development of the clean heat market in Scotland. Appropriate definition of 'unless impractical' will need to be developed, and to take account of heat network zoning.

Points B and C should be captured through the new statutory guidance for public bodies duties under the Climate Change (Scotland) Act which is currently under development.

Questions on Chapter 7: Amendments to Existing Legislation

Q26 Do you agree with our proposals to include powers in the proposed Heat in Buildings Bill to change the current requirement in legislation for a narrowly-defined renewable heat target?

A: Don't know

Additional Comments:

We will consider our viewpoint on this proposal further when it is more developed. In general, we would say that the existing renewable heat target has placed valuable emphasis and accountability in government for the development of renewable heat in Scotland. The current target takes account of both greater renewable heat deployment and energy efficiency. However, the current heat target does also incorporate both industrial heat demand and building (space and water) heating requirements. There are different challenges for electrification and decarbonisation in these two sectors, and so a combined target does not distinguish between progress in the two sectors. We also note that the current target does not distinguish between biomass and electric heating. A new target should place greater emphasis on electric heating and heat networks, which will be the two main technologies for renewable heat delivery.

We also note that targets for heat decarbonisation that have legislative basis have also been developed for heat networks, fuel poverty, and for various aspects through the climate change plan monitoring reports and sectoral targets developed under the Climate Change Act.

We would be happy to engage further on this issue.

Q27: Do you agree that the Heat Networks (Scotland) Act 2021 should be amended in light of the passage of the Energy Act 2023?

No response

Q28: Are there any further amendments to the Heat Networks (Scotland) Act 2021 that the Scottish Government should consider?

The Scottish Government should consider amending the Heat Networks (Scotland) Act to require new developments that are located within a Heat Network Zone to be "heat network ready".