# Scottish Government consultation

# Heat in Buildings Strategy –

# Achieving Net Zero Emissions in Scotland's Buildings

## Submission from CIBSE

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**CONSULTATION RESPONSE**

## Respondent information

The Chartered Institution of Building Services Engineers, CIBSE, is the professional engineering institution that exists to 'support the Science, Art and Practice of building services engineering, by providing our members and the public with first class information'

CIBSE members are engineers who design, install, operate, maintain and refurbish life safety and energy using systems installed in buildings. CIBSE members include specialists in fire safety systems and fire engineering. Others, who are belong to the Society of Façade Engineering, a Division of CIBSE, specialise in the design and installation of cladding systems.

CIBSE is unusual amongst built environment professional bodies because it embraces design professionals and also installers and manufacturers and those who operate and maintain engineering systems in buildings, with an interest throughout the life cycle of buildings.

CIBSE has over 20,000 members, with around 75% operating in the UK and many of the remainder in the Gulf, Hong Kong and Australasia. CIBSE is the sixth largest professional engineering Institution, and along with the Institution of Structural Engineers is the largest dedicated to engineering in the built environment. Our members have international experience and knowledge of life safety requirements in many other jurisdictions. We also have members working in London Underground, with considerable experience in the regulations governing sub-surface stations, which are heavily influenced by the requirements introduced following the Kings Cross fire in 1987.

CIBSE publishes Guidance and Codes providing best practice advice and internationally recognised as authoritative. The CIBSE Knowledge Portal makes our Guidance available online to all CIBSE members and is the leading systematic engineering resource for the building services sector. It is used regularly by our members to access the latest guidance material for the profession. Currently we have users in over 170 countries, demonstrating the world leading position of UK engineering expertise in this field.

## Chapter 2 – A 2045 Pathway for Scotland's Homes and Buildings

1. *To what extent do you support the pathway set out for achieving the 2045 net zero target and the interim 2030 target?*

CIBSE very much welcomes the overall approach set out in this consultation on decarbonisation. We particularly support it, in particular:

- Having an interim target for 2030, which allows you to track progress, build supply chains and increase accountability
- The focus on energy efficiency

- Defining a set of outcomes; and we also broadly support the proposed outcomes
- The dual objectives of tackling both fuel poverty and climate change together; as part of this, we very much support the proposals for reform of the EPC system to better reflect and incentivise energy efficiency and low carbon heat – see question 48 and associated appendices
- The proposals which combine the spectrum of possible tools for action, including public and private financing, regulations, incentives, and consumer / householder engagement
- The acknowledgement of the need to balance speed with continuous gathering of evidence, lessons learning and improvements.
- The acknowledgement that supply chains need to develop, and that this will require government support, including support to retrofit supply chains and the adoption of PAS 2035/30 on the government's delivery programmes.

We also agree with the assessment that some aspects of the strategy will need further assessment, for example how best to approach multi-occupancy buildings, and the extent of energy efficiency and heat pump deployment across different parts of the building stock, depend on characteristics such as climate, local site conditions and exposure, heritage constraints etc.

We have reservations mainly on the following specific points:

- High reliance on decarbonisation of the gas grid, which is uncertain – see question 2
- The role of heat networks, and especially existing ones - see details in question 33. Without very clear and firm plans in place, we strongly recommend against the current statement that ""*Buildings connected to existing heat networks, powered using natural gas, will be considered to be future proofed and net zero ready. However, these heat networks will need to decarbonise by 2040-45*".
- The position favouring energy from waste: this is against the circular economy principles and has a number of environmental drawbacks, so must not be considered on a par with other "true" waste heat sources – see details in question 34.

2. *What are your views on any risks of unintended consequences from this pathway?*

While we support the use of no- and low-regret solutions first, and the desire to keep flexibility, we think the current pathway includes risks due to **high uncertainty on decarbonisation of the gas grid**: the current pathway sets out that over 1 million dwellings by 2030 should have converted to low or zero emissions heating, out of a total 2.5 million occupied dwellings. Potentially this leaves more than half of the dwellings therefore still connected to the gas grid (or to heat networks reliant on the gas grid). The pathway also states that by this date "at least 20% volume of gas is green": this would therefore only take all those dwellings only a very small part of the way towards heat decarbonisation. We note that further work on hydrogen feasibility is planned in the strategy; we strongly recommend that milestones (e.g. key indicators and dates) be set out in the strategy, possibly with alternative "Plan B" routes, with points at which firm decisions will need to be made for those buildings still connected to the gas grid or to a gas-fed heat network.

Energy efficiency retrofit would also need to be part of a **whole house / building approach** to avoid detrimental consequences such as poor indoor air quality and overheating – hence our support for the use of PAS 2030/5, as per question 50.

**Skills and supply chain development**: Finally, we very much support the intention to provide consumer protection and apply quality standards to energy efficiency and heating installation works, including the adoption of PAS 2035/30 - see question 50. However, supply chains will need to develop for this; it means that an initial build-up phase should be expected before works can be carried out at scale, in large volumes. Any initial "friction" or delays due to low availability of qualified supply chains should not be seen as excuse to drop quality standards, but instead be integrated in the intended programme. The earlier and stronger messages can be on the commitment to quality, the more supply chains are likely to adapt quicker.

See also our response to question 18 on the risks of transitioning to electric heating, until energy prices are better aligned with their carbon burden.

3. *What are your views on our assessment of strategic technologies in low and no regrets areas to 2030?*

We agree, except that airtightness should be added alongside insulation measures – provided it is part of a whole building approach to avoid unintended consequences – hence our support for adopting PAS 2035/30 in delivery programmes, and using it to inform future regulations - see question 50.

4. *What function should a new heat target serve?*

The current focus in the proposals for a heat target seems to be on how much of the heat is served by renewable or low-carbon sources, not on energy efficiency and demand reduction. We think it should also reflect the total heat demand, or energy to meet that demand, in order to track progress both in demand reduction and energy efficiency (and therefore support fuel poverty) AND in decarbonisation.

5. *How do you think a new heat target should account for the need to deliver against our statutory fuel poverty targets?*

See response to question 4: through a dual target that would also reflect reductions in heat demand.

6. *Do you agree that a new heat target should apply to heat in buildings, distinct from industrial heat?*

Yes. This seems reasonable, as they are two different aspects of the overall need to reduce carbon in heat. There needs to be a separate strategy to reduce industrial heat.

7. *What form should a new heat target take and why?*

See response to question 5: it should be a dual target reflecting total heat demand (or energy to meet that demand), to reflect demand reduction and energy efficiency, and decarbonisation of that heat (e.g. kgCO2/kWh heat).

8. *At what level should the target(s) be set and for what date?*

We cannot comment on the levels in details, but recommend the following principles:

- The end goal should reflect an analysis of the stock with heat demand brought to exemplar levels
- These "end goal" heat demand levels could be adjusted to the types of building and constraints (e.g. heritage).
- At a national level, the total energy required to meet that demand should reflect that expected to be available by 2045 from zero carbon sources.

Overall this would set targets which take account of both "bottom up" meeting "top down" approaches, in a similar was as used by the London Energy Transformation Initiative, LETI, to develop total energy use intensity targets for new buildings. LETI and CIBSE are currently engaged in a similar exercise for the existing UK building stock, and we would be very happy to share our method and initial findings.

We recommend interim dates following the current pathway i.e. 2030, 2035, 2040.

## Chapter 3 – People

*9. What are the most significant actions we can take to ensure that Scotland's people and organisations are meaningfully engaged in the net zero heat transition?*

We agree with the government's focus on fuel poverty and a fair transition, which will be an important part of bringing the population on board. A stable framework and clear pathway should also significantly help, as they will provide certainty for businesses to invest in, with associated job creation benefits and therefore wider benefits to the population. Low carbon heat, and especially retrofit, have significant job creation potential, and for these jobs to be local, and this must be capitalised on (see for example the Construction Leadership Council's draft national retrofit strategy).

*10.What in your view are the opportunities, if any, available to key organisations, such as local government, businesses and trade associations and community or other non-government organisations, in supporting this public engagement activity?*

It is important that public policy, for example relating to procurement, supports the ambitions of the heat strategy and does not send mixed messages about government commitment or even undermine it.

*11. In your opinion, could any of the proposals set out in this strategy unfairly discriminate against any person in Scotland who shares a protected characteristic? (age, disability, sex, gender reassignment, pregnancy and maternity, race, sexual orientation, religion or belief).*

*12.In your opinion could any of the proposals set out in this strategy have an adverse impact on children's' rights and wellbeing?*

*13.What further action can we take to support people to make informed choices on the energy efficiency and heating options available to them?*

We very much support the proposed changes to EPCs: not only would they help ensure that the system delivers both energy efficiency and carbon emissions reduction, but they would help provide clearer advice to consumers: in particular, the current term "energy efficiency rating" is highly misleading, since it is in fact a cost rating - see details in question 48, including information on recent work on SAP/RdSAP11 for BEIS, which CIBSE took part in.

*14.What is your view on the current level of support and advice provided through existing services such as Home Energy Scotland and the Energy Efficient Business' Support service?*

*15.Are there any further suggestions that you could provide on how the customer journey through these delivery services could be improved, in light of the ambitions set out in this strategy?*

See questions 16 and 17 + recommendations from the CLC National Retrofit Strategy (https://www.constructionleadershipcouncil.co.uk/news/national-retrofit-strategy-consultative-document/ ).

*16.What are the most appropriate steps we can take within our powers to ensure sufficient consumer protection for supported energy efficiency or zero emissions heat installations?*

Government has already confirmed that fuel and energy would be included in the scope of the planned New Homes Ombudsman, so this is one layer of consumer protection for new build homes. One potential additional action would be to **include retrofit works and heating installations in existing dwellings within the scope of the Ombudsman** – this would make sense given the significant financial investment, disruption, and potential unintended consequences for consumers, and it is something CIBSE strongly advocated for at the time of the MHCLG consultation on this matter (https://www.cibse.org/News-and-Policy/Policy/Consultations/Closed-Consultations/Redress-for-Purchasers-of-New-Build-Homes-and-the ). Given the complexity of significant retrofit works it is essential to provide appropriate consumer redress, otherwise the programme is vulnerable to bad press due to poorly implemented retrofit which could increase consumer resistance to retrofit works.

See also question 17 and 18 + recommendations from the CLC National Retrofit Strategy.

*17.Do you have views on whether we should adopt the use of the UK government's TrustMark quality assurance framework?*

Yes, on balance, but at least in the first phase and the spirit of "lessons gathering", we would recommend going beyond the requirements of PAS 2035 for post-project evaluation: at the moment this places a lot of emphasis on evaluation of the process and whether it complied with PAS, whether we recommend, alongside, an evaluation of actual building performance outcomes. Government must also keep in mind the lessons from the Green Homes Grant i.e. still limited capacity in supply chains to respond to PAS; this does not mean it shouldn't be adopted, but this must be taken into account in timeframes – again, see the gradual recommended phases in the CLC National Retrofit Strategy.

CIBSE would also recommend that Scottish government works closely with the relevant trade and professional groups in Scotland to review whether Trustmark needs adaptation to the Scottish housing market, works with Scottish Building Standards and has the support and engagement of the construction sector locally. CIBSE would be willing to be engaged in this through its membership in Scotland.

*18.In your view, is there any further action that we, or other key organisations (please specify), can take to protect those on lower incomes, and those in or at risk of falling into fuel poverty, from any negative cost impact as a result of the zero emissions buildings transition?*

We agree with the strategy to:

- prioritise fabric first and energy efficiency, in order to reduce energy demand and exposure to higher energy costs; the deployment of heat pumps should also help, compared to direct electric heating (whether storage or not).
- in parallel, work with the UK government on a strategy regarding how the costs of policy are transferred onto energy prices: as the strategy rightly identifies, there is currently a contradiction in many cases between lower carbon and lower cost fuels, in particular electricity is more expensive than gas, in part because it carries the costs of grid decarbonisation (rather than fuel costs reflecting their carbon burden!). This has also been called for by the CCC, who state in the 6$^{th}$ Carbon Budget report (Buildings report, page 63): "*rebalancing of gas and electricity prices, would be important parts of any policy package*". This review should be started as soon as possible, and back-up or transition options evaluated in case the feasibility and/or timeline were not in line with the proposed pathway, and there was a risk of many households having transitioned to electric heating while electricity costs are still high.

*19.What are your views on our approach to phasing out funding for fossil fuel heating systems by 2024 where it is not detrimental to our fuel poverty objectives? Do you think that this could be achieved any sooner than 2024, and if so how?*

We agree: ultimately, financial investment must align with carbon objectives, to maximise the effectiveness of carbon policy AND of financial investments. This is in line In line with the

UK's G7 commitment and recommendations by the Environmental Audit Committee (Energy subsidies, Ninth Report of Session 2013–14).

An earlier date may be challenging, but there may be opportunities, ahead of this, to provide households with options: either continue to receive support for high emissions heating systems, OR receive a higher level of support for energy efficiency works, turning this into an opportunity to support the transfer of those needing support onto more sustainable energy supplies early in the process, which offers better value over the life of the programme by reducing levels of future support.

*20. What changes can be made to the Strategy to help maximise positive impacts and minimise negative ones on people experiencing fuel poverty and other vulnerable groups?*

One point to consider in the development of the strategy would be the EPC targets: currently they are set at EPC C by 2030, and B by 2040 (on the basis of the intent to reform EPCS, which we very much support):

- the current band C is quite wide, and could result is very different levels of energy use and running costs. A target including not only the band but a rating (i.e. a "good" C) may be preferable.
- It is very useful that the strategy sets the longer-term aspiration for an even better rating, as this should help promote efficiencies, whereby works to some properties to bring them to a C rating may already take the longer-term target into account. More attention may be needed in policy development to ensure this the case, in order to minimise costs and disruption and avoid initial works targeting EPC-C preventing or making further improvements more costly or difficult. In particular, this should be incorporated in the evaluation of improvement options and longer-term plan produced to accompany any retrofit works (as required in PAS 2035) – see questions 48 and 50.

See also question 18 on energy prices: we do not recommend a change, but a back-up plan, at least in a transition period if needed.

## Chapter 4 -Place

*21.What are your views on how we can support place-based deployment of zero emissions heat within our delivery programmes?*

The actions identified in the draft strategy seem reasonable, alongside other actions in the strategy including through the planning system and by the creation of a taskforce including DNOs.

*22.What is your view on how best to engage, and support, local communities in the planning and implementation of the heat transition in their area?*

*23. What role do you think community anchor organisations could play in supporting the heat transition?*

This could be crucial in identifying early adopters, communicating benefits, enhancing the consumer journey, and providing a tailored support service. A useful organisation to talk to on this matter would be with the Carbon Coop, working in Manchester with Urbed.

*24.In your opinion, what steps can we take to ensure that policies set out in this strategy do not unfairly impact Island and other remote communities?*

*25.What is your view on the timescales proposed for Local Heat and Energy Efficiency Strategies (LHEES)?*

*26.Do you agree with the approach to LHEES set out above? If not, please give reasons to support this.*

The information outlined in the strategy is rather high-level so it is not possible to comment in detail, but it seems reasonable, including planning for energy networks and involving DNOs, and a commitment to resourcing – this will be crucial in terms of personnel, funds and skills to do the work. For the avoidance of doubt, because the wording is a bit ambiguous in the strategy, we stress that the LHEES should take a whole system approach and therefore not only consider buildings, but the whole area as this could help identify opportunities such as heat exchange from industrial sites etc.

It is unclear in the current draft what “working with Zero Waste Scotland” will entail – see our comments on energy from waste in question 34.

*27.What are your views on what Permitted Development Rights might help enable in the heat transition, in addition to those we have already included in the Permitted Development Rights review programme?*

We assume this question relates to PDRs for low-carbon heating installations, including heat networks. This seems reasonable provided it does not apply to larger schemes and those in locations such as conservation areas. Outcomes should however be monitored, and government ready to revise or reduce PDRs if needed due to unintended detrimental consequences.

## Chapter 5 – Preparing our Energy Networks

*28.In your view, is there further action that can be taken to ensure that our electricity systems are ready for heat decarbonisation? I f yes, please provide further information.*

Yes. Further actions are likely to be identified later on, but this is where the planned engagement with stakeholders such as Ofgem and the DNOs is crucial, as they could help identify some of these actions.

Further actions may also be required on buildings themselves, to ensure they support decarbonisation of electricity systems – see question 48.

*29.What are your views on the changes set out above for the electricity networks and are there further actions that could be taken by government, the regulator or industry that would make these more cost effective? Please provide evidence to support any suggestions.*

See question 28.

*30.In your view, what changes are needed to ensure that those least able to pay, including those in fuel poverty, are not unfairly impacted by the transition in our electricity and gas networks?*

See question 18 on energy prices.

*31.What are your views on the changes set out above for the gas networks?*

One question is where the biomethane would come from, with what environmental impacts, and whether its production would compete with other land uses e.g. biodiversity, tree planting, farming? Are the assumptions aligned with CCC scenarios?

In addition, and as stated in question 2, clearly there is a huge gap and uncertainty in the viability of a gas grid carrying 100% hydrogen, including its production. We strongly recommend a date be introduced in the pathway by which time an alternative solution will be adopted for those homes connected to the gas network, depending on assessed viability, availability, cost effectiveness and carbon effectiveness. We think this is a key element of remaining risk at the moment in the strategy, since it may turn out not to be a viable pathway for homes.

*32.Are there further actions that could be taken by government or industry that you think would make the changes set out more cost effective? Please provide evidence to support any suggestions.*

*33.What evidence can you provide on the potential for heat networks in Scotland that can help inform a new ambition for deployment within the final Heat in Buildings Strategy?*

In addition to the issues mentioned in the strategy, the assessment of the potential contribution from heat networks must consider:

- Not only whether they have potential in a particular area, but whether they are a <u>better option than the alternatives</u> in terms of energy efficiency, carbon emissions, and running costs: there are significant embodied carbon and financial costs associated with establishing networks, and such investment should only be made when it is really the best option. The recent proposals by BEIS for the future Green Heat Network Fund are a reasonable starting point for the comparison i.e. whether networks are lower

carbon than an on-site air source heat pump, although we recommend using average, rather than marginal carbon factors for this appraisal.

- Existing heat networks, not just new ones: they must be assessed for energy efficiency and carbon intensity, or at least whether they have a firm plan to decarbonise. While in theory a network could switch plant (from, say, CHP to an air source heat pump), there are only very few examples in the UK of such conversions from gas (boiler or CHP) to low carbon sources. The assumption that networks can switch to low carbon plant really has to be looked into in more detail when developing the strategy. The issue is not simply plant replacement, but associated design and operational issues to optimise performance, such as flow temperatures, storage and controls. In particular, most existing networks operate at relatively high temperatures which do not promote high heat pump efficiency. There can also be legal and commercial barriers e.g. contracts tying heat to the cost of gas, restricting ability to increase heat price to pay for investment, or concession agreements with limited remaining time (e.g. if a concession expires in 10 years this constrains the business case to this timeframe, not the longer term). All of these issues need to be explored and understood before policy can be implemented effectively and at the least cost. At the very least, more guidance will be needed for industry, and this is something which CIBSE would be happy to work with government with. CIBSE publishes CP1, the Code of Practice for Heat Networks, and would be very willing to work directly with Scottish Government as well as BEIS to address these issues in the next revision of the Code in order to support the strategy for heat networks in Scotland.

*34. What evidence can you provide on the potential for heat derived from energy from waste to qualify as low or zero emissions?*

The concerns about energy from waste include carbon emissions, but also wider issues:

- Carbon emissions
- Air quality
- Circular economy and wider environmental impacts: energy from waste is low on the waste hierarchy and very much against the circular economy principles. Furthermore, EfW contracts often tie local authorities into long-term agreements discouraging recycling. In terms of overall environmental impacts, and often argued not to be much better than landfill.

*35.What views do you have on mechanisms to support this and the use of wider sources of waste heat?*

CIBSE do not think energy from waste should receive support by government (e.g. financial support, relaxations in standards, “fast track” processes etc), for reasons explained in question 34. While it may be appropriate in some circumstances, it could then be delivered by the market, framed by appropriate regulations on issues such as efficiency, carbon emissions, air quality etc. By contrast, there are many other solutions which deliver multiple health and environmental benefits and align with several policy objectives, which need and warrant government support. In relation to this question, this means for example that government

support should prioritise “true” waste heat, such as unavoidable heat generation from (already efficient) industrial processes.

*36.With the sustainable market for heat networks described above in place by the early-2020s, are there any further gaps that must be filled to support subsequent delivery of heat networks? If so, what are these and are there particular types of organisation that would be key in filling these?*

Yes. Guidance on low-temperature networks, and on the conversion of existing gas-fed networks to low-carbon sources: see response to question 33. CIBSE would be very happy to work with the Scottish government on producing such guidance. Conversions from existing gas-fed networks to low-carbon sources could also be the target of specific funding, as CIBSE advocated recently to BEIS in the consultation on the upcoming Green Heat Networks fund (https://www.cibse.org/News-and-Policy/Policy/Consultations/Closed-Consultations/Green-Heat-Network-Fund ).

We very much support the intention to develop Decarbonisation Plans; such plans should be financed, deliverable, have a clear timeline, and be a condition for any public funding and any approval for extension. They could even be introduced as a condition for the new proposed licensing system.

For experience on consumer protection, we also recommend engaging with the Heat Trust, at the very least until such time that an equivalent level of heat regulation is in place.

## Chapter 6 – Kick-starting the Investment in the Transition

*37.What are your views on the range of actions identified above to kick start the investment in the transition over the next 5 years?*

*38.Do you agree with the strategic funding priorities set out above?*

*39.In your view, should equal funding be allocated across these priorities or should certain priorities be weighted in terms of impact for Scotland?*

*40.What are the opportunities and challenges we face in maximising our £1.6 billion investment?*

*41.What are your views on the role of government funding over the next five years? For example, should it be focused towards significant increases in the volume of renewable heat and energy efficiency measures installed or more targeted at specific priority groups or technologies?*
*42.What are your views on how we can use our funding to leverage and encourage private sector and other forms of investment?*

*43.What are your views on the effectiveness of our existing delivery programmes in supporting different client journeys, including for those in or at risk of fuel poverty? (for*

*example, landlords, home owners, non-domestic building owners – public and private, domestic and non-domestic tenants). I n your opinion, are there any gaps in support ?*

*44.Is there any action we can take to further tailor our support to meet the ambitions set out in this strategy, including in relation to fuel poverty?(Please include any evidence you may have to show what this might achieve.)*

## Chapter 7 – Working Towards a Long Term Market Framework

*45.What are your views on the approach outlined above to take action towards a long-term market framework for net zero emissions in buildings?*

*46.What are your views on how we can achieve a fair and equitable cost distribution for the net zero transition, including ensuring we tackle fuel poverty?*

See response to question 18

*47.What financing mechanisms are needed to encourage investment from householders, businesses and the private sector?*

A stable policy framework, to give confidence to investors; and energy price signals aligned with decarbonisation – see response to question 18.

## Chapter 8 – A Regulatory Framework

*48.What are your views on the regulatory actions set out in the proposed regulatory framework?*

CIBSE very much welcome the following:

- Regulations that address both new and existing buildings, domestic and non-domestic. We recommend that, after an initial phase where PAS 2035/30 is adopted in the government's delivery programmes, a review be carried out to gather lessons and review the possibility to incorporate PAS, or key lessons and elements of it, within regulations.
- Regulations that address both energy efficiency and heating emissions
- Reforming the assessment process and metrics underpinning EPCs.

Reforming EPCs is very closely linked to **reforming SAP**. CIBSE, as part of a consortium led by Etude, has recently worked on the BEIS-commissioned scoping study on SAP11. Many of the recommendations from this work very much align with the Scottish government strategy, including the use of a dual metric system based on energy efficiency (energy use) and carbon emissions. In addition, we think some of the recommendations could help take the strategy forward and make it more effective, for example in seeking ways that SAP could better encourage demand management and support the energy systems. We would very much welcome the opportunity to discuss it, and support the work of Scottish government on this.

We think however that there is one crucial element missing in the proposed regulatory framework: **addressing actual in-use performance**. This must be addressed, probably through a combination of regulatory instruments (e.g. operational ratings alongside EPCs, extension of Building Standards requirements beyond practical completion). This would help deliver actual performance improvements, rather than theoretical asset ones. Such a move is supported by a growing number of organisations, as evidence by the BPN Joint Position Statement (https://building-performance.network/advocacy/building-performance-joint-position-statement ) and recent letter to MHCLG (https://www.cibse.org/news-and-policy/april-2021/cibse-joins-coalition-in-letter-to-government-over ). Our current assessment is that a crucial primary legislation tool for this is the Building (Scotland) Act, in particular Section 2 – Continuing Requirements. This is as similar situation in England with the Building Act – Section 2, and probably an area where collaboration with MHCLG and the UK Government would be beneficial. For information and as it is very relevant here too, we have copied at the end of our response to this question an extract from the submission we recently made to the MHCLG consultation on the Future Building Standard, which details our rationale and recommendations. We would be very happy to discuss it with the Scottish government, as we think it could really help implement, in practice, the ambitions of the strategy.

**Planning system:** as stated in the strategy, achieving net zero "*is not just about new development– our existing buildings and places will need retrofit solutions*". In relation to the planning system, the current strategy mentions developing approaches for low and zero emissions heating; however, **this must also cover energy efficient retrofit**; in many cases, this is currently hindered by the planning system, and by insufficiently resourced and joined-up energy, conservation, and design officers. This must be addressed with suitable resources and planning guidance in order to deliver energy efficiency, protect valuable heritage, and provide a clear planning framework for applicants on what is expected and acceptable.

**Extract from the CIBSE submission to the MHCLG consultation on the Future Building Standard, April 2021/**

***There must be a commitment to move to regulating for actual performance, starting with disclosure****: Actual in-use performance beyond Practical Completion must be addressed, for example as part of the wider regulatory regime created in response to the Hackitt Review.*

*At the very minimum, in Building Regulations:*

- *Commissioning performance tests linked to as-built Part L calculations: see comments above.*
- *Airtightness testing and limiting values must be introduced for the existing stock where works are carried out, to help inform a whole building approach according to PAS2035 and PAS2038. This will improve energy performance, probably improve air quality as ventilation strategies will be based on better-informed decisions, and improve overall build quality.*
- *The move to in-use performance should start in 2021 with a requirement for*

*monitoring and disclosure of energy use (broken down into fuels where applicable). The collected data could then inform future revisions of Building Regulations in 2025 and the setting of absolute rather than relative targets (as per point above).*

*However, we think there is scope even within the existing framework of the Building Act and the Building Regulations to put together a* ***more comprehensive set of monitoring and post-occupancy evaluation*** *requirements to accompany all existing performance requirements, as detailed below.*

***Section 2 of the Building Act*** (note for this consultation: this is very similar to Section 2 of the Building (Scotland) Act) *makes provision for continuing requirements and it should be used to start to develop ongoing requirements in relation to energy use, and to upgrade the existing stock through building regulations (addressing performance overall, beyond just imposing standards on works being carried out). Whilst CIBSE understands that there are considered to be difficulties around Section 2, including how difficult it is to understand, these difficulties need to be resolved as the difficulties posed by the absence of in-use performance feedback and by inappropriate or insufficient works on existing buildings are far more significant and undermine the objectives of national policy.*

*As a starting recommendation, we think this should apply to non-domestic buildings over 1,000 $m^2$ (to align with the proposed threshold in the current BEIS consultation on operational energy ratings), and for residential schemes above 5 homes (to align with, for example, the new "Be Seen" requirement in the London Plan) – possibly on a sample basis.*

*Monitoring and reporting should be carried out within the first year defects period: while this is not "ideal" post-occupancy evaluation period, it is easier then to tie results to contractual obligations, and to request remediation.*

*The recommended parameters to be monitored and reported on are listed below; Supporting Evidence – Item E provides more detail on how they tie to current building regulations and approved documents, and how they could be implemented in 2021 and 2025.*

- ***Energy Use****: Energy Use Intensity (kWh/m2/pa) - Total building energy use as a minimum. For non-domestic buildings there are upcoming requirements on operational energy ratings which could help to enable and support this requirement, provided coordination between BEIS and MHCLG and assuming a compatible system of performance metrics.*
- ***Water Use****: Litres Per person Per Day Per Year, at least for residences where the building regulations requirement already exists*
- ***Adequate ventilation as required by building regulations, and air quality spot checks or monitoring*** *against the pollutants already covered by performance criteria in Approved Document F. For non-domestic buildings that are used as a workplace there are already ongoing requirements for ventilation in the workplace regulations which would help to enable and support this requirement.*
- ***Acoustics:*** *in addition to current testing requirements for fabric and airborne impact, noise measurements should be carried out during commissioning checks, particularly*

*for ventilation systems as this is known otherwise to lead occupants to switch ventilation off (particularly in residential settings).*

- ***Overheating:*** *we strongly recommend that MHCLG should put together a programme of monitoring at random to check the consequences of using the new simplified method, gather lessons, and use them to inform further revisions where required*
- ***Thermal bridging check and thermography:*** *A thermographic survey should be carried out to check for any thermal bridging that may lead to excessive moisture and mould issues.*
- ***Heat Transfer Coefficient:*** *Measurement of the heat transfer coefficient (e.g. via smart meters, subject to SMETER trial conclusions). Note the FEES is not directly verifiable, as it is a notional artificial metric. However, the HTC together with the airtightness test would more or less verify the as-built FEES. In addition, we recommend in 2025 to move to a better, more meaningful metric than FEES* (note for this consultation: one with a track record, such as space heating demand, or one which can be measured, such as Heat Transfer Coefficient, or a combination of both e.g. space heating demand target + requirement for as-built testing of HTC).

*49.What are your views on the timeframes set out for the application of the regulation set out above?*

*50.What are your views on how our Delivery Programmes could support compliance with regulation?*

One particularly useful aspect for Delivery Programmes to support compliance is if government commits to future regulation, and Delivery Programmes adopts those standards ahead of regulation: this gives confidence to invest, and helps industry develop relevant skills, products etc. For this reason, we support the adoption of PAS 2035/30 in delivery programmes, which will support the development of skills and supply chains. Wherever possible outcomes from these programmes should be monitored in order to gather lessons for the wider industry and possible future regulation.

*51. What other mechanisms/support may be required to ensure that regulation is fair and equitable for all?*

## Chapter 9 – The Economic Opportunity

*52.What are your views on the plans set out to maximise the economic benefits to Scotland from the heat transition?*

*53.What role could technology-specific milestones (for example, by 2025) play in supporting supply chain development, and how should these milestone levels be developed?*

*54.Is there anything further that can be done to ensure that Scotland realises the economic opportunity available from the heat transition?*

On jobs specifically related to retrofit, we recommend referring to the CLC National Retrofit Strategy.

*55.What more can be done to support the development of sustainable, high quality and local jobs in the heat and energy efficiency supply chain across the breadth of Scotland?*

See question 54 + we recommend referring to the CLC National Retrofit Strategy, including recommendations for a national hub supported by local delivery networks.

*56.In your view, what are the opportunities and constraints presented by the role of the wider public sector in maximising the economic benefits to Scotland?*

It is important that public policy, for example relating to procurement, supports the ambitions of the heat strategy and does not send mixed messages about government commitment or even undermine it. For this reason, we support the adoption of PAS 2035/30 in delivery programmes, which will support the development of skills and supply chains. Wherever possible outcomes from these programmes should be monitored in order to gather lessons for the wider industry and possible future regulation.

*57. In recognition of the proposals in the forthcoming skills consultation, what further action can be taken to support skills development in Scotland over the lifetime of this strategy?*

We welcome the proposal for a specific consultation on skills development in Scotland. This is a fundamental aspect of the transition to a low carbon or net zero carbon built environment. The recent experience in England with the Green Homes Grant appears to show that lack of access to demonstrably competent installers is a significant barrier to building retrofits. It is of course true that a requirement for greater levels of competence may reduce the volume of retrofit works in the early stages, but it will also significantly reduce the risk of failures, improve consumer confidence in outcomes and reduce the long term cost of retrofits. Without significant investment in the skills needed for achieving low carbon outcomes we will struggle to deliver the objectives of the strategy.

*58.Are you aware of any barriers to the reskilling of existing oil and gas heating engineers to equip t hem to install low and zero emission heating?*

*59.How can we support the development of more opportunities for young people?*

## Chapter 10 – Working with the UK Government

*60.To what extent do you agree that the issues identified must be addressed jointly by the UK and Scottish governments to unlock delivery in Scotland?*

CIBSE agree, in particular in relation to the need to work jointly on energy prices, and where additional regulatory powers are needed – on this point, see our comments in question 48 on regulating for in use performance, possibly through the Building Act.

*61.Are there any further areas where joint action is required, for example to ensure no one is left behind in the transition and fuel poverty is addressed?*

Energy prices: see response to question 18. In reference to the CLC National Retrofit Strategy, which we recommend as reference, it may also be relevant for central retrofit resources, rather than (or in addition to) ones for each devolved nation.

## Chapter 11 – Monitoring, Evaluation and Future Decision Making

*62.Do you agree with our proposals for a monitoring and evaluation framework? If not, please state your reasons and suggested improvements.*

Yes. CIBSE very much support and agree with the intention to monitor not only outputs but outcomes. This will be crucial to ensure that works carried out do deliver the intended savings in energy use and carbon emissions, deliver co-benefits such as air quality and comfort, and do not bring unintended consequences, and to gather lessons for later phases.

This is in line with best practice and with the recommendations from the National Audit Office, which states: "*It is essential for government to have an effective system for measuring its environmental performance, in order to:*

- *understand whether it is on track to meet its long-term environmental goals, including those for air quality, carbon emissions and the natural environment;*
- *assess the effectiveness of new and existing policy interventions; and*
- *fulfil its international obligations on environmental reporting.*

*Robust data on performance are also essential for Parliament and the public to be able to hold government to account on how it meets its obligations and spends taxpayers' money* " (NAO, Report by the Comptroller and Auditor General, Environmental metrics: government's approach to monitoring the state of the natural environment, 2019). In that same report, the NAO also recommends that targets should be "*specific, measurable and time-bound*".

We would also stress that examples of best practice should not only be sought from new programmes: past programmes should be reviewed, not only for the lessons they brought at the time but also as a potential view on longer-term consequences: for example, a retrofit programme carried out several years ago may be a good opportunity, today, to check any unintended consequence on fabric degradation, mould etc – consequences which may not have been possible to detect at the time of the programme itself.

*63.What are your views on how lessons learned from heat and energy efficiency policy and programmes should be shared with the sector and key stakeholders to ensure that Scotland benefits from the public investment outlined above?*

CIBSE (including our membership in Scotland) would be very happy to support the government in this, through our experience in knowledge dissemination and training.

*64.Finally, is there any other information you would like to provide us with that is relevant to the development of Scotland's Heat in Building Strategy?*

## *ENVIRONMENTAL REPORT CONSULTATION QUESTIONS*

*Consultation Questions have been included within the Environmental Report to help shape respondents views on the Strategic Environmental Assessment.*

*65.What are your views on the accuracy and scope of the information used to describe the SEA environmental baseline set out in the Environmental Report?*

*66.What are your views on the reasonable alternatives set out in the Environmental Report?*

*67.What are your views on the predicted environmental effects as set out in the Environmental Report?*

*68.What are your views on the findings of the SEA and the proposals for mitigation and monitoring of the environmental effects set out in the Environmental Report?*

## *General questions*

*69.Is there any further information you wish to provide on the content set out in this draft Strategy?*

*70.Is there anything else you would like to highlight about the role, opportunities for, and constraints of, specific types of organisation (such as local government, other public sector, trade associations, individual business organisations, charities, environmental organisations, community groups) in contributing to the transition to zero emissions buildings, in particular over the next five to ten years?*

**END**

Please do not hesitate to contact us for more information on this response.