

Environmental Audit Committee Inquiry: Energy efficiency in existing homes

CIBSE submission

Submitted on 10th July 2020

The respondent is The Chartered Institution of Building Services Engineers (CIBSE), the professional body for energy using systems in buildings.

CIBSE members design, install, operate, maintain and refurbish the energy using systems in homes, and are specifically trained in assessment of heat loss from buildings and the design of energy using systems to provide heating and hot water, lighting, ventilation, cooling and small power distribution in homes.

CIBSE has over 20,000 members, about 15,000 in the UK. We publish best practice advice and guidance that is internationally recognised as authoritative. The CIBSE Knowledge Portal makes it available online as the leading systematic engineering resource for the building services sector.

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Executive summary

§1 - Our key recommendations to deliver retrofit at scale, at speed, with the intended benefits and without unintended detrimental consequences are:

- §1-1 - Adopt a **clear and visible retrofit strategy** that is fully coordinated between government departments and linked to the heat decarbonisation strategy. It must have long- and short-term objectives to give confidence to supply chains to invest in development of skills, competence, business models and products. There must be efforts to increase awareness among homeowners, and raise their confidence in supply chains and potential benefits to justify the disruption and capital investment.
- §1-2 - **Review the regulatory framework** to include all relevant opportunity points for retrofit and all sections of the market – see Q8. This must include, as a very minimum, building regulations, planning, MEES and ECO, and the planning system; new requirements at point of sale should be considered. The review must consider how to address actual in-use performance.
- §1-3 - Build the regulatory framework into the new regulatory regime being developed as a result of the Hackitt Review, including the new Building Safety Regulator, to make sure that healthy and comfortable internal conditions and

energy and carbon reduction are seen as key safety and performance requirements in their own right.

- §1-4 - **Monitor progress** and be prepared to introduce incentives, requirements and additional support if regulations and market-driven demand do not deliver sufficient progress.
- §1-5 - Adopt a **whole-house approach** to avoid carbon lock-ins and detrimental consequences and achieve more ambitious energy and carbon reductions.
- §1-6 - Introduce digital **building passports**, with a clear route to net zero carbon and a record of the works carried out – see Q2 and Appendix B.
- §1-7 - Learn from past reviews and make better use of existing schemes, in particular the **PAS 2030/35 framework and Trustmark**; implement data gathering, monitoring and sharing throughout, and gather lessons to allow **continuous improvements** – see Q2 and Appendix A.
- §1-8 - **Put in place a strategy to develop supply chains skills and competence**. This could start with requirements on public projects and could form an integral part of the post-pandemic recovery plans – see Q6 and Q8.
- §1-9 - Carry out a review **of energy pricing and financial incentives**, to align with carbon, environmental and health objectives - see Q6 and Appendix C.

Q1 - Are the Government's targets on residential energy efficiency still appropriate to achieve its ambition to reach net zero emissions by 2050?

§2 - No.

§3 - There are two fundamental issues: the targets themselves, and the instruments to meet them.

§4 - The **main targets** are as follows:

- §4-1 - A commitment that fuel-poor homes should achieve Energy Performance Certificate (EPC) rating of C by 2030.
- §4-2 - An ambition that as many homes as possible should achieve an EPC rating of C by 2035 where “cost-effective, practical and affordable”.
- §4-3 - An ambition to halving the cost of renovating existing buildings to a similar standard as new buildings.

§5 - See Q4 on the serious limitations of EPCs.

§6 - In addition, ambitions are not firm commitments. The current regulatory and incentive framework is insufficient to meet these targets, with the main **instruments** being:

- §6-1 - Energy Company Obligation (ECO), which targets fuel-poor homes
- §6-2 - Building Regulations, where homes undertake qualifying works
- §6-3 - Minimum Energy Efficiency Standards (MEES), for the private rented sector
- §6-4 - The new Green Homes Grants – see Q11.

§7 - This is inadequate:

- §7-1 - The requirements **do not cover all opportunity points** where low-carbon retrofit could be triggered, in particular:
 - o substantial internal works not requiring building regulations or planning approval e.g. new kitchens or bathrooms, which are significant in capital costs and disruption and affect heating, hot water and electrical demand
 - o new sales: the only requirement is to produce an EPC, not to achieve a particular level; see also Q4 on limitations of EPCs.
- §7-2 - Where they exist, the requirements are **not onerous enough**, and enforcement is weak and inconsistent. Requirements under Building Regulations Part L for existing buildings have not been substantially tightened in the past few years, and do not reflect the UK's carbon reduction target. A review was expected in 2020 but its timing is currently unknown. MEES are subject to a landlord cap such that only about 32% of applicable F and G rated dwellings will be brought to the minimum EPC-E rating¹. This is ineffective regulation; we recommend monitoring of enforcement, and a review of requirements.
- §7-3 - Requirements largely take an elemental approach and do not promote a whole-house approach, which means that opportunities for substantial energy and carbon savings are missed and **detrimental consequences** such as overheating or poor indoor air quality may occur.
- §7-4 - Building Regulations and EPCs in themselves **do not guarantee actual energy and carbon performance**, due to the nature of the assessment and the fact that they relate to the design and as-built stage, not actual in-use performance. See details on EPCs under Q4.

§8 - The system of financial incentives is also insufficient and, in some cases, inconsistent with energy and carbon saving goals – see Q6 and Appendix C.

§9 - Finally, we must **not keep adding to the stock of buildings which will later need retrofitting**. We are not expanding on this here as the focus is the existing stock, but strongly recommend a review of proposals for Building Regulations for new buildings (2020) and for the 2025 Future Homes Standards. We have detailed our concerns and recommendations to MHCLG², and would be happy to discuss this with the Committee.

Q2 - What are the potential risks and opportunities of bringing forward the Government's energy efficiency target?

Risks:

§10 - The main risks are that **the existing targets may not be achieved, due to an insufficient regulatory and support framework, nor deliver the required energy and carbon savings** (see Q1 and Q4).

¹ Consultation impact assessment, December 2017

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/669214/PRS_Consultation_stage_1A.pdf

² <https://www.cibse.org/getmedia/b365476d-1a0c-4ac4-a133-3e6aab84bbe6/Part-L-and-FHS-Consultation-CIBSE-Response.pdf.aspx>

§11 - In addition, whether or not the target is accelerated, **there are important risks related to the need for developing supply chain skills and competence:**

§12 - If retrofit works are not carried out properly, they can have serious detrimental consequences including poor indoor air quality (e.g. from insufficient ventilation or mould growth), fabric degradation, and increased overheating risk. Works may not deliver energy and carbon savings and can “lock in” high-carbon building design, making future savings even more difficult.

§13 - Skills and competence need to be hugely scaled up both for whole-house retrofit and low-carbon heat – see Appendix D for illustrations of the scale of the challenge. This is crucial to improve outcomes and build consumer awareness and demand. Much more should be made of existing skills and competence schemes. The main ones currently are:

- §13-1 - The PAS 2035/30 framework for specifications and installations, developed as a result of the Each Homes Count review and adopted by the Trustmark registration scheme. Trustmark is mandated for ECO works but not in all public works; PAS 2035/30 is not integrated in regulations. There are efforts in developing supply chains³, some with support from BEIS. However, overall, the PAS framework has only penetrated a very small part of the market. CIBSE understand there are currently only approximately 400 retrofit coordinators trained or in training.
- §13-2 - The Microgeneration Certification Scheme (MCS) for domestic low-carbon heat: its future post-RHI remains to be seen. We have received anecdotal evidence that it is used outside the RHI, highlighting the importance of such schemes to support consumer demand and confidence.

Opportunities:

§14 - If implemented properly and as part of a whole-house approach, retrofit can deliver a number of important **co-benefits** to individuals, the environment, and the system; many of these co-benefits (e.g. comfort, repairs) are often the actual trigger for residents, and need to be capitalised upon:

- §14-1 - **Physical and mental health, comfort and wellbeing** of occupants through improved indoor air quality and comfort (both in winter and summer) and reduced fuel poverty. In turn, these brings benefits in healthcare and social care costs and reduced rent arrears. CIBSE TM40 *Health and Wellbeing in Building Services*, 2020, includes a review of benefits related to domestic refurbishment.
- §14-2 - Reducing **outdoor air pollution** by reducing energy consumption and associated fossil fuel combustion.
- §14-3 - Opportunities to simultaneously retrofit **climate change adaptation measures**
- §14-4 - Opportunities to simultaneously improve the state of repair, functionality, and quality of the home
- §14-5 - Opportunities to be part of wider regeneration and “levelling-up” programmes, which could be stimulated by area-based stock profiling and support local initiatives on skills for low energy retrofit.

³ e.g. programmes led by Urbed, Carbon Coop, Retrofit Works and the Retrofit Academy Centre of Excellence

- §14-6 - Benefits to the UK economy, with **huge opportunities for job creation, products development, and export of low-carbon expertise**; this could play a central part in the UK's recovery from the pandemic – see Q6.
- §14-7 - Reduced energy demand, at consumer and system level – see Q5.

§15 - There are opportunities for more ambitious targets to deliver these benefits, provided that targets are supported by the right regulatory framework and incentives (see Q8), and by a supply chain development programme.

§16 - The **development of skills and competence** can start now, and the recovery programme provides opportunities and a further incentive for it – see Q6 on the recovery, and Q8 on regulations and incentives which could support the development of skills and competence.

§17 - A programme of **data monitoring and analysis** is needed alongside, including both large-scale data and deeper studies. This will help track progress, avoid unintended consequences, and identify lessons for improvements to the next iterations of training and competence schemes, regulations, and incentives (as happened in successive phases of the RHI). Data should cover a wide range of retrofit outcomes, including but not limited to energy e.g. comfort and indoor air quality.

§18 - There are mechanisms for data gathering (mainly NEED, the EPC register, and the Trustmark database), but they are not enough, due to the quantity of data they capture, the portion of the market they cover, and the lack of data sharing. This hinders analysis by departments and organisations who could otherwise turn data into policy and practical recommendations. In particular, data sharing could help a better understanding of possible improvements to EPCs, and of the effectiveness of energy efficiency strategies – see details in Appendix A.

§19 - The introduction of digital **building passports** would be a significant step to capture these opportunities and drive consumer demand. Their introduction has been recommended by previous reports⁴. We have detailed in Appendix B our recommendations for what they should include.

§20 - Government should define a suitable building passport form, contents, and quality requirements, building on existing guidance including PAS 2035. It should drive their adoption on publicly funded projects, for early lessons and refinements. This could be followed by wider adoption, including regulatory requirements for passports to be produced at all opportunity points – see Q8.

Q3 - Should Government targets for energy efficiency be legislated for, and if so, what difference would this make?

§21 - It is useful for commitments to be legislated so that government can be held to account, but we have reservations about the way the current targets are expressed (as detailed in Q1 and Q4). The focus should be on translating existing commitments into tangible action now, including regulations which align with objectives (see Q8).

⁴ E.g. [Green Finance Taskforce recommendations to government](#), 2018, and CCC progress report, 2020

Overall progress can be tracked through existing processes including the CCC's work.

Q4 - How effective is the EPC rating at measuring energy efficiency? Are there any alternative methodologies that could be used? What are the challenges for rural areas?

§22 - CIBSE have been working on producing domestic energy benchmarks, which are due for release this year; benchmarks will be available by typology, and possibly by EPC rating. We would be happy to provide more information to the EAC about this work. In the meantime, the information available on how well EPCs relate to actual performance is limited (see Q2 and Appendix A), but it indicates only little correlation between EPC rating and actual energy use⁵.

§23 - Currently, we have reasons for concern that the current reliance on EPCs alone cannot drive energy and carbon savings, due to:

- §23-1 - the methodology behind EPCs (i.e. SAP for new build, and otherwise RdSAP, with modifications for EPC purposes), and assumptions
- §23-2 - the lack of consideration to ventilation and moisture in EPC recommendations reports: this is against the whole-house approach and can lead to detrimental consequences
- §23-3 - the EPC ratings: the main one, called "Energy Efficiency Rating", is in fact a cost rating – this is very misleading; the "Environmental Impact Rating", on the last page, is not prominent. This problem is made worse by the current significant discrepancy between the relative costs and carbon impacts of gas and electricity.
- §23-4 - the focus on design and as-built performance, rather than actual in-use performance
- §23-5 - the lack of granularity in the EPC scale: an EPC "low C" rating may not deliver affordable warmth
- §23-6 - these concerns are true across the stock, but particularly for dwellings of traditional construction and/or heritage value, where assumptions related to fabric performance can be particularly misleading, **and** a whole-house approach is critical, as detailed in a comprehensive 2018 review⁶.

§24 - There are additional issues with the way EPCs are produced, especially an over-reliance on superficial visits and assumptions, rather than more thorough site visits and evidence. Building passports would help address this - see Q2 and Appendix B.

§25 - Alternative methodologies for predicting energy consumption are available e.g. Passivhaus Project Planner, or PHPP, which requires very detailed inputs; and proprietary methods, sometimes based on modified SAP to account for factors such as different occupancy profiles and densities, but which are not widely used.

⁵ See for example Figure 1 in [BPN joint position statement](#), 2019

⁶ STBA, EPCs and the Whole House Approach: A Scoping Study
<https://research.historicengland.org.uk/Report.aspx?i=16098>

§26 - We understand that in the housing sector there is a need for relatively simple and affordable tools, and that EPCs, or similar, have a value due to their established position and their relative simplicity. We therefore recommend a two-pronged approach:

- §26-1 - Improving EPCs by modifying the methodology (this would also benefit Building Regulations outcomes), and focusing on energy or carbon, and possibly space heating, rather than costs. This should build on industry recommendations **and** analysis to better relate EPCs to actual performance – see Q2 and Appendix A on data
- §26-2 - In parallel, introducing attention to actual in-use energy performance through other regulatory means – see Q8.

§27 - Specific challenges in rural areas include:

- §27-1 - Large proportion of buildings of traditional construction – see EPC limitations above
- §27-2 - Higher proportion of buildings off the gas grid: heating solutions are required which are low-carbon and do not lead to fuel poverty; EPCs as cost ratings do not necessarily drive these solutions. There are also concerns about how wood-fired systems are treated by EPCs⁸.

Q5 - How will lack of progress on residential energy efficiency impact the decarbonisation of heat and the associated costs of this?

§28 - This would have a huge impact.

§29 - The need for mass energy efficiency retrofit of existing homes for the UK to meet its carbon reduction target is well documented, in particular by the CCC. Energy demand reduction must be prioritised and should not be traded-off with carbon intensity of energy supplies. It is important for both consumers and the overall system.

§30 – First, because it helps reduce **annual energy consumption and associated carbon emissions**.

§31 – Second, because it helps **reduce peak demand and support load shifting and demand response**, so that system capacity is sufficient. This will also facilitate the transition to zero-carbon energy supplies, as insufficient electricity grid capacity could expand reliance on the gas grid. Even if hydrogen became available to decarbonise the gas grid (currently very uncertain), for a good period it is likely to remain expensive, limited, and best kept for applications such as transport and industrial processes where alternatives are very difficult to find, rather than for heating, which is a low-grade application. Reducing peak demand also has capital cost benefits at the supplier and consumer level, by reducing the required plant and infrastructure.

Q6 - How can the Government frame a Covid-19 stimulus strategy around improved energy efficiency of homes?

§32 - Retrofit should be a significant part of the recovery package, as one of the measures most beneficial to both the climate and the long-term economy⁷. First, as it has the potential for significant **job creation**, throughout the UK⁸; second, those currently furloughed, unemployed or at risk of unemployment (in the construction sector or others) could be targeted in a programme of **skills and competence** for retrofit and low-carbon heat (as detailed in Q2).

§33 - A **strategy for works** should be developed which prioritise areas where works are already planned, i.e. where opportunities arise and where carbon lock-ins must be avoided e.g. the programme of cladding remediation in high rise residential buildings, homes in social ownership and others with households in fuel poverty.

§34 - Pressures on public finances also justify an **overall review of taxes and incentives**, to align them with carbon, environmental, and health objectives (as recommended by the EAC themselves in their Ninth Report of Session 2013–14). There are currently **barriers, counter-incentives and skewing factors** which encourage the continuous use of fossil fuels. This must be addressed to create new incentives and improve outcomes for a given expenditure. Examples include the following, with more details in Appendix C:

- §34-1 - **VAT rate applied to retrofit works**
- §34-2 - **Relative prices of gas and electricity** which do not reflect their relative carbon impact
- §34-3 - **Winter fuel payments**, instead of investing to reduce bills and improve comfort
- §34-4 - **Permitted Development Rights** which allow the creation of dwellings of poor standards, and may be extended to favour demolition instead of retaining embodied carbon.

Q7 - Is the £5 million Green Home Finance Innovation Fund enough to stimulate the market for and drive action from the banks to encourage owner occupiers to improve the energy efficiency of their homes?

§35 - The current rate and depth of retrofit are well below what is required, and the reasons for this are systemic: lack of incentives, lack of consumer awareness about the possible benefits, lack of consumer confidence in the supply chain, an under-developed supply chain, and insufficient regulations. Green finance could be part of the solution, but cannot be relied upon on its own.

§36 - Furthermore, financial organisations will need confidence that real energy and cost savings will be delivered through the works they fund – hence our strong recommendation on developing skills and competence, as per Q2, and putting more focus on in-use performance in regulations, as per Q8.

⁷ Hepburn et al, May 2020, *Will COVID-19 fiscal recovery packages accelerate or retard progress on climate change?* <https://www.smithschool.ox.ac.uk/publications/wpapers/workingpaper20-02.pdf>

⁸ See for example analysis by Parity Projects, estimating that meeting the target of EPC C would increase demand in tradespeople for domestic retrofit to nearly 400,00, up from 150,000 currently and from 250,000 at its peak in 2008. <https://parityprojects.com/net-zero-housing-workforce/>

Q8 - What policy and/or regulation could supplement it?

§37 - The detrimental effects of past start-and-stop policy are well-known, both on take-up of energy efficiency and on the industry's confidence to invest. Government should create a clear and stable strategy aiming at delivering a step change in the uptake, depth and quality of retrofit, taking account of recent recommendations from the Green Construction Board⁹. This strategy should be supported by a comprehensive set of requirements:

- §37-1 - Regulations must **capture all opportunity, or trigger, points** including works requiring building regulations or planning approval, new sales and rentals, and ideally other works which represent substantial capital investment and disruption to occupants e.g. internal works such as kitchens or bathrooms.
- §37-2 - Requirements must represent **deep retrofit**, either as a one-off or a step-by-step approach
- §37-3 - Requirements must be based on the **whole-house approach** to avoid unintended consequences and avoid "locking in" sub-optimal carbon performance, building on the PAS framework and on data gathered across building types, climates etc.
- §37-4 - Proposals for revisions to **Part L of the Building Regulations** for existing buildings, due in 2020 (and its equivalents in the devolved administrations), should demonstrate real ambition, with increases in performance requirements, better processes to improve in-use performance, and measures to enable a transition to net zero.
- §37-5 - Regulatory requirements must evolve and extend to **tackle actual in-use performance**. There is growing industry consensus on this⁷ and CIBSE have proposed approaches to explore¹⁰. See Q4 on EPCs.
- §37-6 - Digital **building passports** should be woven into all regulatory requirements (see Q2)
- §37-7 - Including retrofit works within the scope of the proposed **New Homes Ombudsman** should be considered: currently, it only covers new homes, but substantial interventions and capital expenditure may similarly warrant consumer protection.
- §37-8 - There should be a review of **Permitted Development Rights (PDRs)**: see Q6 and Appendix C.

§38 - In addition, **support mechanisms** should be put in place, including:

- §38-1 - public procurement levers to develop skills, competence, and the adoption of building passports e.g. through Green Homes Grants, high-rise remediation programme, ECO works
- §38-2 - training support programmes, including links to the new Talent Retention Scheme
- §38-3 - financial incentives and removing counter-incentives (see Q6 and Appendix C); these should target all opportunity points and all parts of the market (owner occupier, social landlords etc), to ensure all have the capability, opportunity and motivation to upgrade existing homes.

⁹ <https://www.constructionleadershipcouncil.co.uk/news/gcb-buildings-mission-retrofit-recommendations-published/>

¹⁰ <https://www.cibse.org/getmedia/bdaf4dee-5980-4b58-871c-a24e88c010d4/CIBSE-Steps-to-net-zero-carbon-buildings.pdf.aspx>

- §38-4 - action to raise consumer awareness and demand, promote qualification and competence schemes, and support exemplar projects throughout the UK to ensure maximum visibility and consumer drive.

Q9 - Which models in other countries have been successful at stimulating demand for energy efficiency within this market?

§39 - Research into successful programmes shows that, as common features, they usually provide some form of financial incentive, and offer a clearly thought out 'customer journey', that smooths the path for those planning retrofits – building passports can play a key role here (see Q2 and Appendix B).

§40 - Useful examples include:

- §40-1 - The Better Buildings programme¹¹ and PACE financing programme in the US <https://www.energy.gov/eere/slsc/property-assessed-clean-energy-programs>.
- §40-2 - Superhomes, run by Tipperary Energy Agency: <https://superhomes.ie/>
- §40-3 - The KfW Experience in the Reduction of Energy Use in and CO2 Emissions¹²
- §40-4 - Renowiki examples across Europe <http://buildupon.eu/initiatives/>
- §40-5 - Greater London Authority review of building passports worldwide⁶
- §40-6 - The German EnEv programme¹³.

Q10 - What additional policy interventions are needed for social housing, leaseholders, landlords and tenants?

§41 - We recommend a review of energy pricing and financial incentives, including those targeting cold homes and fuel poverty (see Q6) and of ECO (see Q11).

Q11 - How should the proposed Home Upgrade Grant Scheme be delivered to help the fuel poor? Should the new grant scheme supplement ECO in its current form, or should ECO be redesigned?

§42 - The scheme should have the following characteristics:

- §42-1 - It should aim to benefit the targeted dwellings AND support the overall programme of developing skills, expertise, knowledge and solutions.
- §42-2 - It should incorporate requirements for achieving in-use performance, not just an EPC rating. This would align with the government's intention to procure for best value.

¹¹ A number of evaluation reports on this programme are available including: Better Buildings Residential Network, Lessons Learned; US Department of Energy; Peer Exchange Calls; Summer 2018, No. 16 and Demonstration of Energy & Efficiency Developments (DEED) Grant Agreement Fort Collins Utilities, 700 Wood St, Fort Collins, CO 80522; Grant #1042- Integrated Utilities Services Final Report; 19 January 2017

¹² from Buildings: Operation, Impacts and Lessons for the UK; Schroder, M et al; UCL 2011

¹³ See for example this summary <https://energypost.eu/uk-green-deal-failed-needs-replacement/>

- §42-3 - Dwellings should be monitored, with the aim that in-use performance should meet the intended energy, costs and carbon savings, internal environmental quality and occupant feedback; lessons should be gathered when this is not achieved. Data should be gathered centrally and analysed, with lessons made publicly and widely available, and fed into the skills and competence programmes as well as future phases of funding.
- §42-4 - It should be used to pilot building passports – see Q2.

§43 - The scheme should represent genuine additionality to financing of home energy efficiency i.e. supplement the funding available through ECO. Using rough benchmark costs of £15-50,000 per deep retrofit per home, the £6.3bn announced for it together with the social housing decarbonisation scheme would represent 126-420,000 homes i.e. only a small proportion of the estimated 2 million in fuel poverty.

§44 - While ECO has been useful in implementing some energy efficiency works, it does not go far enough:

- §44-1 - It is based around individual measures rather than whole-house; this misses opportunities and risks unintended consequences
- §44-2 - It should encourage deeper retrofit, with energy and carbon performance targets
- §44-3 - It should avoid locking-in high-carbon solutions, in particular by tightening limits on the installation of gas boilers as qualifying ECO measure¹⁴. It should instead accelerate the low-carbon heat transition, alongside a review of energy prices (see Q6).
- §44-4 - ECO works should trigger a building passport – see Q2 and Appendix B.

Q12 - Are there examples of where energy efficiency policy has fallen between Government Departments? How could cross-departmental coordination be improved?

§45 - Realising benefits in terms of energy and carbon, fuel poverty, health and wellbeing, skills and competence, and efficient use of funds, demands coordination across departments, including MHCLG, BEIS, Treasury, and the Department of Health and Social Care. Examples where greater coordination is required include:

- §45-1 - **Financial incentives** should be consistent with objectives (see Q6), which requires coordination with Treasury and HMRC
- §45-2 - An important area of overlap is between BEIS and MHCLG on the **building regulations Part L methodology, also linked to EPCs, and the need to tackle actual in-use performance**. Positive aspects include the attendance of BEIS representatives at meetings of the MHCLG working groups on Part L, and the BEIS project for a “fresh thinking” review of SAP and RdSAP. However, this is not sufficient.
- §45-3 - Many datasets already exist, but limited sharing prevents analysis and lessons gathering. **Better data sharing for better outcomes** is required, including between MHCLG and BEIS on EPCs and in-use consumption – see Q2 and Appendix A.

¹⁴ [Ofgem, ECO - Final determination report, April 2019](#)

- §45-4 - The creation of the new **Building Safety Regulator** creates a very real risk of further fragmentation. BEIS need to be involved with the development of the new regulatory regime, including the upcoming Building Safety Bill and Regulator, to ensure that energy and carbon performance are seen as essential requirements.
- §45-5 - There are examples in local, regional and devolved administrations of programmes seeking to jointly tackle **health and home improvements** e.g. in Wales, the Warm Homes Nest scheme includes health criteria for eligibility to home efficiency improvements. Such schemes do not exist consistently across England. Coordination with BEIS and Ofgem is also needed for consistency with the UK's heat strategy, to avoid funding continuous use of fossil fuels and to consider the overall energy pricing landscape.
- §45-6 - There is a need for cross-departmental collaboration on the approach to retrofit works at the building and neighbourhood levels i.e. including planning, MEES and building regulations, particularly on the treatment of the **building stock of heritage value**.

END OF MAIN SECTION

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APPENDIX A – Limitations of existing mechanisms for data gathering on retrofit

§46 - The main mechanisms for data gathering are currently as follows:

- §46-1 - TrustMark database: as stated in Q2, this only captures a small proportion of the market;
- §46-2 - NEED database: we very much support the gathering of actual in-use data from energy efficiency works. However, this currently only captures publicly funded works (e.g. ECO), and the lessons are limited by a lack of detail on the measures implemented. For example, measures described as “solid wall insulation” could cover anything from regulatory minima to exemplar levels of insulation, which hinders the analysis of energy savings. Furthermore, the database does not consider other outcomes e.g. comfort.
- §46-3 - EPC register: this could in theory provide much information on the building stock i.e. the data used to create the EPCs, however that data is held by MHCLG and not made available. Used alongside utilities data accessible to BEIS, this would help build knowledge and understanding of how well EPCs correlate with actual performance, and of trends in energy use over time as works are carried out across the stock (i.e. in a similar process to NEED). It could also feed into the work of CIBSE and UCL on domestic in-use energy benchmarks, to inform policy and guidance on effective measures, expected energy savings across different typologies etc.

APPENDIX B – Recommendations on building passports

§47 - Building passports should be digital and include:

- §47-1 - Information on current building (fabric, heating system etc)
- §47-2 - User-friendly information on operation and maintenance
- §47-3 - Records of energy consumption
- §47-4 - A route to net zero carbon, whether as single package or step-by-step
- §47-5 - Information on supply chain and accreditation schemes
- §47-6 - A log of works carried out over time
- §47-7 - Other relevant information e.g. occupant comfort and air quality.
- §47-8 - Consideration of an 'MOT' type approach for key aspects e.g. starting with regular fire and combustion appliance checks.
- §47-9 - A link to a central database enabling the analysis of trends and progress; this could be done without compromising privacy, as in NEED.

§48 - Government should define a suitable building passport form, contents, and quality requirements, building on existing schemes including the PAS 2035 options evaluation and improvement plan, for which TrustMark and the Retrofit Academy are currently working on machine-readable templates for improvement plans meeting PAS recommendations. A review of building passports was also recently carried out for the Greater London Authority¹⁵.

APPENDIX C - Policies and incentives which are counter to energy and carbon objectives in the residential sector

§49 - The current **VAT rate applied to retrofit works** discourages energy and carbon improvement works to existing buildings and does not treat new build and retrofit equitably. This should be reviewed. In parallel, increased take-up of retrofit would lead to job creation, increase revenues to HMRC (e.g. income tax, increased spending) and balance lost VAT revenues.

§50 - **Energy pricing should be reviewed to gradually align prices with carbon impact** and incentivise the right decisions. Gas is significantly cheaper than electricity, which can skew investment towards higher-carbon solutions. This must also avoid detrimental effects on fuel poverty – see next point.

§51 – **The approach to winter fuel payments should be reviewed:** these total on average £2bn per year¹⁶, and do not address the fact that homes may remain uncomfortable and inefficient. Options should be reviewed to shift finances towards improving the energy efficiency of these homes. We do **not** recommend weakening commitments to end fuel poverty, but instead more effective targeting of support and a better alignment with carbon policies; crucially, this would also bring benefits in comfort and health, often to vulnerable populations such as the fuel poor and the elderly, and in turn offer potential benefits to both the health and social care budgets. The shift should be announced as part of a long-term strategy, to allow organisations

¹⁵ Not publicly available yet, but may be provided to the Committee on request.

¹⁶ House of Commons Library, Briefing Paper, Winter Fuel Payments update, 5th November 2019

and individuals to prepare, and could be staged. A continued commitment to targeted schemes such as the Cold Weather Payments and Warm Home Discount could help in the transition.

§52 - **Permitted Development Rights** allow the creation of new dwellings by conversion of existing buildings without planning scrutiny. This represents a loss of revenues to the local authority (through S106 or other planning contributions), as well as raising serious concerns about health and safety¹⁷ and missing an opportunity for applying higher standards. Incentives for construction and the wider economy should favour those that demonstrate they contribute to carbon, environmental and health objectives, not the opposite.

APPENDIX D - Scale of the challenge

§53 - Retrofitting 29 million homes within the next 29 years to 2050 means, on average, completing nearly 3,000 retrofits **per day**. This is similar to the numbers reached by the Green Deal **per year** (14,000 homes in 4 years¹⁸).

§54 - In practice, this will require a first phase to grow capacity, to then peak over 1 million (possibly 3 or 4) homes per year. This is similar to the numbers reached by ECO **over 5 years**, which nowhere near achieves deep retrofit (1,003,300 homes between May 2015 and April 2020¹⁹).

¹⁷ CIBSE Journal, Opinion, September 2019 <https://www.cibsejournal.com/opinion/the-fallacy-of-pdrs/>

¹⁸ 2016 NAO report <https://www.nao.org.uk/wp-content/uploads/2016/04/Green-Deal-and-Energy-Company-Obligation.pdf>

¹⁹ Household Energy Efficiency Statistics, headline release June 2020
<https://www.gov.uk/government/collections/household-energy-efficiency-national-statistics>