ENERGY PERFORMANCE CERTIFICATES FOR BUILDINGS

Call for Evidence Summary of Responses

Contents

1 Introduction

Energy Performance Certificates (EPCs) are certificates produced when a building is built, sold or rented out, which:

- Illustrate the energy and carbon emissions[1] performance of a building;

- Allow consumers to compare the energy performance of different buildings; and

- Indicate how a building can be improved.

In July 2018 the Government launched a Call for Evidence on Energy Performance Certificates (EPCs) which aimed to:

1. Gain evidence on how the current EPC system is working;

2. Gather information on the suitability of the current system of EPCs for both their current and emerging uses in measuring building energy performance; and

3. Obtain feedback on suggestions for improvement.

EPCs are widely used in the residential, commercial and public sectors, and are a key tool in encouraging energy performance improvements in building[2]. EPCs are currently the only widely available, standardised means of assessing a building's energy performance and will become more important as we develop policies to meet the UK's commitment to bring greenhouse gas emissions to net zero by 2050.

In order to improve the performance of our building stock, it is essential that EPCs are trusted, engage consumers successfully and encourage them to act, and provide the data required for appropriate decision-making.

The 2018 Call for Evidence outlined the Government's view of what EPCs are used for now and are likely to be used for in the future, and what important characteristics are required of EPCs to be effective at fulfilling these functions. We then discussed in more detail the available evidence on how EPCs are currently performing against 8 desirable 'attributes' and asked questions to gather further evidence on current performance and how potential improvements to EPCs could be introduced.

The Call for Evidence covered domestic and non-domestic EPCs for all tenure types and included both new-build and existing dwellings. We also briefly considered the use of Display Energy Certificates (DECs) in Section 5, as these are relevant to the discussion of operational ratings, but these were not the primary subject of the Call for Evidence. The Call for Evidence did not cover the models underlying EPCs[3] as these are covered by an existing consultation process[4]. We received 229 responses to the Call for Evidence, which are broken down below.

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[1] The EPC includes an Environmental Impact Rating (EIR). The EIR is a measure of a home's impact on the environment in terms of carbon dioxide ($CO2$) emissions.

[2] Emissions from buildings currently represent around 30% of UK greenhouse gas emissions by end use, with homes responsible for 22%

[3] The building model used for domestic EPC is the Standard Assessment Procedure (SAP), and for existing buildings where less data is available, reduced data SAP (RdSAP) is used. Non-domestic EPCs use the Simplified Building Energy Model (SBEM) or Dynamic Simulation Model (DSM).

[4] Public consultation on proposals to amend the Standard Assessment Procedure (SAP)

Figure 1: Number of respondents for each organisational type

Legend:
- EPC industry
- Residential/social landlord
- Consumers
- Sustainability/fuel poverty
- Energy efficiency industry
- Property/energy consultant/surveyor
- Commercial buildings
- Local authority/public sector
- Heritage/off gas-grid
- University/research organisation
- Data/smart technology
- Lawyer/solicitor
- Energy supplier
- Bank/finance
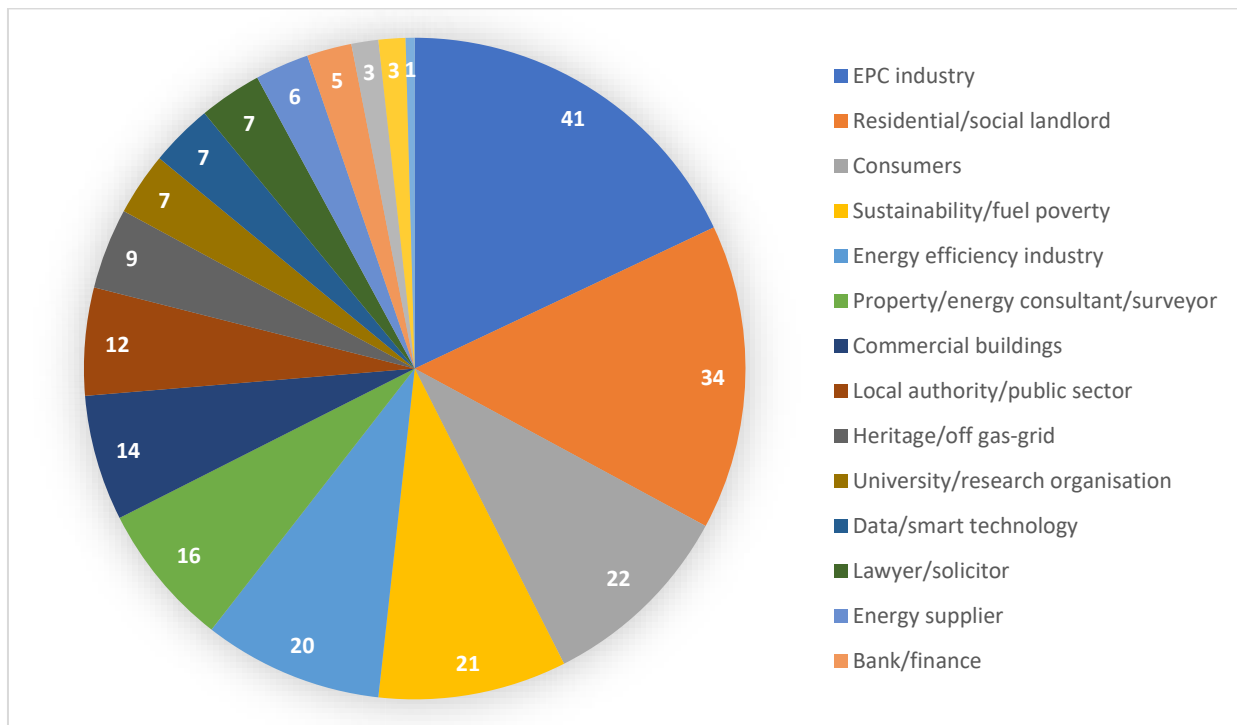
Note on use of graphs, numbers and percentages

Respondents to the Call for Evidence were encouraged to log their answers via the Government's Citizen Space consultation portal. 169 responses were submitted via Citizen Space and 60 via email. Where questions asked respondents for their views on suggestions made in the Call for Evidence, Citizen Space respondents selected pre-set options such as 'Effective' or 'Somewhat Effective'. Non-Citizen Space responses were allocated against one of these options by reviewers, based on a reading of the views expressed by the respondent, with no response entered if an option was not discussed.

Where percentages of respondents are given in this document, these relate to the percentage of respondents who answered a given multiple choice question, rather than a percentage of the total respondents to the Call for Evidence, as around 80-90 respondents did not provide multiple choice answers and the number who responded varied by question. When identifying the most popular multiple-choice options, unless otherwise specified this was based on the number of respondents who responded 'very effective', 'effective' or 'somewhat effective', which have been counted as 'favourable'.

Where numbers of respondents are given, this relates to similar responses which have been grouped together, with an indication of how many people gave this type of response. Where the number of respondents is not provided for a given response, this generally indicates that fewer than 10 respondents gave this response. In general, the number of respondents who stated a reason for supporting a suggestion already made in the Call for Evidence has not been recorded.

Handling Data Responses to the Call for Evidence

Responses to the Call for Evidence are opinion-based or anecdotal and have not been corroborated during the production of this Summary document. Where respondents have referred to external surveys or evidence to support opinions it will not have been possible to independently verify this data.

As such, the action points raised in the Action Plan, published in conjunction with the Call for Evidence Summary of Responses, have been proposed through a combination of the responses to the Call for Evidence alongside policy development work within Government.

2 Aims, Uses and key attributes of EPCs

This section considered the current and future uses of EPCs and what makes a good EPC. We identified 9 types of uses for EPCs now or in the future, and asked respondents whether this was accurate. We identified 8 key attributes of EPCs and asked responders whether they agreed, and which were the most important for the different uses identified.

Figure 2: The 8 key attributes of EPCs

Quality	Encourages action	Data availability
•Reliability •Accuracy •Up to date	•Improves energy performance •Influences property decisions	•Access to data •Coverage •Simple and low cost

Question 1 - Have we captured all of the current uses of EPCs? Are there any existing or emerging uses we should be aware of?

Of the 173 respondents who answered this question, 68% agreed that we had captured the majority of EPC uses. Additional uses mentioned by respondents included:

- Targets in the Fuel Poverty Strategy

- Used by local authorities and other bodies as a general indicator of the condition of the property, or as an indicator of fuel poverty

- Eligibility for some sources of energy efficiency funding which are not directly administered by central Government such as Warm Homes Fund[5]

- Stock efficiency reporting by social housing providers

- Use in the risk assessment within the PAS 2035 standard for energy efficiency retrofit

Question 2 - Do you agree that we have identified the key attributes for EPCs? Are there other important attributes we have not listed? Please indicate how important you consider each attribute and provide details to explain your answer.

Of the 172 respondents who answered this question, 77% thought we had identified the key attributes. The two attributes that were considered the most important were accuracy and reliability. The reasons given for accuracy and reliability being important included: accuracy is currently poor; policy and legislation are based on EPCs so they should be accurate; and variations in quality undermine EPCs as a benchmarking and data collection tool.

Additional attributes suggested to be important included: clear and understandable; appropriateness for particular use; influencing design decisions; valued by consumers; fairness – all properties should have an EPC; public awareness of EPCs; and feasibility (EPC should contain more of the information necessary for works).

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[5] https://www.affordablewarmthsolutions.org.uk/warm-homes-fund/

Figure 3: Responses that indicated which attribute was the most important
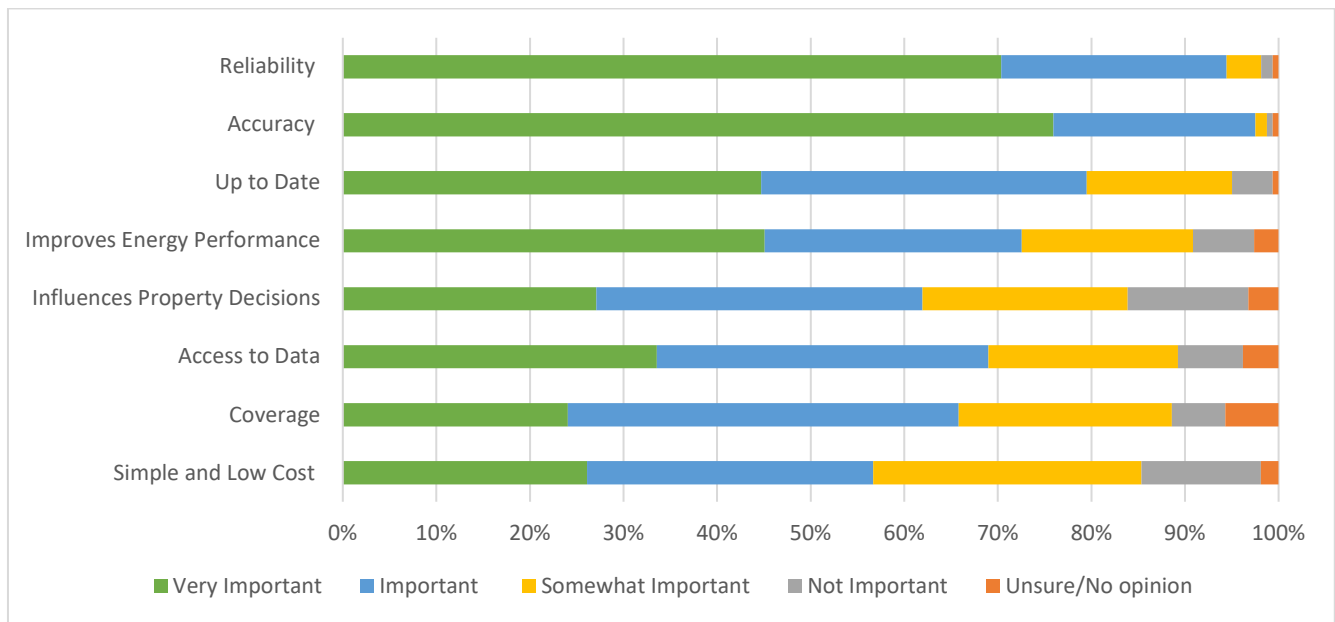
Question 3 - Which attributes are important for which uses and why?

Respondents who responded via Citizen Space were given the option to tick which attributes they thought were important for which uses – with no limit to how many ticks could be used.

Figure 4: Number of responses indicating an attribute was important for a given use
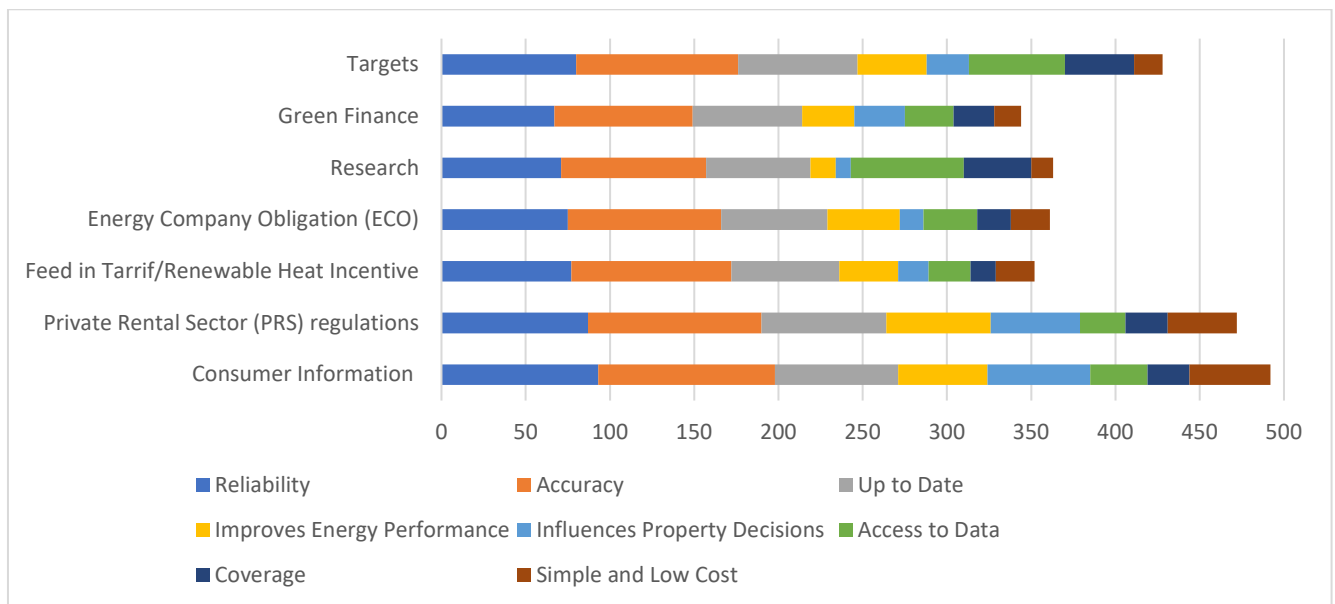
158 respondents answered this question. Again, reliability and accuracy were seen as the most important across all uses, with 'up to date' also being seen as broadly important. 'Improving property performance', 'influencing property decisions' and 'simple and low cost' were mainly seen as important for consumer information and Private Rented Sector Minimum Energy Efficiency Standards regulations (referred to below as PRS regulations). Coverage and access to data were mainly seen as important for research and targets. Many reasons given were similar to those under question 2, but few respondents outlined how individual attributes were relevant to individual uses. 20 respondents repeated the importance of EPC quality in general and for improving trust in EPCs.

3 EPC data quality

This section considered three different aspects of EPC data quality and how this could be improved. These aspects were: the rating should be reliable across different assessors, EPCs should be an accurate indicator of energy performance, and they should be up to date.

3.1 Reliability

Question 4 - What evidence do you have relating to the reliability of EPC assessments? Do you have any information on how reliability varies across different properties, and/or the likely sources of variation in assessments?

Of the 145 respondents to this question, 2 provided formal evidence of EPC reliability, comprised of two separate unpublished academic studies. The remaining evidence consisted of anecdotal evidence or single examples of poor EPCs. A further 21 responses thought EPC reliability was poor, but gave no evidence, while 5 respondents thought reliability was good.

The first study compared properties with 2 EPCs, estimating the average error between these to be 10 percentage points. Because ratings went down as well as up, differences were not simply due to works carried out. The second study suggested no change in EPC errors between 2008 to 2016 and identified that London EPCs and those for flats showed more errors, while Green Deal EPCs showed fewer. The study also identified that EPCs often don't include energy efficiency measures known from other sources to be present, and that very efficient properties are often scored worse than they should be.38 respondents provided a single example of an EPC issue. This was either where the same building received two different EPC ratings, or where the EPC produced didn't represent the building characteristics. 33 provided examples where particular EPC inputs were incorrect.

Sources of variation in EPC results

The predominant explanation for variation was attributed to inconsistencies in data input. Of the 145 respondents who answered this question, 87 respondents mentioned incorrect assessor inputs and 42 respondents mentioned a cause relating to missing data and assumptions.

Of the reasons for assessors inputting the wrong data, 34 thought low prices were driving down assessor time for the assessment, 33 attributed this to different levels of assessor expertise, 19 mentioned gaming or fraud, 19 thought there was a problem with the QA process, 10 referred to poor appeals, redress or error reporting processes and 8 mentioned that the property owner can't assess the accuracy themselves.

25 respondents identified particular types of properties with variation, including complex buildings, older buildings, industrial units, flats and converted buildings, heat pumps, electric or biomass heating and very low energy homes. Older EPCs were perceived to be less accurate by 9 respondents – related to improvements in both training and QA, despite the evidence from the academic study suggesting there was no difference. 33 respondents described which EPC inputs were likely to be entered incorrectly, including errors with building construction, build date, glazing type, building dimensions, heating type/controls and wrong/missing insulation.
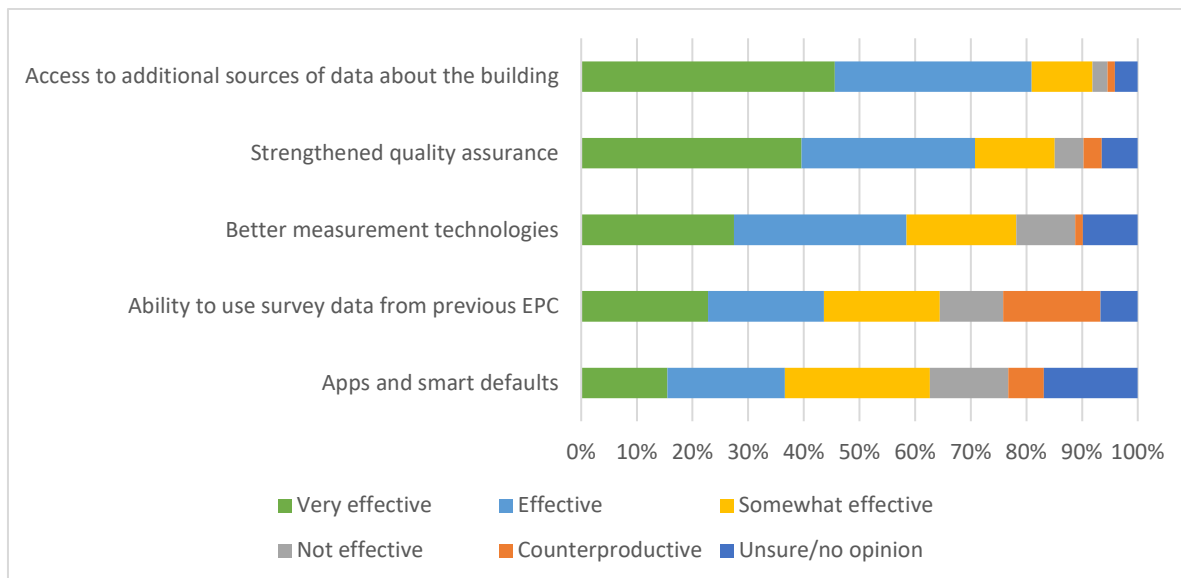
Of the reasons for missing data and assumptions, 19 referenced excessive use of default values, 19 mentioned data being missing or access issues, 12 thought that the 'tick-box' assessment method gave rise to errors, 6 mentioned that some products weren't included in the EPC product characteristics database, and 4 thought that the software artificially limited what could be input.

Wider issues affecting EPC reliability not related to assessor inputs or missing data included EPC methodology updates, software inconsistencies, issues with EPC conventions[6], different accreditation scheme requirements, other modelling issues, problems with EPC addressing resulting in incorrect lodgements, new build construction not matching specification, and the use of sampling techniques where an archetype building is used to estimate a large number of similar properties. Respondents also raised as an issue that the EPC doesn't take build/install quality or deterioration of materials into account.

Question 5 - Which of the suggestions provided above do you think would be effective in improving the reliability of EPC ratings? Do you have any other suggestions for improving EPC reliability?

Of the 154 responses to this question, the most popular options were access to additional data sources (92% favourable responses) and strengthened quality assurance (85% favourable responses).

Figure 5: Responses indicating whether the suggested measures would be effective for improving reliability

The most common reasons given in support of access to additional data sources were to avoid missing data, to avoid making assumptions, to ensure a more joined up approach to data and to support the possible use of the building logbook proposed under Question 19. Other reasons given to support access to additional data were that this would reduce time and cost and could improve enforcement. However, variable data quality and the need to check this, as well as data protection issues could be disadvantages.

The most common reasons in support of strengthened quality assurance were that poor EPCs reduce trust, that gaming needs to be addressed, and that self-regulation by accreditation

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[6] Conventions are the working practices developed by MHCLG and industry partners to ensure consistency and to improve the energy assessment process.

schemes is not effective. Additionally, QA can improve training, the QA process needs to be updated for new EPC uses, and robust QA is standard in related industries. Concerns raised were that stricter audits could push up EPC costs and that QA had already improved.

Responses to the other three solutions were less positive, although over 50% of respondents to this question thought that all of them would be at least somewhat effective.

Better measurement technologies, such as thermal imaging, air permeability tests and machine vision of building geometry could be low cost and options are increasing, but assessors would need to be properly trained. Some schemes already use apps and smart defaults effectively and they could reduce costs, but they might oversimplify the process and need to be properly tested and properly applied by assessors.

Allowing assessors to access previous EPC survey data was disputed in the comments, with many arguing this would be counterproductive due to historic errors, things having changed, assessors not visiting the site themselves, and more potential for disputes. 1 respondent thought only the more objective data (building size, dimensions and drawings) should be used. However, those in favour thought this would make the EPC process quicker and cheaper, would identify previous errors and prevent new ones, and that SAP data could be used for RdSAP.

Additional suggestions

137 respondents provided additional suggestions for improving EPC reliability. Suggestions were closely related to the reasons provided for variation in EPCs, with the majority of suggestions focused on improving data or making the approach assessors take to assessments more consistent.

To improve data, the main suggestions were better ways in which data could be collected (34 responses) and that the number of default values used could be reduced (21 response). Suggestions for improving data mainly focused on improving data provision by the property owner, either through better awareness or through obligations. Build date and data for extensions and conversions were mentioned as particularly important for accuracy. The main theme for reducing default values was around improving SAP's Product Characteristics Database (PCDB)

To ensure more consistent approaches by assessors, the most popular suggestions were improved auditing and enforcement, better training/qualifications and better accountability or redress processes. Other suggestions were better pay to allow more time at site; addressing gaming/fraud; making it easier for the homeowner to check the data in their EPC; making people value EPCs more so they care about quality; and a better process to deal with non-standard or heritage buildings.

More detailed suggestions to improve quality assurance included a TrustMark quality mark for assessors, tougher sanctions on failed audits, site visit for audits, more frequent monitoring for errors, smart auditing, checking use of default values, and preventing assessors from switching accreditation schemes if removed from the register. Oversight suggestions were a single body responsible for both EPC compliance and accuracy[7], a formal scheme for reporting of EPC errors by third parties (e.g. Ofgem), an independent regulator/mediator, UKAS[8] accreditation of

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[7] Currently, EPC compliance is enforced by Local Authority Weights and Measures authorities, while accuracy is self-regulated by accreditation schemes and overseen by MHCLG
[8] UKAS is the UK's National Accreditation Body for organisations offering testing, calibration and certification services https://www.ukas.com/

accreditation bodies, more public input into the scheme, and an improved process for dealing with a lodged EPC if an error is found.

Other suggestions were improvements to EPC software, improvements to EPC conventions, improving the way that addresses are used on EPCs, making it necessary for the property owner to sign off on an EPC, creating an EPC 'revision history' for each property showing the changes from one EPC to the next and the reasoning behind them, and taking account of the condition and maintenance of building aspects on the EPC. Suggestions made elsewhere in the Call for Evidence could also improve reliability, such as a building logbook, using actual consumption data and up-to-date EPCs. Twelve responses were specific to new build EPCs, in particular improved oversight by building control and checks to ensure that the desktop EPC matches the building actually built.

3.2 Accuracy

Question 6 - What evidence do you have on the accuracy of the models used to produce EPCs (SAP, RdSAP, SBEM, DSM) in comparison to other methods such as the co-heating test?

Of the 61 responses to this question, 12 respondents provided evidence on the accuracy of EPC models. The remaining respondents provided their opinion on EPC accuracy.

4 responses provided evidence of good accuracy. 2 respondents referenced a project for 10 homes in Nottingham which compared theoretical performance and measured data and found a good correlation, suggesting that the underlying model is strong if input data is correct. 3 respondents referenced work by the Zero Carbon Hub which compared SAP, PHPP, Energy Plus and IES on the same dwellings and found that SAP gave similar results to the more sophisticated models despite its relative simplicity[9]. 1 respondent referenced experience analysing hundreds of thousands of properties using RdSAP which showed that the EPC provides a good estimate of energy bills for most standard building types, as long as accurate information is provided and the householder has normal energy use patterns.

7 respondents provided evidence of poor accuracy from studies. 2 respondents provided examples where EPC data did not correlate with actual consumption, in particular a comparison of Operational Ratings with EPC ratings for 26 non-domestic buildings found that better EPC rated buildings actually had slightly higher energy consumption. 2 respondents compared SAP with the co-heating test, in new and older homes, and found that there was a poor correlation[10]. 4 further respondents gave other evidence on poor accuracy: data increasingly shows the energy consumption of new dwellings can be up to 200% more than the EPC predicts; similar buildings can receive very different EPC results, SBEM and DSM can produce different results for the same non-domestic building; and different DSM models show substantial differences in estimated heating and cooling demand for non-domestic buildings.

7 respondents mentioned issues with the models used to produce EPCs. 2 were critical of the accuracy of RdSAP and 4 were critical of non-domestic models. Issues raised included the fact that models don't take into account additional energy-related issues such as the effect of ventilation on air quality and overheating, errors in the SBEM fabric library, battery storage for

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[9] Zero Carbon Hub, Carbon Compliance for Tomorrow's New Homes, Closing the Gap between Designed and Built Performance, August 2010
[10] A Retrofit of a Victorian Terraced House in New Bolsover: A whole house thermal performance assessment. Published by Historic England 2015

renewables is not included in the rating and out of date fuel costs, emissions factors and renewables information. Some respondents described SAP issues specific to heritage properties, including: incorrect u-values for solid walls[11]; specific features such as timber-framed double glazing, open fireplaces and small windows not accurately represented; and biomass boilers/stoves not reflected correctly on PCDB.

Question 7 - Are you developing any kind of tool for measuring the energy performance of buildings (controlling for the effects of occupant behaviour) using smart meter data or other data, which could be relevant for EPCs?

Of the 50 responses to this question, 24 responded that they were developing a tool that could be relevant for EPCs. Since the launch of the Call for Evidence, BEIS launched an Innovation Competition to develop and test methods such as those described in the action plan (referred to as Smart Meter Enabled Thermal Efficiency Ratings, or SMETERs) and 5 respondents were involved in this programme. 6 were developing something similar outside of this innovation competition. A further 22 respondents described another tool that might be relevant for EPCs.

SMETERs and similar tools

The applicants for the SMETERs programme did not provide much detail on their technologies, although information about the successful applicants' tools will be published in future as part of the SMETERs programme. Of the tools not part of the SMETERs competition, one respondent has developed an algorithm that detects appliance use from the Smart Meter. Another has developed SAP-based software that can take a feed from any digital technology to make data-driven decisions on retrofit. Another has a method based on smart meter data and weather data that could be used to check a surveyed EPC to identify a problem with an EPC calculation. Another respondent has an energy advice tool based on SAP, but where the modelled energy use can be modified by additional inputs such as temperature and actual energy consumption. The final respondent has developed something similar to the SMETERs participants, based on energy consumption and temperature data.

Other relevant tools

Four respondents mentioned operation ratings tools for non-domestic properties, covered under Question 14. A further three respondents are developing tools which provide advice to homeowners that could compliment EPCs: Ecologic[12] have developed a web-based energy rating and retrofit assessment tool that allows users to specify behaviour and compares predicted to actual consumption data; SMAP is an online web tool which uses smart meter data to provide personalised, accurate advice on the benefits of installing energy efficiency measures in Scotland; and The Dynamic Engine (DE), which is a combination of SAP, RdSAP and the Green Deal occupancy assessment, including calculations of income from Government renewables schemes.

Five respondents outlined tools which they felt could inform the EPC methodology; heat-engineer.com – a heat-loss calculation software; the ARCADA tool for rapid U-value measurement; the STBA retrofit survey methodology incorporating EPCs; the GGF Energy Savings Calculator, which calculates the potential energy, carbon and cost savings from installing more energy efficient windows; the Electric Heating Company smart app for

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[11] Note that u-values for solid walls were updated in RdSAP in November 2017 in response to better evidence, so this issue has been resolved

[12] http://www.getecologic.com/blog/building-performance-ratings-disclosure-and-rating/

optimising power consumption for heat where there are restrictions on the incoming electrical supply.

Research or data which could be used

Four respondents described relevant data that they felt could be used to help to improve EPCs: an analysis of the performance gap in domestic properties using Green Deal data; data collected through a prototype Home Energy Management System (HEMS) deployed over 2 winters as part of the Home Energy Services Gateway (HESG) project; data collected through the Energy Data Integration System (EDIS) project which collated housing stock data, historical mapping, building control data along with benefits and EPC data; and Monitoring and Evaluation outcomes collected under PAS 2035 requirements[13].

Question 8 - What evidence do you have on how the accuracy of EPCs could be improved using the tools and data sources outlined above, or through any other means? Do you have any views as to how these approaches could best be incorporated into the current EPC framework?

Few responses provided evidence that tools such as the ones described could provide more accurate measurement of energy performance. 2 respondents described field trials demonstrating such approaches, and 1 is using a similar approach commercially in Belgium.

The remaining respondents gave their opinion on whether such tools could improve EPC accuracy. 9 respondents were generally positive about the potential, with comments that such methods could be useful for comparing actual performance with predicted performance from the EPC and that being able to factor out occupant behaviour would be crucial to the success of such methods. The main concern with such tools, raised by 12 respondents, but based on a misunderstanding of the tools, was that using smart meter data would not be compatible with the EPC as an asset rating because it would include occupant behaviour.

Incorporating new approaches into the EPC framework

9 respondents provided specific thoughts on how these tools could be used in EPCs. 2 respondents thought that energy performance tools such as SMETERs could be incorporated directly into the SAP calculation, as described in the Call for Evidence, but 4 respondents thought that, at least in the short term, they might be better used as a check against the Heat Transfer Coefficient (HTC) calculated through RdSAP. This could be through a separate section either where changes to the EPC could be recorded to preserve continuity with previous EPCs, or where predicted data could be compared with measured data, or the SAP and SMETER-generated HTCs could appear separately. 1 respondent thought that such methods should not be used to replace survey data but to enhance it, because replacing data would be essentially turning the property into more of a black box and reduce any accuracy of analysis of how to improve the property.

8 respondents had some comments on implementation. These included a parallel system with two different accuracy levels of 'standard' and enhanced'. The French EPC system allows two alternative ways of calculating the EPC rating which may be relevant, this would require the type of tool used to be specified on the EPC. As a first step, EPCs should record whether the property has a smart meter. These tools would then need a DCC-enabled smart meter and

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[13] https://www.trustmark.org.uk/ourservices/pas-2035

permission to access the data with a way of 'metering' the savings achieved from retrofit by comparing pre- and post-works energy use.

One respondent noted the need for incentives to develop these tools, such as regulatory requirement or use in schemes like the Energy Company Obligation (ECO). A possible model could be to require such tools for new properties across a set proportion of the housebuilder's portfolio, which could increase over time to build a market. Other considerations mentioned included: there would need to be standards set out to account for the fact that heat is stored in walls or benefits from intermittent solar gains that can affect the results; new gas boilers now record their usage, which could be used for such tools; and smart apps for controlling electricity use could also provide data.

11 respondents noted concerns that would need to be resolved, of which 7 concerned smart meter data. Issues mentioned were insufficient granularity of energy data to allow disaggregation of energy for heating from other uses, reliability of smart meter data due to connectivity issues, delays in smart meter rollout and lack of coverage, and issues with access to data such as security and privacy concerns. Other concerns raised included: how to verify accuracy; the current low penetration of smart appliances and devices; more evidence or testing is needed; EPCs would still be dependent on the accuracy of the building dimensions and orientation; the suggested approaches could increase cost; and temperature data is needed for the whole property and not just one room with a thermostat.

More fundamental concerns were that it was not appropriate to combine theoretical data with actual data from the individual property; that such modelling techniques should not go into the EPC but instead be developed into a completely new approach; scepticism about the value of absolute accuracy as compared to a reliable result; and concerns that this approach was disproportionate compared to improving the current assessor system.

3.3 Up-to-date

Question 9 - What evidence do you have on how frequently people are likely to make updates to their properties which would change the EPC score?

Of the 101 respondents who provided an answer to this question, many responses gave a subjective indication that building features were changed 'frequently' (14 responses) 'not frequently' (10 responses) or identified that it can vary greatly by building (8 responses).

Some responses did provide figures on how often certain building features were changed, based on professional experience. Gas boilers were estimated to be changed either every 10-15 years on average. Flat roofs and whole house changes (e.g. replace all windows) could be altered every 40 years. Another respondent suggested that work affecting the EPC (including boilers, windows and other renovations) was likely to take place every 10-15 years. Twelve respondents thought that there would be at least one change affecting the EPC within the current 10-year validity period, and 4 energy assessors cited their experience that new EPCs often have different ratings to the previous ones due to works having been done. Nineteen respondents suggested the kinds of changes that would make a difference to the EPC rating.

Some respondents suggested other possible sources of data to answer this question, such as the English Housing Survey and other national statistics data, ECO data, Ofgem, building control databases, similar data in other countries, and installer databases like the Competent Person Schemes (CPS), FENSA and Microgeneration Certification Scheme (MCS).

The majority of respondents gave responses that discussed what triggers property improvements. Cardiff University provided the results of a study into what prompts homeowners to undertake renovations, based on 31 in-depth interviews. This suggested that the three main triggers for major renovations are likely to be birth of children, children moving to secondary education, and retirement. Reasons were likely to be related to space in the home, change of activities at home, domestic stability, financial certainty/access to capital and reducing running costs. Other respondents mentioned various triggers for works that would affect the EPC, but didn't provide information on how frequently these are likely to occur, such as legal requirements, new lease or new owner, as part of other building works, fixing a fault, investing in new technology, funding availability, life changes, re-mortgaging, and business need or benefit (for landlords and non-domestic properties).

Question 10 - Which of the suggestions provided above do you think would be effective in ensuring that the information on EPCs is up to date? Do you have any other suggestions for ensuring EPCs remain up to date?

Of the options suggested, the most popular was a new trigger point for extensions and major renovations, with 90% of the 166 responses favourable. A new trigger point for more minor works that effect the EPC (80% favourable) and reducing the validity (75% favourable) were also fairly popular. Whilst trigger points for Houses in Multiple Occupation (HMOs) and Green Mortgages were less popular, this partly reflects the much higher proportion of respondents who were unsure, possibly reflecting lack of knowledge in these more niche areas.

Respondents identified some common advantages and disadvantages to all suggestions, with the advantages being that: more up to date EPCs would better reflect the building; having a new EPC would prompt people to improve the rating; accuracy would improve because older EPCs are less accurate; and there would be better information on the building stock. Disadvantages were the additional cost and difficulty of enforcing more frequent EPCs and unclear benefits to some respondents of more up to date EPCs.

The main advantage of a trigger point for major works was that it would prompt individuals to consider energy efficiency improvements more often (20 responses). Whilst specific standards of energy efficiency are required to meet the building regulations in terms of energy efficiency and carbon emissions, an EPC requirement could prompt consumers to consider additional energy efficiency works alongside planned changes – either beyond those planned for the part of the building to be renovated, or in other parts of the building. Disadvantages are that it would be difficult to enforce and might discourage people from doing works. 7 respondents would only support additional trigger points if an existing EPC could be updated. The main trigger points that were suggested were major renovations, extensions and planning permission applications. Other suggestions were conversions, fit out of commercial units, conservatories, changing heating system or increasing floor area.

Figure 6: Responses indicating whether the suggested measures would be effective for ensuring the EPC is up to date
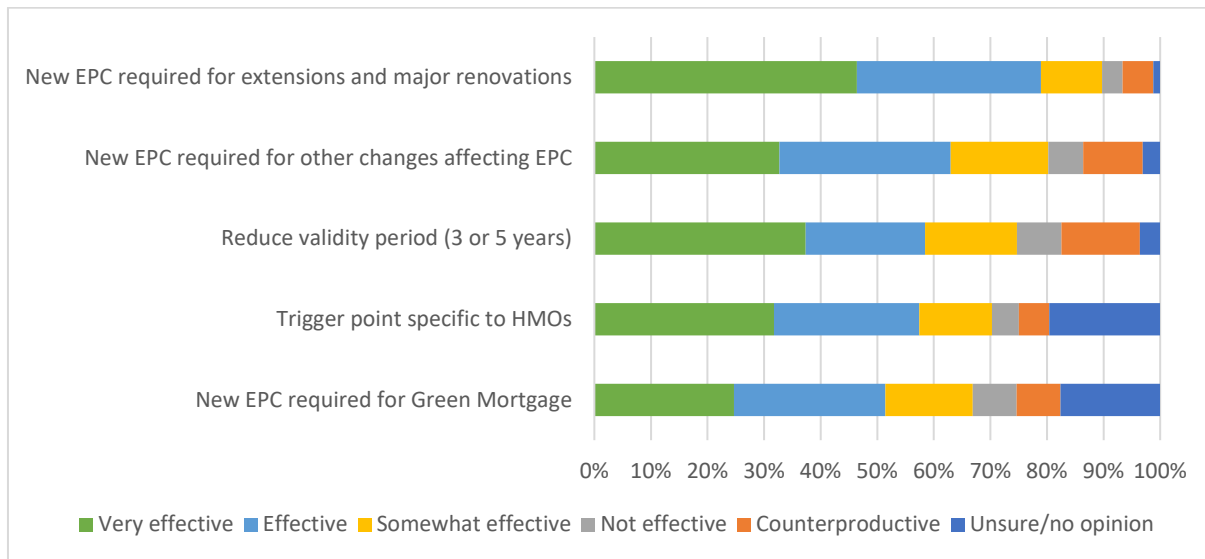
Similar arguments were made for works that do not trigger the building regulations, where the advantage would be that this would prompt action where building regulations may not require energy efficiency improvements. However, there was more concern that costs would be disproportionate and that enforcement would be harder. The most popular proposals for new trigger points in addition to the process triggered by the building regulations included: HVAC/heating/boiler changes; fabric changes such as insulation or glazing; floor area changes; and use of funding schemes. Alternatives suggested were that minor works should be systematically recorded and used to update the EPC at a later trigger point, or that changes to the property should require a new EPC, but only when the property was next sold or let.

One question raised was whether a new EPC should be required before or after works. Getting an EPC after works wouldn't affect decision making, but getting it before the works wouldn't ensure the EPC was up to date. A compromise could be requiring a draft EPC before works and a final one afterwards. Other considerations included: how to balance cost against impact; whether changes would affect other policies like ECO; how often changes are likely to occur; and whether to require an EPC based on specific measures or overall change to EPC score.

The advantages of reducing the validity period were that it would capture all changes, including changes too minor to be used as a trigger point, and that it would capture changes to the EPC methodology. The disadvantages were that there might not have been any changes and that it wouldn't prompt action if not linked to works being carried out. The main suggestions for alternative validity periods were 3 years (16 respondents) or 5 years (29 respondents).

The majority of respondents who gave details on the HMO trigger point were in favour, because HMOs are more likely to have low energy efficiency and house vulnerable people and the fuel poor, and EPCs could help inform landlords and tenants. The main disadvantage was that this would be an extra cost which might be passed on to tenants.

In relation to a trigger point specific to green mortgages, some respondents noted that this would be aligned with the principles of green mortgages, or that EPCs were already used effectively/being investigated for this purpose, but others were concerned that this would add expense, or restrict innovation or lender discretion.

Additional suggestions

Of the 109 responses to this question, the most popular suggestion (also referenced under Questions 5 and 9) was to introduce an updateable EPC, taking existing EPC data and producing a new EPC rating based on changes that have been made, possibly using the competent tradesperson scheme to verify works (34 responses). Suggestions related to changing the validity were to require a new EPC or review of EPC for sale/rental, or to have different validity periods for different types of property (shorter validity for PRS properties or less efficient properties, longer if some kind of enhanced EPC methodology were created).

Other suggested trigger points included: a specific trigger point for work that decreases the EPC rating; mortgage valuation or re-mortgaging; expiry of the previous EPC, ECO works, change of freeholder (for flats), new connection to gas network, housing health and safety rating system (HHSRS) remedial works, building fit out (commercial buildings), works under PAS 2035; council tax/business rates revaluation, building use change, and change to building regs.

Some suggestions as an alternative to trigger points were to issue reminder letters as is done in the Netherlands (4 responses) or to make people want to update the EPC by implementing policies that give benefits to a better EPC rating (12 responses). Other suggestions for keeping EPCs up to date were updating old EPCs when the SAP model changes, basing EPCs on up to date consumption data, and updating costs and emissions factors in SAP.

Question 11 - Would you support introducing new EPC trigger points at any of the stages listed above (or any other stages)? What evidence do you have relating to the advantages and disadvantages of any of these trigger points?

Again, the most popular trigger point was for extensions and other major renovations, with 82% of the 173 respondents supporting this option. All of the trigger points were supported by more than 50% of the respondents, with 68% supporting a trigger point for more minor works, 63% supporting an HMO trigger point and 57% supporting a Green Mortgages trigger point.

Figure 7: Responses indicating whether the respondent would support each suggested trigger point
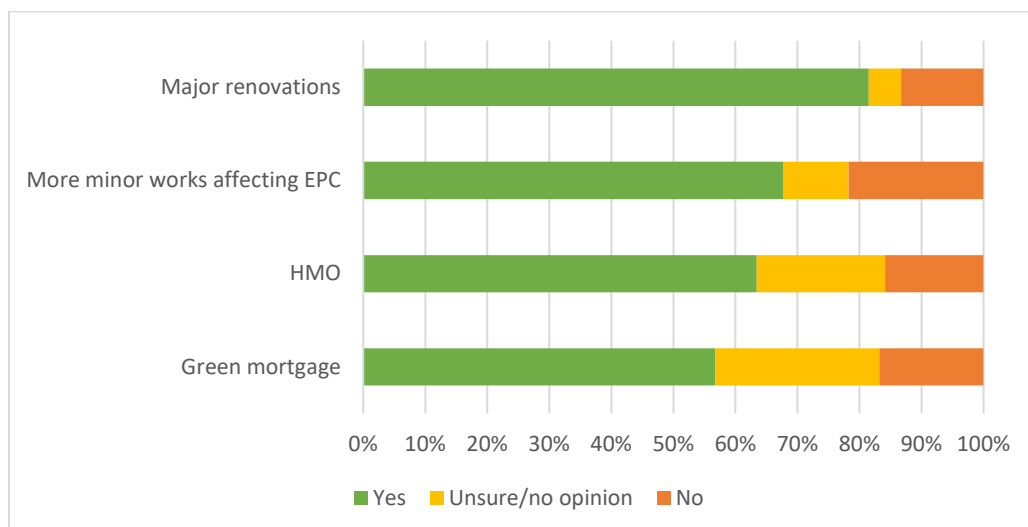
Responses given in support of these answers were similar to those given under Question 10 and have been grouped together under that question in the section above.

4 Encouraging action

This section considered the original purpose of EPCs – to advise consumers and to affect decision making. The Call for Evidence differentiated between the function of the EPC to inform purchase or rental of a building and the function to inform a current property owner or occupier on how the property could be improved.

4.1 Improves energy performance – EPC recommendations

Question 12 - What evidence do you have on how useful the EPC recommendations are to consumers when they are considering making changes to a property? How effective are they at encouraging consumers to take action?

Of the 121 responses to this question, 88 respondents answered on whether EPCs are useful and 94 respondents answered on whether they are effective. 4 respondents provided relevant evidence on the usefulness of EPCs. One programme in Scotland produced 9,500 online interactive EPCs for Local Authorities, which increased engagement from homeowners. One unpublished academic study of motivation for home improvements showed EPCs were barely mentioned. Another unpublished academic study of motivation of home improvements showed that fewer than 10% of people are driven primarily by energy savings when making renovations, compared to other considerations such as improving the value of a property[14]. A HomeOwners Alliance members survey found respondents were generally critical of the usefulness EPC.

Of the 88 responses relating to EPC usefulness, 10 said EPCs were useful, 17 said somewhat useful and 40 said not usefulOf the 94 respondents that gave an answer on effectiveness, 8 respondents said that the EPC was effective at encouraging action, 17 somewhat effective, and 69 not effective. Reasons given for effectiveness and usefulness were very similar.

Positive responses around the usefulness of EPCs were that domestic EPCs are more useful, the format of EPCs has improved, and EPCs are effective for cheaper measures. Of the negative responses to this question, 67 people mentioned that the effectiveness and/or usefulness of the EPC was limited by factors relating to the content of the EPC. 44 people mentioned that the effectiveness and/or usefulness of the EPC was limited by factors external to the EPC.

The main features of the EPC itself that were suggested to need improvement were: inappropriate recommendations; insufficiently detailed recommendations or next steps; incorrect/misleading cost information; and inclusion of measures with very long payback periods. Other issues raised were: unhelpful formatting; lack of alternative options; out of date information; and recommendations not in a helpful order. Presenting the effects of improvements cumulatively was also thought to be misunderstood. Specific concerns with non-domestic EPCs were that: some recommendations could actually make the EPC rating worse if implemented; and that financial costs and benefits of recommendations are not provided.

Factors external to the EPC itself which were most frequently mentioned were: lack of capital or high upfront costs; lack of advice in person (property seller meets the assessor, not the

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[14] http://www.ukerc.ac.uk/publications/understanding-homeowners-renovation-decisions-findings-of-the-verd-project.html

buyer); and lack of incentives or requirements to take action. Other concerns were: not enough cost-effective improvements to the property; recommendations not feasible or disruptive; supply chain barriers; combining retrofit measures requires specialist advice; people can't accurately measure savings; consumers are unaware of the EPC; EPCs are received at the wrong time or not at all; and consumers wouldn't hunt around for an old EPC when doing works.

Question 13 - Which of the suggestions provided above do you think would be effective in encouraging building owners to make appropriate energy performance improvements to their property? Do you have any other suggestions?

Of the options suggested, the most popular was making recommendations more tailored, with 88% of the 145 responses favourable. Other more popular options were 'nudge points' to prompt people to look at the EPC (80%), changing the way the recommendations are presented (79%), adding additional information relevant to homeowners (79%) and an enhanced role for assessors in providing information (77%). Other suggestions were relatively less popular, although linking to the online advice service received positive support from those who justified their response. In general, allowing advice to be more tailored to the property owner and providing further, more detailed information (particularly on finance, next steps and finding installers) were cited as advantages to many of the suggestions.

Figure 8: Responses indicating whether the suggested measures would be effective for encouraging building owners to improve their property
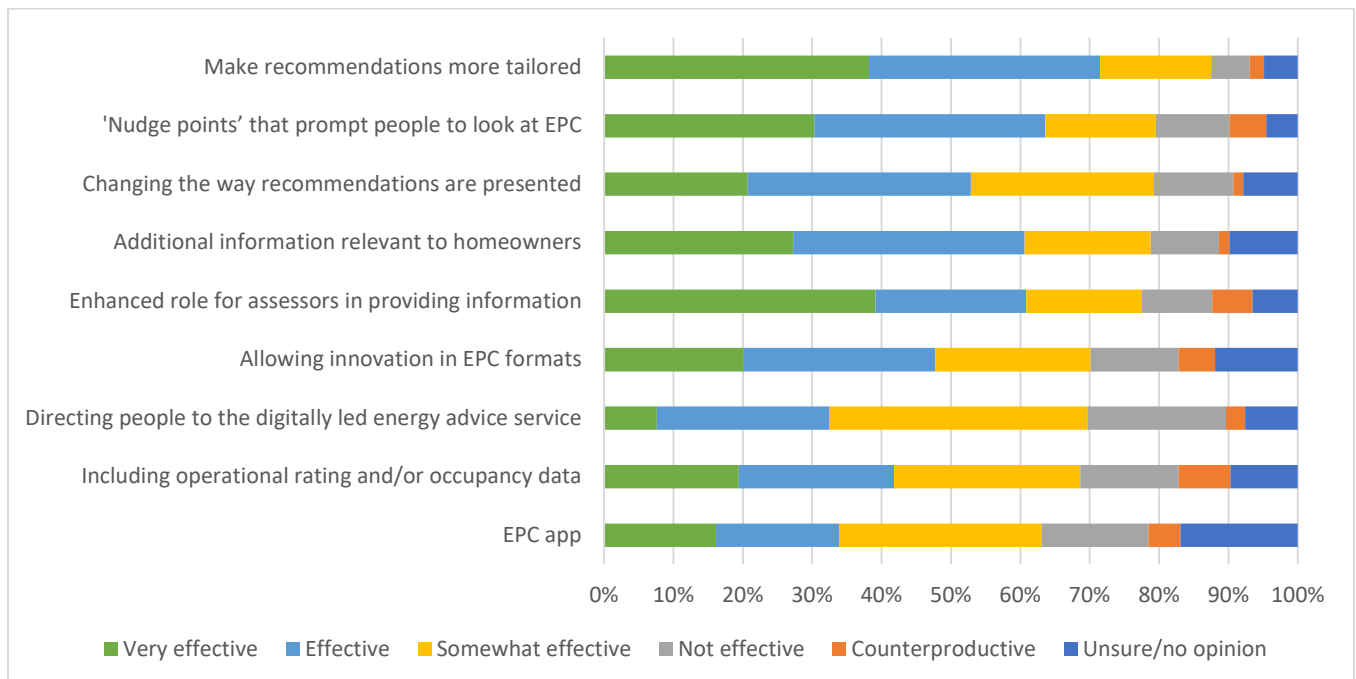
Respondents who supported more tailored recommendations tended to list ways in which the current recommendations are not suitable (as per responses to Question 12), and some thought that better recommendations might engage consumers more effectively and make the EPC more credible and trusted. Negative responses to this suggestion were that assessors aren't sufficiently trained and that it would increase costs.

Reasons given in support of 'nudge points' were to prompt people at an appropriate time and to generally increase awareness of the EPC, but 1 respondent suggested caution as overplaying a message can put people off.

Improving the presentation of the EPC recommendations could make the EPC more visually appealing and improve the clarity and layout. Behavioural science would be effective and energy companies are already using these techniques on bills to reduce consumption. Ideas suggested were comparative information or benchmarks, visualisation of a house, a 'traffic light' system, and presenting savings as a percentage. No disadvantages were suggested.

Reasons given for supporting additional information such as improvements to property value were that this resonates more with homeowners, that landlords are now considering this due to PRS regulations, and it would engage estate agents, buyer and sellers more effectively. One respondent suggested also including information about the effects on health of properties at lower EPC bands. However, one respondent cautioned making EPCs all about house value as this could backfire with tenants seeing there is no value for them, and another respondent was unconvinced of the effect of EPC ratings on property value and concerned this could unfairly raise expectations. The effect on property value would also depend on the quality of the works. Another respondent was concerned about too much information on the EPC.

The main reasons given for supporting EPC assessors to provide advice were the ability of assessors to provide more in-depth knowledge and guidance on next steps, which could also improve engagement with the EPC and educate consumers. Advice would be impartial, more holistic, and allow people to ask questions. Respondents suggested that assessors should be better trained, possibly using the Green Deal assessor training or retrofit coordinator training, and particularly on heritage properties and off-gas grid properties. However, there were concerns about assessor training, increased time and costs, inconsistency of advice, and the fact that the assessor only meets the property seller, not the buyer who might want the advice.

Most comments on innovation in EPC formats did not support this option, such as concerns that this would add confusion, make it difficult to compare properties and take away the EPC's strength of being a standardised report and legal document.

Reasons given for providing a link to the online energy advice service were this could help educate consumers, be impartial, engage people better, improve accessibility, and allow the EPC to be simpler if more details are online. The service could include smart meter, occupancy and other building data, allow plans to be saved for later use, add a telephone service, and also cover non-domestic properties. Disadvantages would be consumers aren't sufficiently energy-literate, less suitable for older and/or vulnerable people, too generic, not suitable for heritage buildings and not as useful as advice from a trained assessor. Responses for the EPC app were similar, but engagement could be better with an app as ONS statistics suggest that 78% of adults use phones to access the internet and 42% of over-65s use a tablet[15].

Reasons given for including occupancy data were better engagement, more accurate bill savings and possible effects on occupant behaviour. However, this could be more time consuming, make it harder to compare properties and would mean the EPC would no longer be a measure of building performance. As an alternative, occupancy data could be provided as an additional report or through the website instead of on the EPC itself.

Additional suggestions

Of the 113 responses which made additional suggestions for encouraging building owners to make energy performance improvements, 65 suggested improvements to the content or format

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[15]

https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediaus age/bulletins/internetaccesshouseholdsandindividuals/2018#mobile-phones-or-smartphones-still-most-popular-devices-used-to-access-the-internet

of the EPC certificate. Of these, 31 suggested making the format clearer, 25 suggested additional information to include on the EPC, 16 suggested changes to cost information and 9 responses wanted EPCs to highlight non-cost benefits of energy efficiency (such as improved comfort, health, security against rising fuel prices and increased value of the property). Other suggestions were additional measures included in recommendations, better information on EPC limitations/assumptions (e.g. not a full energy audit, based on standard assumptions) and keeping information (e.g. average UK EPC rating) up to date.

The suggested changes to the EPC format related to clarity included: making information simpler, shorter and reducing duplication; revising the ordering so most important information up front/details in annex; better highlighting most important information and clearer explanations. Other suggestions included: more visual impact; better tailoring to the consumer (e.g. different for landlords/tenants/owners); changing the order of recommendations; a customised section written by assessor; allowing photos; presenting carbon savings in comparison to other relevant actions (e.g. car use); showing how occupancy affects consumption; and changing from PDF to digital format.

Suggestions for additional information on the EPC included: thermal image; photos; water usage; maintenance needs; information about smart technologies; summary of reasons for low score; information on behaviour change; suggestions for scheduling of improvement works or packages of complimentary measures; possible limitations of measures (e.g. for heritage buildings); and measures which don't increase the RdSAP score but do reduce energy use, such as chimney balloons, draught-proofing or window shutters.

Suggested changes to the presentation of cost information included: making cost savings more prominent; providing estimates for annual fuel bills; including annual return on investment from recommended measures; presenting savings more intuitively; providing more detailed payback periods for non-domestic EPCs for developing a business case; presenting lifecycle costs for non-domestic EPCs; presenting savings as a percentage; making clearer where costs are estimated (e.g. round up estimates to nearest £10 or present as a range); linking to an up-to-date costs calculator; and requiring bills to be presented with the EPC. Other suggested improvements to cost information included: more accurate cost of measures; base cost of measures on actual property dimensions and features; base cost of measures on up to date rates; use different local rates for cost of measures; and better cost modelling for oil/LPG.

As well as changes to the EPC document, 36 suggested additional policies outside of EPCs to stimulate action (outlined under Question 26), and 28 suggested changes discussed elsewhere in this Call for Evidence, such as improving quality, changing what EPC information is seen in adverts, changing when EPCs are required and improvements to EPC data provision.13 respondents suggested improving education or awareness of energy efficiency and/or EPCs, 10 suggested changes to the underlying methodology, 7 made suggestions for additional consumer engagement around the EPC. Other suggestions for encouraging building owners to make energy performance improvements included: make the EPC into a full energy audit/ or make it more comprehensive; EPC to take a 'whole house approach'; EPC assessors to get Green Deal training to provide advice and recommendations; provide a telephone advice service to complement the EPC; 'EPC advisor' tool to see effect of works on EPC rating; and switching the responsibility to procure the EPC from the seller to the buyer.

Question 14 - What are your views on introducing operational performance ratings for non-domestic buildings, either on the EPC or separately?

Of the 88 responses, 81 agreed that operational performance ratings should be introduced. Of the 7 respondents who disagreed, reasons given were that it would add complexity, that it

would be more difficult to compare buildings like for like, it wouldn't solve the problems with EPCs, and that Government should focus on improving DECs.

10 responses referenced as a successful example the Australian NABERS scheme[16] and its use of operational ratings. The UK Design for Performance initiative, based on NABERs principles, was also referenced. Other schemes or tools referenced included: the London Plan[17]; the LETI hierarchy (Be Lean, Be Clean, Be Green, Be Seen)[18]; Voldecs[19], a voluntary rating system which can provide a separate landlord/tenant DEC score; BluePrint[20], a non-domestic energy auditing tool using half-hourly smart data and producing a DEC-style benchmark; and CIBSE's online dynamic platform for releasing of revised energy benchmarks[21].

Various responses related to the practical implementation of operational ratings. 28 responses thought that operational rating should be kept separate to EPC data. 16 responses considered that it was important to improve EPC quality assurance and incorporate DEC considerations. 14 responses highlighted the importance of building on DECs and the existing DEC infrastructure, including setting targets. 10 responses thought that operational ratings should be made mandatory. Other comments included: EPCs should focus on measuring fabric and HVAC technologies while operational ratings should measure building energy use and be linked to Building Management System (BMS) data; and it's important to focus on performance outcomes for operational ratings.

8 responses noted some challenges for introducing operational ratings, including: ratings would require a multitude of variables to be considered; success will depend on what data is used; it's important to resolve performance gap issues before having both an EPC and operational rating; there is a notable difference between new and existing buildings; and operational ratings should build on the Part L BMS requirements.

4.2 Influences property decisions – EPC rating

Question 15 - What evidence do you have on how useful the EPC rating and cost information are to consumers when purchasing or renting a property? Are consumers using information on the EPC to negotiate property prices or rents?

4 respondents provided formal evidence in answer to this question. One cited focus group research from 2011[22] suggesting that consumers see energy efficiency as something to be addressed over time, not at the point of sale. In particular, renters considered this the landlord's responsibility and didn't want to raise poor energy efficiency only to lose out on the property. A second respondent referenced a study by the European Commission[23] which found that EPC information reached the potential buyer/renter too late in their decision-making process to affect purchase behaviour. A National Landlords Association (NLA) members survey found that only 7% thought the energy efficiency of a home was an important decision

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[16] https://www.nabers.gov.au/
[17] https://www.london.gov.uk/what-we-do/planning/london-plan
[18] https://www.leti.london/about
[19] https://voldectool.com
[20] https://blueprint.carbondescent.org.uk/
[21] https://www.cibse.org/knowledge/energy-benchmarking-tool-beta-version
[22] This is the same year as a study referenced in the Call for Evidence was published and may be the same research - Consumer Focus 'Room for improvement: The impact of EPCs on consumer decision making'
[23] https://ec.europa.eu/energy/en/studies/energy-performance-certificates-buildings-and-their-impact-transaction-prices-and-rents

factor, with 22% saying it was unimportant, and 42% saying other factors were more important. A Better Buildings Partnership (BBP) members survey (covering non-domestic buildings) found that 62% of respondents thought that EPCs were useful for owners when buying or selling a building, but only 44% agreed that EPCs were requested by occupiers when leasing a property and only 11% of respondents thought EPCs were useful for this group.

The remaining responses cited wide experience (35 responses), anecdotal evidence or asserted an opinion. Of the 96 responses to this question, 55 responses considered that EPCs are not useful when making property decisions and 20 thought that EPCs are useful.

Reasons that the EPC was considered useful included: buyers can use EPC information to weigh up property value against requirements for an improved rating; tenants can understand what improvement work may be needed; the EPC gives an indication of the extra energy costs; the EPC has information on improving the property to a certain standard to be accepted for a mortgage; and consumers can check the rating is appropriate to the age of the property. 2 respondents said EPCs were becoming more useful, which was attributed to PRS regulations or to a higher awareness of the rating being linked to running costs.

Reasons the EPC was not considered useful included: consumers/renters do not think they are relevant; other aspects are more important (such as price, location, aesthetics, layout, number of rooms, neighbours, and for tenants cleanliness, safety and security); tenants do not ask for EPCs, but may ask about thermal comfort, energy costs and type of heating; energy costs are often covered in rent; and some tenants prioritise low rents and don't factor in running costs.

Other barriers to influencing decisions were: EPCs seen as a tick box exercise; 2008 EPC not comparable with 2018 EPC; owners do not believe an improved EPC rating would effect market value; EPCs not always shown on online real estate portals; tenants have a short term interest in properties; high property purchase/rental costs compared to bills; and the shortage of properties on the market, particularly in the south, will override consideration of EPCs.

EPCs used in negotiations

Of the 96 respondents, 1 provided evidence on the use of EPCs in domestic property negotiations, citing three different pieces of research. A 2008 survey by the Energy Savings Trust suggested 70% of consumers would consider re-negotiating a property price if the property was very energy-inefficient[24]. Other research showed a statistically significant relationship between EPC ratings and sale prices, but not between EPC ratings and rental prices, suggesting buyers might be more likely to negotiate[25]. A focus group study found that buyers were more likely to use energy efficiency information to budget for post-purchase improvements than negotiate on price.

The remainder provided opinions. 8 thought consumers were using the EPC to negotiate property prices or rents, but 54 thought this wasn't happening. The most popular explanations why this isn't happening were that that the lack of affordable properties reduces consumers' negotiating position, or that other property features are more important in influencing decisions. Others commented that estate agents don't highlight EPCs as important, and that if negotiation is happening it would be for poorer-rated properties.

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[24] EST (2008) Energy Performance Certificates: Home Truths. Green Barometer 6, quoted in Easy as EPC http://www.icaro.uk.com/images/uploads/project_downloads/Easy-as-EPC-WEB.pdf
[25] https://www.citizensadvice.org.uk/about-us/policy/policy-research-topics/energy-policy-research-and-consultation-responses/energy-consultation-responses/citizens-advice-response-to-beis-call-for-evidence-on-building-a-market-for-energy-efficiency1/

Responses were more mixed in the non-domestic sector – overall 4 respondents said that negotiation was happening, while 3 said it wasn't. The Better Buildings Partnership survey found that 56% of members agreed that buyers use EPCs when negotiating on sale price, with 23% disagreeing. However, only 11% thought that tenants use EPCs to negotiate on rents, with 28% disagreeing. 3 non-domestic respondents suggested that PRS regulations are having an impact on decisions and could affect property values, and 1 suggested that EPC ratings are now being considered at commercial rent reviews and lease renewals[26].

Question 16 - Do you have any evidence on consumers' understanding of the energy efficiency rating used in EPCs? Do you think a different rating such as carbon emissions or primary energy would have a better impact for consumers?

Of the 147 respondents who gave their preferred metric, 49% preferred the current cost metric, 10% preferred a carbon metric and 20% preferred a primary energy metric. The cost metric therefore was preferred by the majority of the respondents who expressed a preference.

Figure 9: Responses indicating the preferred EPC rating metric
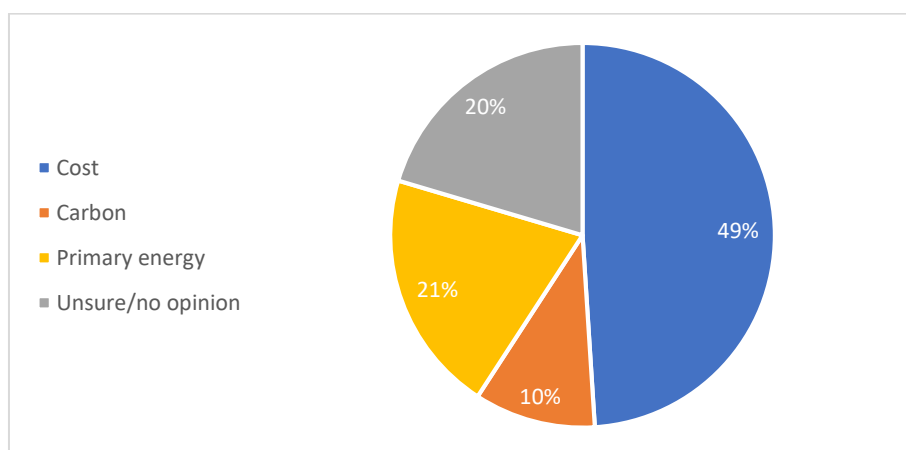
The most cited reason in support of the cost metric was that the everyday consumer is more likely to understand and/or care about cost than energy or carbon, with two respondents backing this up with research findings. One respondent particularly mentioned cost being important for those on low incomes. The other reason cited was that changing the metric would be confusing, or it would cause difficulties with existing legislation and targets.

Respondents who preferred another metric to the cost metric were concerned that the cost metric penalises consumers who aren't on the gas grid, and it could lead to perverse incentives with people installing low-cost, high-carbon measures. There was also a concern that EPCs should be based on environmental issues, not economic considerations. This was the main reason cited in favour of a carbon metric.

The main reason cited against a carbon metric was that consumers would not be interested in carbon emissions. The main reason cited in favour of a primary energy metric was that carbon and cost metrics can fluctuate based on factors outside the control of the consumer, as the grid carbon emissions and energy prices may change. The main reason cited against a primary energy metric was that it was too difficult to understand.

Other comments on the EPC metric were: support for continuing to have a different metric for domestic and non-domestic EPCs; different metrics are useful for, or benefit different people; and there should be consistency between the metric used in England/Wales and the other

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[26] RICS Property Journal (March-April 2018 p.22-23)

regions of the UK. Some respondents supported having more than one metric visible on the EPC, whilst others found this confusing.

A large number of responses covered a more general understanding of the EPC rating, not specifically related to the EPC metric. On the whole it was felt that there was a reasonable understanding of the EPC rating among consumers, with 31 of the 66 respondents who gave an opinion feeling that people have a good understanding, 12 some level of understanding and 23 a poor understanding of the EPC rating. Most of those stating there was a good understanding referenced the clarity of the A-G rating, and some mentioned the similarity to the energy efficiency ratings that appear on household products. There was a concern among a few respondents that consumers don't understand that the current rating is a cost rating, and this should be renamed to make this clearer. Some respondents suggested that the rating and metric should be better explained.

Question 17 - Which of the suggestions provided above do you think would enable prospective buyers and tenants to make more effective decisions based on the information on the EPC? Do you have any other suggestions?

Of the suggestions in the Call for Evidence, the most popular among the 144 respondents to this question were presenting energy costs annually instead of over three years (81% favourable) and better visibility of the EPC on property comparison sites (79% favourable). Providing more of the EPC on adverts was also fairly popular (75% favourable).

Figure 10: Responses indicating whether the suggested measures would be effective for enabling prospective buyers and tenants to make more effective decisions
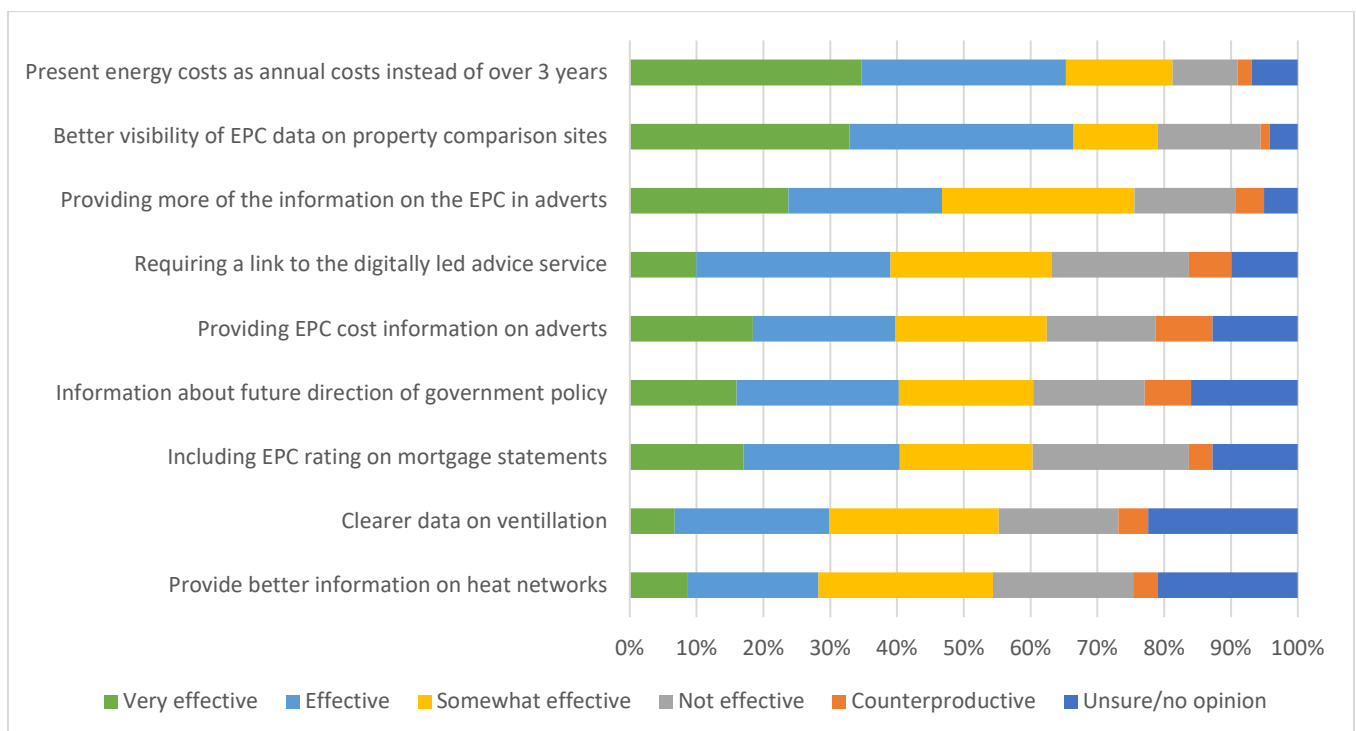
Better data on ventilation (55%) and heat networks (54%) were the least favoured options, which also had a fairly high proportion of respondents saying they were unsure or had no opinion, possibly reflecting that respondents were unsure what the benefits would be.

Arguments in support of presenting costs annually were that the current three-year presentation is confusing and that consumers think in terms of annual or monthly energy costs.

It would also be more relevant to tenants on short tenancy agreements. However, one respondent thought that people didn't look at the energy costs anyway.

Reasons given in support of making EPC information more visible on property comparison sites were that people would take more notice of the EPC rating, that it would highlight better performing properties, it could allow people to filter their search by EPC rating, and that it would make EPCs more recognised and people would consider them more during the buying and rental process. However, one respondent thought no one would look at the EPC on comparison sites.

Reasons given in support of providing more of the information on the EPC on adverts were that landlords and sellers were more likely to improve a property before selling if they knew the recommendations would be displayed, that it would help prospective buyers and renters make more informed decisions, that the buyer/renter could see what features are installed, and that it would ensure that the property does actually have an EPC (rather than entering a rating that is not substantiated).

Requiring a link to the digitally led advice service could help younger consumers, help consumers make sense of information on the EPC and give them better information on cost and benefits of potential improvements, but some thought that the current service is limited as a source of retrofit advice.

Including EPC rating on mortgage statements could strengthen the alignment of energy performance and property value, and regular communications mean people would become more familiar with EPCs and take more notice. However, some respondents queried how relevant this is to mortgages and one respondent though that consumers wouldn't be interested and it would be difficult for lenders to get access to EPC information.

Providing EPC cost information on adverts could give potential tenants a better indication of efficiency, cost data might influence people more than a rating as it shows real-world benefits, and a simple running cost could be used to compare against purchase or rental costs. But there were concerns that data wouldn't be accurate for the individual consumer and could give incorrect expectations, that it would be difficult to get the actual energy unit price data for the property, and that too narrow a focus on cost savings could be counterproductive.

Adding information about future direction of Government policy could encourage long-term thinking, provide certainty for industry and time to plan for improvements, and improve the narrative around the need for changes. It could also help buyers make more informed choices, for example around the potential to rent out or sell poorer performing properties in the future, and help to drive a price premium for more efficient properties and increase price negotiation. However, some thought that the current direction was still unclear and there was a lack of trust in Government projections and policies. There was also concern that goals and plans need to be achievable and not change, that different policies need to be aligned together, and that only some information such as current targets and regulations would be relevant to the EPC.

Clearer data on ventilation could address concerns around air quality and condensation, but it was unclear what the benefit was and how this could be usefully presented to the consumer.

Provide better information on heat networks was seen as important because consumers are currently not well-informed on heat networks, these are currently not dealt with well on the EPC and are important to long term decarbonisation. But this would not be relevant for many properties.

Additional suggestions

Various respondents made suggestions relating to changing the EPC format. In addition to suggestions made under Question 13, other suggestions included: moving from abstract ratings to more concrete information; using a pie chart to show costs (currently used by some property comparison sites); providing comparisons against the average home, a target standard, or local properties; providing more explanatory text in relation to EPCs in heritage properties and better user testing.

Respondents also suggested changes to the cost information on the EPC. Additional suggestions here included: a 'total cost of ownership/rental' calculation; adding a 20-year estimate to show long term difference in fuel cost; more information about the effect of energy tariff on costs; and better information about how cost and carbon metrics relate to energy use.

Further suggestions for additional information on the EPC to those given under Question 13 included: likely maintenance costs; health issues such as internal air quality, condensation, mould, radon and over-heating; the existence of a smart meter; the existence of any Green Deal plan; itemising existing property features; and the condition of the property and recommendations for improvement. Benefits other than running costs such as property value were again mentioned, and more specifically EPCs should be better designed to serve as a price signal or to be used in price negotiations.

More detailed suggestions for improved communication of EPCs included: an EPC app linked to smart meters, water meters and connected home devices allowing homeowners to see the effects of changes to the EPC; greater role for estate agents to promote, explain and recognise the value of EPCs; a role for mortgage brokers in promoting EPCs; and providing the EPC earlier in the homebuying process. Respondents suggested dovetailing with other MHCLG work on homebuying and looking at how other European countries more effectively encourage consumers to take notice of EPCs.

Again, 17 respondents suggested additional policies which would prompt people to consider the EPC when making decisions, elaborated under Question 26. Some respondents noted that PRS regulations have made some people more interested in the EPC. 3 respondents were sceptical that EPCs could ever be effective at changing behaviour on their own. Some respondents referenced other Call for Evidence suggestions, such as improving accuracy, better compliance, including occupancy data, improving recommendations, independent advice through assessors or online and the introduction of a building logbook.

5 EPC availability

This section considered factors that affect the availability of EPCs and of EPC data. Availability of EPC data depends on the means of accessing this online. Availability of EPCs depends on compliance levels and the ease of obtaining an EPC.

5.1 Access to data

Question 18 - What evidence do you have on how easy it is to access EPC data or Open Data? What additional information would be valuable and why? If you are currently a user of the Open Data Communities website, what do you use the information for and how valuable is this website as a source of data?

Of the 74 respondents who provided an answer on ease of access to EPC data, 24 answered in relation to Open Data, 35 in relation to the Energy Performance of Buildings (EPB) register and 6 answered in relation to both.

Of the 30 respondents who provided an answer on accessing Open Data, 12 said it was easy to access and 18 said it was difficult, or cited problems. Of the 43 respondents who provided an answer on how easy it is to access the EPB register, 22 said it was easy and 19 said it was difficult. 11 respondents thought consumers were not aware of one or both websites and 2 respondents thought that having two different websites made it more complicated to access data. The predominant reason for Open Data being cited as difficult to access was that it has not been kept up to date (11 respondents). Other reasons given were limits on the search function and limits on the number of records that could be downloaded.

The concerns with the EPB register, or generally accessing EPC data, included: missing data on the register where a property owner has 'opted out' from their EPC being made public, (currently it appears as if there is no EPC)[27]; difficulties registering an address on the register; and confusion caused by properties where more than one EPC has been lodged and it is not clear which EPC is current. Some EPC assessors reported that .xml files downloaded from the EPB register are not easy to use, and it is difficult to alter an EPC once it has been lodged.

Additional data

Of the 50 respondents who provided an answer on additional data they would like to see on either Open Data or the EPB register, the largest response (23 respondents) was a request to gain access to the inputs that go into producing the EPC. This is a wider suggestion than just allowing building owners access to their own EPC input data. The reasons given included: to use the data to better model/understand the building stock; to carry out research and develop innovative energy efficiency solutions; for identifying ECO projects; for better monitoring and enforcement of EPCs; and to allow comparison of heat pump data with MCS data.

Where respondents described other data they wanted access to, 12 wanted to see more detailed information about a particular building and 6 wanted to see additional data specifically related to bulk datasets. 7 wanted to combine or compare other datasets with EPC data.

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[27] Although respondents referred to 'missing data', this data does exist. The reason the data is not presented on the register due to the option to 'opt out' of having this information published under The Energy Performance of Buildings (England and Wales) Regulations 2012

Datasets that respondents mentioned included: building age; local council data, building control data, guarantee schemes, National Land Property Gazetteer (NLPG); ECO data; and Tenancy Deposit Scheme data.

Other suggestions for additional data provided through the register/Open Data included: gaining access to Building Regulations Part L (BRUCKL) and Data Reflection reports from SBEM through the EPB register; a link to the PRS exemptions register; a published update schedule to let people know when Open Data will next be updated; information on whether an EPC is mandatory or voluntary; and a time stamp on the EPC to distinguish multiple EPCs lodged on the same day and identify the current EPC.

Use of Open Data

Of the 46 respondents who provided feedback specifically on the Open Data website, only half of the respondents that use the website provided a response on how useful the website was. Of those who provided a response, 10 said it was very useful, 6 useful, 4 somewhat useful, and 3 barely used it. The majority of the respondents who provided information on what they use Open Data for described a use that relied on bulk data, but some use it for finding out additional data about a specific property. Specific uses that were mentioned included: identifying retrofit opportunities or ECO projects; analysing patterns and identifying errors in the data; PRS enforcement; modelling building stock; research and policy work; and identifying whether an intervention has been successful (DEC data only).

Question 19 - Which of the suggestions provided above do you think would improve the ability of building owners and other stakeholders to make effective use of EPC data? Do you have any other suggestions?

Among the 144 respondents to this question, the most popular options were allowing building owners access to their own EPC survey data (80% favourable) and the data warehouse and building logbook (76% favourable).

Figure 11: Responses indicating whether the suggested measures would be effective for making use of EPC data
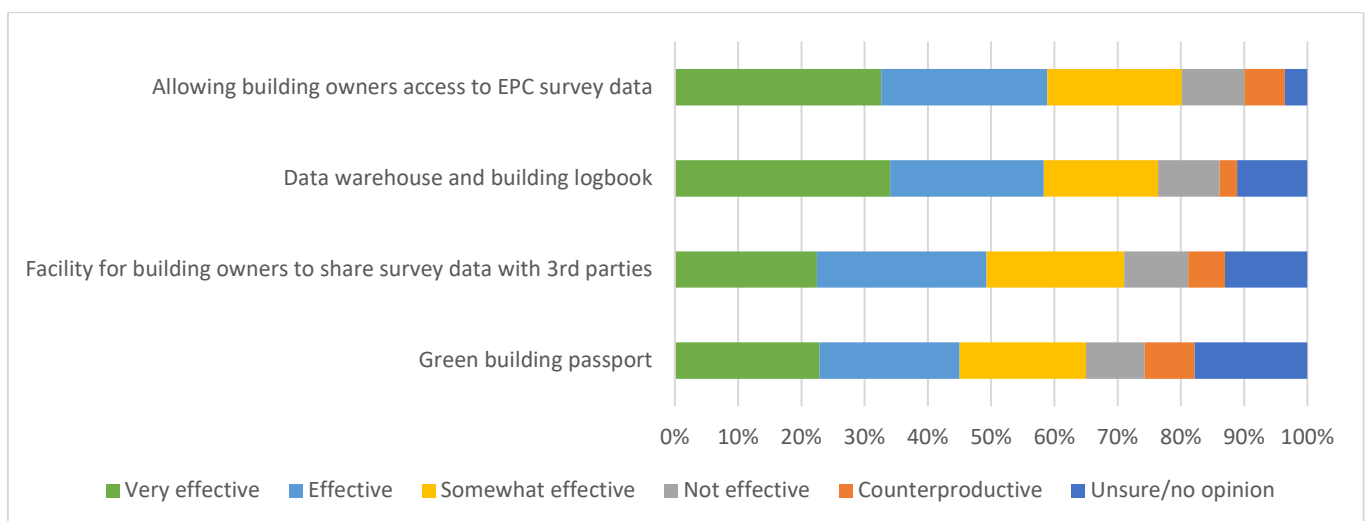
Reasons given for supporting property owners having access to their own EPC data were that this data has value to the homeowner and enables better decisions; that the property owner has access to their property data; that better scrutiny of the inputs will make assessments more accurate; being able to check the reasons for the rating and recommendations will improve trust; and that data won't be lost and can be used for other purposes.

In future it might be possible for all data held about a building to be located together in one location, which will be considered below under building 'logbooks'. The main reasons given for supporting the data warehouse and building logbook included: keeping a history of changes; keeping all information and documentary evidence in one place; giving the consumer better information on the building; it would be useful to consult when planning new work; it prevents data loss and repetition of work; and it ensures all changes are recorded. Others' supporting reasons included: it's useful when selling, or for a new owner/occupant, it could encourage the property owner to improve the property; it could be used for green finance; the data warehouse could allow third parties such as local authorities to access data and target efforts; better data on the housing stock; and this data can help make the EPC more accurate. However, data protection would need to be considered and enforcement would be needed as compliance with the existing building logbook requirement in non-domestic properties is poor.

Advantages of allowing the property owner the facility to share EPC data with third parties included reducing the cost and hassle of multiple surveys; other benefits to the property owner such as more accurate quotes and better advice; and enabling new business models.

Many respondents gave similar reasons for supporting the green buildings passport as the building logbook. Other benefits included: more detailed information to aid decisions; could be seen as an asset when selling; it provides a more holistic or long term approach to retrofit; it sets out steps to take or a roadmap; a more customised approach to retrofit; it sits with the building, not the occupier; and it gives greater certainty on costs and benefits of works. Other information could also be added such as funding sources, and national standards and targets. Concerns raised were possible fraud, increased cost, and insufficient training of assessors.

Additional suggestions

The majority of comments related to implementing one of the options already suggested under Question 19.

A number of responses also made suggestions also covered by options in another section of the Call for Evidence, such as improving Open Data, giving assessors access to previous EPC data, signposting consumers to energy advice and using consumption data and/or operational ratings. 7 respondents also again suggested the ability to update an existing EPC with changes, rather than commissioning a new one.

10 respondents made a suggestion that involved improving the EPC interface in some way, including being able to find EPCs on a map. 7 respondents wanted better access to bulk data, including the use of an API to transfer data. Additional data tools suggested were access to full SAP methodology, an online tool with personalised inputs and outputs, a digital information hub, access to a 'live' online EPC that can be updated, online, free to use SAP calculator, and a toolkit to see how renovations will impact EPC/consumption.

Question 20 - How useful do you think a 'data warehouse', 'building logbook' and/or 'green building passport' would be in increasing take up of energy efficiency improvements or supporting existing initiatives? What kinds of data might usefully be included in addition to EPC data and how could these proposals best be implemented? How might more comprehensive assessments be encouraged without making them a requirement for homeowners?

For this question respondents were given the option to indicate support for one or more of the three options suggested. Of the 153 responses to this question 75% supported one or more options and 22% supported all three. The most popular of the three options was the building

logbook, with 58% of respondents supporting this (either alone or in combination), followed by the data warehouse with 42% and green building passport with 39%. The most popular combination of two options was the building logbook and data warehouse, with 12%.

Reasons provided to support these responses were similar to answers provided under Question 19 and have been combined above.

Figure 12: Responses indicating which improved data options respondents supported
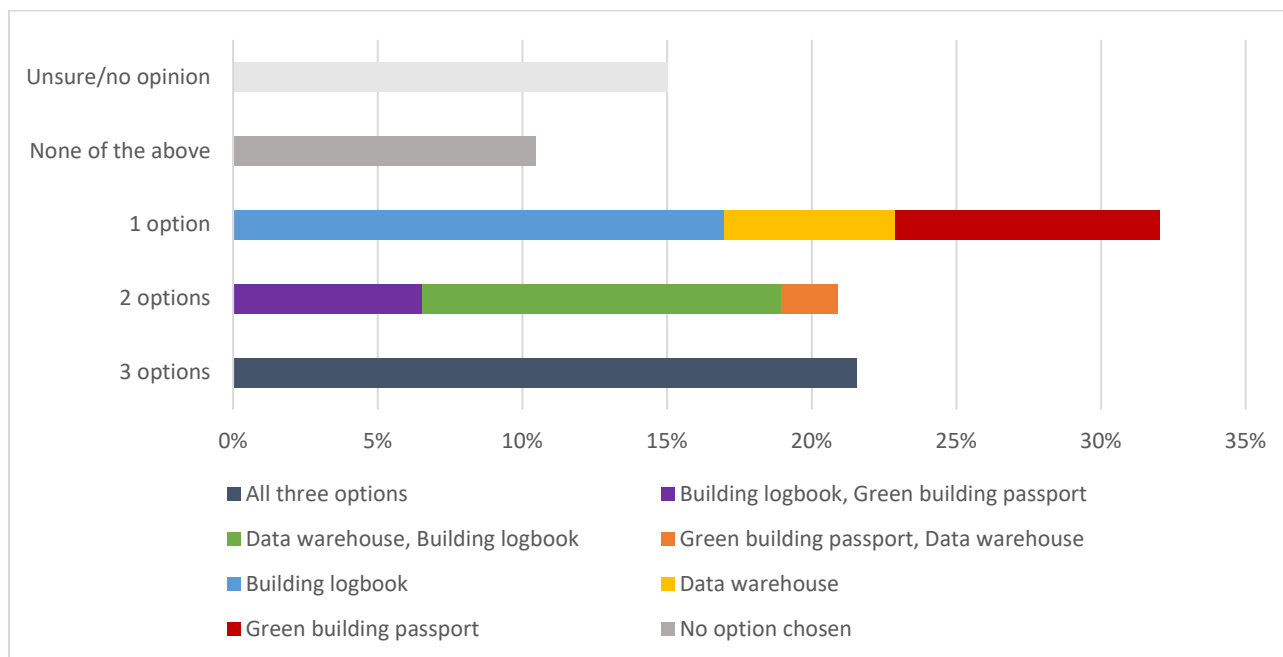
Suggested information to include and other implementation suggestions

The main suggestions for the types of data to be included were: record of changes or improvements to the building (14 responses); property specification data e.g. building dimensions, insulation installed, building fabric, date built (10 responses); warranties and certifications (10 responses); condition and maintenance data (8 responses); asset lists (8 responses) and building operation data/occupant lifestyle (8 responses). Other suggestions were smart meter and other energy data, underlying model data e.g. u-values; environmental data; Building Information Management (BIM) data; regulatory records; planning applications; building safety information, conveyancing reports and photos.

Other implementation suggestions included: emulating a car service history or MOT records; regulating to ensure people update the logbook with changes; having a third party verification process for works; allowing both authorised parties and the building owner to access and update, but with different access levels; model on the existing non-domestic logbook but an electronic version; could be used to demonstrate PRS compliance or for enforcement work.

Examples of existing data sharing platforms or programmes that could be useful to integrate with the building logbook or data warehouse or could serve as a relevant model included: PAS 2035 standard and TrustMark register; homeworksregister.com; Netherlands EPC[28]; Land Registry Digital Street project[29]; NHBC's HUG platform[30]; Oxford City Council's Energy Data

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[28] https://www.government.nl/topics/energy-performance-certificates-for-homes-and-buildings/epcs-for-homeowners
[29] https://hmlandregistry.blog.gov.uk/tag/digital-street/
[30] http://www.nhbc.co.uk/homeowners/homeuserguide/

Integration System (EDIS) project[31]; Better Buildings Partnership's Acquisitions Sustainability Toolkit[32]; work by the Energy Data Taskforce[33]; RICS building passport; Modern Methods of Construction property logbooks proposal. The Building Performance Network (BPN) had previously submitted a proposal for the creation of a data portal to IUK, which was not taken forward, but could also be relevant.

Encouraging more comprehensive assessments (building passports or similar)

The most popular suggestions for encouraging more comprehensive assessments were raising awareness of the benefits, such as improved data and information on potential property improvements (15 responses) and linking enhanced assessments to fiscal incentives such as green mortgages, funding or tax breaks (11 responses). Some respondents suggested third party requirements, for example on housebuilders, installers or landlords. Others suggested linking enhanced assessments to trigger points when people are already considering works.

Some respondents thought there could be multiple layers of assessment, for example 2 or 3 levels of EPC, gold, silver and bronze EPCs or 'optional extras' with the basic EPC. Others thought that the existing EPC would be sufficient, if improved. Some concerns raised were that assessors might not be sufficiently competent to carry out more advanced assessments and that the relevant information is already available but not delivered consistently or held in the same place – for example ECO pre- and post-works data is held separately. Although for new properties it would be easier and cheaper, as all the information is already available.

5.2 Coverage

Question 21 - What evidence do you have on compliance with the requirement for providing an EPC when purchasing/letting a property, or the requirement to display the EPC rating in property listings. Does this differ by tenure type or by any other subset of the building stock? What evidence do you have on the reasons for lack of compliance with the requirement for an EPC?

There were 75 responses to this question, with evidence put forward including desk research and published research as well as a mix of anecdotal/on the ground references from installers, EPC accreditation schemes and local authorities.

A detailed spot check carried out by one respondent on 60 properties showed varying compliance with EPC requirements depending on the tenure type and estate agent type. For local estate agents all properties had an EPC, but website adverts were only 70% compliant for sales and 50% compliant for lettings. For property comparison sites, 20% of properties had no EPC and 17% for sales and 13% for lettings had an EPC but the advert was non-compliant[34]. A survey of NLA members showed that 95% of landlords knew the EPC of their property, taken as evidence of a high level of compliance. Several respondents referenced an FOI request from 2013 on EPC enforcement (referenced under enforcement below) and the CCC's 2018 progress report which raised concerns about poor enforcement[35]. One surveyor estimated that

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[31] https://edis-ricardo.com/edis-practice
[32] http://www.betterbuildingspartnership.co.uk/acquisitions-sustainability-toolkit
[33] https://www.gov.uk/government/groups/energy-data-taskforce
[34] Spot check details provided by respondent and have not been independently verified
[35] https://www.theccc.org.uk/publication/reducing-uk-emissions-2018-progress-report-to-parliament/

of 200 properties they visited only 2-3 don't have EPCs, but 3 other respondents provided similar experiential or spot check evidence suggesting greater levels of non-compliance.[36]

The remaining respondents gave answers based on professional experience or anecdotal evidence, while 41 provided their opinion. In general, there was an even split between those who perceived compliance as good (25 responses) and those who thought it was poor (26 responses). Responses from the EPC industry and councils tended to see any level of non-compliance as 'poor' while landlords tended to see majority compliance as 'good'. 9 responses specifically mentioned poor compliance in displaying the EPC rating in adverts, with 4 responses stating that compliance by lettings and estate agents is good.

How compliance differs by tenure type

Only 42 respondents answered this part of the question, providing mostly informal evidence. 2 respondents cited an FOI request made to the Department of Communities and Local Government (DCLG) in 2013[37], which cited compliance in domestic sales, social housing rentals and private domestic rentals at 95%, 75% and 26% respectively. 1 respondent cited a Consumer Focus survey where some participants assumed that the EPC was only applicable when buying a home, suggesting EPCs were not widespread when renting[38]. The NLA survey referenced above broke down responses by property type and region. Most areas were similar, but landlords in London and Scotland and landlords of blocks of flats were less likely to know their EPC rating, suggesting these are more likely to be non-compliant, though there could be other explanations for this finding.

The remaining responses were based on personal views. The most frequent response was that compliance in the private rented sector was worse (17 responses), but the second most frequent response was that there was no difference between different property types (12 responses). 1 response thought properties for sale had worse compliance than rented.

6 respondents thought that commercial buildings or a certain subset had worse compliance, although 2 respondents thought compliance in the commercial sector was good. 4 respondents thought listed buildings had worse compliance, with some respondents mentioning a lack of clarity in the requirements. 1 respondent thought social housing had better compliance and 2 thought new builds had better compliance, although 1 thought new builds were worse. Specific types of private rented properties thought to have worse compliance included: small landlords and buy-to-let landlords; transactions with no letting/estate agent or unregulated agents; rogue landlords; and the least energy efficient properties. Specific types of commercial properties thought to have worse compliance included: SMEs/sole traders; industrial properties; and fit outs of shell buildings.

Reasons for lack of compliance

Again, evidence given was mainly based on personal views and experience. In the spot check referenced under the first part of the question, reasons given by agents for lack of compliance with EPC requirements were stated as 'waiting for an EPC to be done' on newly-listed homes or a culture of providing EPCs once a let for the property was agreed (this was echoed by another respondent, who thought the same was true for sales and in the commercial sector). In some cases, referrals were made to the Government EPC register website, but the property

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[36] There have been no studies to independently verify these estimates
[37] Provided in response to a request by campaign group 10:10: http://www.1010global.org/sites/default/files/uploads/ckfinder/files/130816%20-%20Final%20response%20letter%20to%20D%20Timms.pdf
[38] http://www.icaro.uk.com/images/uploads/project_downloads/Easy-as-EPC-WEB.pdf

had no EPC on the site. Even where there was an EPC this was not easy to find and the respondent thought most buyers would likely not take this trouble.

Several respondents pointed to findings by the Environmental Industries Commission (EIC) that only one Trading Standard authority is currently fining EPC non-compliance (referenced below under evidence for enforcement). The NLA survey referenced above suggested that landlord awareness may not be a factor in domestic properties. The spot check referenced above suggests that sales and lettings agents are not consistent at checking landlords meet requirements.

The reason for lack of compliance that was most frequently cited by respondents was poor enforcement (20 responses), with the next most frequent responses being perceived lack of interest by consumers (11 responses), property vendors/landlords not being aware of requirements (9 responses) and general poor landlord practice/rogue landlords (8 responses). Other reasons given were estate/lettings agents not acting correctly, adverts not being policed and the cost of EPCs. Some respondents noted that only requiring agents to display the EPC rating on the website (as opposed to the full EPC) opens up opportunities for fraud in the absence of compliance checking against the EPC register. Others noted that letting and sales agents have little incentive to comply due to a conflict of interest when acting for the vendor.

Question 22 - What evidence do you have on what enforcement work is currently being done to ensure that EPCs are being produced?

Of the 50 responses to this question, 40 respondents supported the view that enforcement was minimal or non-existent. The remaining 10 responses gave personal views from individuals noting their own compliance with the requirements or asserting that enforcement constituted a level of unnecessary bureaucracy.

Evidence cited for lack of enforcement included the Environmental Industries Commission 'Improving non-domestic energy efficiency after Brexit' report[39] and ADE's 'Warm Arm of the Law' report[40]. Various respondents cited Trading Standards authority feedback that EPC compliance checks are rarely carried out and no fines for non-compliance are issued. The remaining evidence was anecdotal.

5 responses identified that enforcement in Wales was more proactive and that soft compliance and enforcement through estate agents, legal forms and planning permissions was driving compliance. Two other local authority processes were also described: Oxford Council checks EPCs for all private rented properties, including HMOs, under its licensing programme. They have also set minimum standards for compliance within both HMO licensing and single occupancy which ensures compliance with PRS regulations. Bristol City Council provides incentives to property owners/landlords if they provide their EPC within a certain timeframe for property licensing.

17 responses highlighted a lack of resources or commitment in Local Authority Trading Standards teams, with the responsibility for enforcement powers split across Trading Standards and housing/environmental teams.1 respondent thought there was a conflict of interest within local authorities for DEC enforcement, as they have to both meet DEC requirements and enforce compliance. Another thought that enforcement has not been prioritised by central Government, because the regulations are seen as a burden on business.

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[39] http://eic-uk.co.uk/wp-content/uploads/2018/08/Improving-non-domestic-energy-efficiency-after-Brexit-8.18.pdf
[40] https://www.theade.co.uk/resources/publications/the-warm-arm-of-the-law-tackling-fuel-poverty-in-the-private-rented-sector

Question 23 - Which of the suggestions provided above do you think would be effective in improving compliance with the requirement for an EPC, bearing in mind the other changes to EPCs being considered. Do you have any other suggestions?

All proposed suggestions scored well (favourable scores above 70%), with 'providing information to landlords' (87%) receiving the greatest support, followed by 'providing better information to tenants' (82%) and 'putting greater obligation on estate/lettings agents' (80%). Additionally, 'linking EPCs to other requirements' had the highest proportion of responses saying that it would be either effective or very effective (72% of respondents to this question).

Figure 13: Responses indicating whether the suggested measures would be effective for improving compliance
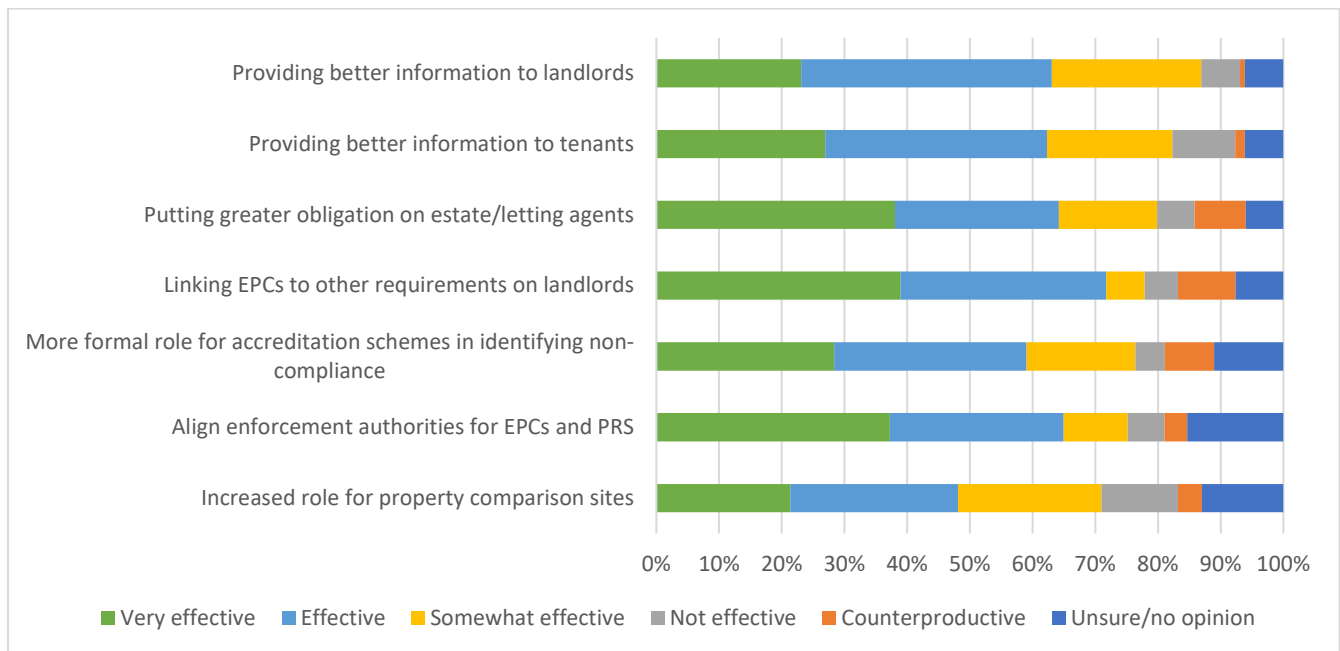
Reasons given for supporting better information to landlords and/or tenants were that wider understanding of EPCs would support compliance, that tenants need to better understand the regulations and the exemptions register, that vulnerable tenants could be empowered, that the consequences of non-compliance could be communicated, and that buy-to-let landlords need to be aware of rental legislation when making property purchases, but some respondents were unclear how better information would help or thought tenants wouldn't care.

Support for requirements on lettings agents was because it was considered effective, that they should be held accountable, that otherwise lettings agents have no incentive to ensure landlords comply and that agents should better inform landlords of the regulations. However, others argued that it's not part of their role and that there would be a conflict of interest for lettings agents. There was also concern that rogue landlords wouldn't be picked up, and that not all properties are advertised through lettings agents.

There was support for linking EPCs to requirements for Tenancy Deposit Schemes or landlord licensing. Some respondents thought property comparison sites had a role as they are not currently regulated and could sign up to a code of conduct, but others queried if it was really their responsibility and how this would help. Support for aligning PRS and EPC enforcement was based on the fact that it would make enforcement easier and stop landlords using the lack of an EPC to evade PRS regulations, but there were concerns that more resources and

expertise would be needed. If accreditation schemes had an official route to report non-compliance it was thought this could make enforcement of EPC regulations easier.

Additional suggestions

The most frequent type of suggestion for improving compliance was around improving enforcement or increased penalties for non-compliance (20 responses). Other popular options were additional regulation (10 responses), better data to help enforcement (9 responses), educating the public or providing better information on requirements (8 responses), or linking EPC requirements to other requirements (8 responses).

Suggestions for improving enforcement included: enforcement by an independent body; heavier fines; more resources for enforcement; more expertise within Trading Standards; the creation of a central register for rental properties; a formal process for other bodies to flag up non-compliance to enforcement authorities; combining enforcement of EPC requirement and EPC accuracy; linking to enforcement on rogue landlords; and for non-domestic properties enforcement by the Environment Agency as with the Energy Savings Opportunity Scheme (ESOS) and Carbon Reduction Commitment (CRC).

Suggestions for additional regulation included: requiring all properties to reach EPC C; requiring an annual building MOT; land registry can't give a new title unless an EPC exists; setting EPC targets on energy suppliers; putting legal requirements on estate agents; giving local authorities the power to ban landlords; and a landlord licensing regime which requires EPCs. Other requirements that could be linked to included: building regulations; planning process; land registry changes; tenancy deposit schemes; landlord licensing; mortgage processes and insurance requirements.

One respondent suggested improved policies for tenants, such as allowing tenants to leave non-compliant properties with no penalty or putting in place Alternative Dispute Resolution schemes. Other suggestions were to improve clarification on legal issues such as listed buildings and lease renewals. One respondent suggested that outsourcing of EPC enforcement could be permitted, as is currently done with parking enforcement.

5.3 Simple and low cost

Question 24 - What evidence do you have on costs of EPCs, how easy it is to procure an EPC or on consumer attitudes towards EPC costs?

Of the 96 respondents who answered this question, 35 respondents provided an indicative cost of EPCs. 2 gave reported sources – £75 in the Green Deal impact assessment[41] and £60-120 in a Uswitch report[42]. The rest were given from single examples or broad experience. Prices that were thought to be too low were £20 (2 respondents) or £30-35 (5 respondents). Typical/reasonable prices for domestic properties started at £40 (1 respondent, covering the North West), rising to £50-60 (11 respondents), £60-90 (11 respondents) and up to £120 (2 respondents. Urban areas and the South East were more expensive on average. Commercial EPCs were generally thought to be more expensive and could be as high as £1,200 according

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[41] DECC (2012) Green Deal Final Impact Assessment
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/70265/5533-final-stage-impact-assessment-for-the-green-deal-a.pdf
[42] https://www.uswitch.com/energy-saving/guides/energy-performance-certificates/

to 1 respondent. 16 respondents said prices could differ significantly across the building stock, dependent on size, type and location, particularly for commercial and new-build EPCs.

19 respondents said it was easy to get an EPC undertaken, with 7 respondents saying it was difficult or noting problems. Factors in the ease of procurement were a competitive market with lots of assessors, and use of the register or a simple internet search. Difficulties related to problems finding local assessors (especially in remote areas), and the register sometimes being out of date. There were some concerns that consumers don't know about the EPC register and too many people were procuring EPCs via their estate agent by default rather than shopping around, though a survey of HomeOwners Alliance members found only 4% felt pressured into using their estate agent for this. One respondent suggested better guidance that the EPC relates to the property and doesn't belong to the estate agent. Another respondent wanted more information on the register about experience of assessors with older properties.

No respondents provided formal evidence on consumer attitudes to EPC costs. Of respondents who gave an opinion, 21 thought the current cost was roughly appropriate, 24 thought EPCs are too cheap, 3 said the costs were too high and 15 thought EPCs were a waste of money or an unnecessary cost. As one assessor body noted "*Consumers often still complain about having to get an EPC, they seldom seem to complain about the cost of them*". Neither of the landlords' associations that responded thought the cost of EPCs was a concern for their members. 4 respondents thought the costs were low or reasonable compared to similar or relevant services such as the RICs homebuyer report or a professional survey (which could cost £1,000), and 2 respondents noted that EPCs are cheap in the UK compared to other countries, despite higher property prices

37 respondents mentioned a concern that in the trade-off between cost and quality, the current market results in low cost and low quality. 11 assessors particularly mentioned low costs driving out good assessors or resulting in very low profit margins. 7 respondents thought this was less of an issue in commercial properties. 2 respondents mentioned that PRS regulations have resulted in landlords being willing to pay more for better quality. 12 assessors specifically mentioned estate agents or 'panels' paying low prices to assessors and driving down prices, or conversely paying market rates to assessors and overcharging consumers. 5 respondents wanted a set price like an MOT, 3 were concerned about prices rising, and 1 ECO provider said they would be prepared to pay more if there were clear benefits.

Question 25 - Which of the suggestions provided above do you think would be effective in making the process of procuring EPCs easier or more affordable, bearing in mind the other changes to EPCs being considered. Do you have any other suggestions?

Of the 136 respondents who answered this question, the most popular suggestion was drawing in additional datasets, with 77% expressing a favourable response. The least supported was allowing apps with smart defaults (61%).

Figure 14: Responses indicating whether the suggested measures would be effective for making EPCs easier or more affordable
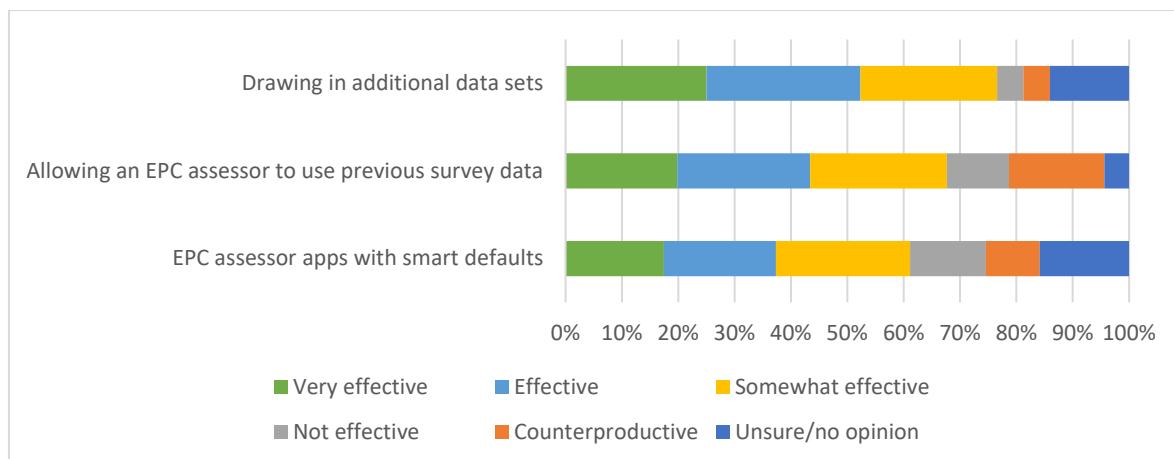
Respondents' comments about all three of these suggestions were mostly similar. The benefits were reducing the time taken to complete the EPC, improving accuracy, filling gaps in knowledge, and that the cost of a new EPC would not discourage people from getting a new EPC to reflect changes to the property. However, the quality of data from any of these sources would need to be verified and could become out of date, and there would need to be a standardised data format. There was also concern about the trade-off between cost and quality, with the concern that such measures might reduce cost but impact quality.

Additional suggestions

The biggest single response to this question was an expression of concern that EPCs should not be made cheaper at the expense of quality (27 responses). 5 respondents said EPCs were already cheap compared to other costs and 3 said assessors should take more time, not less.

Most of the suggestions made for reducing costs involved some improved way of gathering data (17 responses). Of these 8 respondents suggested that the introduction of a building logbook and/or data warehouse would provide better data to reduce costs, and 8 suggested an updateable EPC. Other suggestions included better software; reduce survey time needed; link into building control processes; reduce the lodgement fee; a central database of input data; access to information on property age; making better use of information held by the property owner; making more use of smart meter and connected home data; and avoiding EPC changes that increase the cost.

6 Additional insights

Respondents were given the option to highlight anything that was particularly important to them, or to make any additional suggestions not covered elsewhere in the Call for Evidence.

Question 26 - This Call for Evidence has outlined a number of options for making improvements to EPCs. Of the suggestions discussed in this document or which you have put forward, is there one or more you think is particularly important, or are there any other suggestions you have or comments you want to make about EPCs?

In answer to this question 84 respondents highlighted one or more of the suggestions in the call for evidence as important, with the most frequently cited issue being EPC reliability or general EPC quality (24 responses). In addition, 14 respondents specifically mentioned better EPC quality assurance and 12 mentioned better data for producing EPCs. The second most frequently cited issue was developing a building logbook, passport, or some other form of enhanced EPC (18 responses). Better EPC enforcement was also seen as important (15 responses) although in some cases respondents conflated enforcement of compliance and enforcement of quality. Ensuring EPCs are up to date (18 responses), including an operational rating or occupancy data (12 responses), access to EPC backing data (11 responses) and moving away from the cost-based rating (10 responses) were also frequently cited.

Other issues mentioned as important by several respondents included: improving the EPC format; the ability to use previous EPC inputs; using actual/smart meter data; improving data access; not driving down cost at the expense of quality; requiring EPCs for HMOs; and including information on future Government policy on the EPC.

Other suggestions

120 respondents provided additional suggestions or made general comments about EPCs.

People listed a huge range of suggestions and problems with EPCs, many of which have already been described elsewhere in this document as additional suggestions. The majority of additional suggestions raised under Question 26 related to EPC reliability or quality (covering 8 areas such as independent oversight, an updateable EPC, SAP issues, concerns with heritage buildings and concerns about using EPCs for PRS regulations) or their effect on behaviour (such as changing EPC content and better informing the public). 5 responses in this section were specific to non-domestic properties and 8 were specific to new-build EPCs.

Additional suggestions made in this section not specifically related to a Call for Evidence question included: better/more joined up policy or making a single department responsible (17 responses); resolving legal uncertainties or unclear guidance (15 responses); better transparency of SAP/EPCs (7 responses); resolving issues with addresses (7 responses); making visible data that is hidden on the EPC register (5 responses); and reviewing exemptions from EPCs such as listed buildings (4 responses).

Of the suggestions provided under Question 26 not made elsewhere, some of the most interesting suggestions included:

- More accurate renewables information – consumption vs export, up-to-date cost information

- EPCs need to be consistent with MCS and BS EN 12831 for heat pumps

- Develop an additional enhanced EPC to consider acoustic, lighting and air quality improvements as well as other sustainability measures and general home improvements

- RdSAP should take into account measures mandated in boiler plus - weather/load compensation and hydraulic balancing

- Green Deal plan disclosure should be made on the face of the EPC

- Property owners should have to confirm the EPC before lodgement to prevent lodging EPCs against the wrong address

- EPCs should clearly set out what measures are already installed

- EPCs should take into account other technologies such as batteries and EV charging that shift demand, or a 'smartness' indicator

- EPCs should include the ability to tick that the building is a heritage building, which could then add specific relevant information to the recommendations e.g. on suitability of measures or the need for adequate ventilation

Other comments

There were 18 respondents that suggested additional policies to improve energy performance or influence property decisions, other than changes to the EPC itself. Similar additional policies were described under Question 13 (36 responses) and Question 17 (17 responses). These are all summarised together here and included: financing street-by-street surveys, local promotion and promoting trusted local trades; a wider communications campaign; lower stamp duty for properties with a better EPC rating; council tax/business rates rebates or a better rate linked to energy efficiency; funding/monetary incentives for energy efficiency works; Government-backed loans; lower mortgage rates for a more energy efficient properties; improved rateable value based on energy efficiency; reduced rate VAT on energy efficiency products; mandatory EPC ratings; and linking EPCs to other policies such as the Energy Savings Opportunities Scheme and Simple Energy and Carbon Reporting for businesses.

Other comments made were general comments in support of EPCs or this Call for Evidence (11 responses) or criticising the principle or implementation of EPCs (9 responses).

Summary

In the above document we have set out new evidence on EPC performance and use, feedback from respondents on suggestions made in the Call for Evidence, and additional suggestions for improvement provided by respondents. A summary of percentage responses to all questions in the Call for Evidence is set out in the Annex to this document.

We briefly summarise below what has been done already to improve EPCs in relation to the Call for Evidence responses and other drivers for change. Further actions are set out in an Action Plan which accompanies this document.

Taking action

What has already been done

Since the Call for Evidence was launched, we have already made progress in several areas.

Simple Energy Advice service (Question 13)

This was referred to in the Call for Evidence document as the 'digitally led energy advice service'. When the Call for Evidence was published, this had just been launched in public beta. The Simple Energy Advice service[43] (consisting of website and associated call centre function) provides advice on energy use in the home, mainly based on pulling in EPC data. Simple Energy Advice fulfils some of the functions that stakeholders asked for in relation to EPCs, such as being able to include occupant behaviour. User engagement is exceeding the previous telephone-only service, and both site visits and calls have trebled since March 2019, and continues rise.

Ongoing user testing and feedback and planned development have concentrated on further improvements such as: better integration with ECO funding schemes; improved presentation of cost savings; improved functionality and recommendations for landlords; new content such as improved information on smart meters; social media integration; and an accessibility audit and associated improvements.

Smart Meter Enabled Thermal Efficiency Ratings (SMETERs) (Question 7/8)

In September 2018 we launched an innovation competition[44] to develop and test new Smart Meter Enabled Thermal Efficiency Ratings (SMETERs) which meet the description of the tools discussed in Section 3.21 of the Call for Evidence. This £4.1million competition awarded funding to 8 projects in Phase 1, covering development of SMETERs tools. Applications for Phase 2, covering testing and demonstration, closed in September 2019 and the projects are expected to be completed by March 2021. Tools like SMETERs, once fully developed, could enable at least part of the EPC rating calculation to be based on actual measured data, whilst controlling for occupant behaviour, which would alleviate some of the concerns with accuracy of surveys and assumptions made through RdSAP.

Energy Performance of Buildings register and EPC Open Data (Question 18)

In September 2018 we launched the Discovery phase of a project to re-procure the Energy Performance of Buildings Register. In September 2019, Made Tech Ltd was appointed to carry out the Beta development[45], which is expected to take 10 months. Both the Discovery and Alpha phases included extensive stakeholder engagement and user testing of the prototype new register[46]. The Discovery and Alpha phases identified the need for improved access to EPC data and developed a prototype register based on 16 user journeys[47].

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[43] https://www.simpleenergyadvice.org.uk/
[44] https://www.gov.uk/guidance/smart-meter-enabled-thermal-efficiency-ratings-smeter-innovation-programme
[45] https://www.digitalmarketplace.service.gov.uk/digital-outcomes-and-specialists/opportunities/10188
[46] https://communitiesuk.github.io/mhclg-epc-alpha/user-research.html
[47] https://communitiesuk.github.io/mhclg-epc-alpha/prototypes.html

In July 2019 we concluded the review of Open Data referenced in Section 5.7 of the Call for Evidence and published a new tranche of EPC Open Data[48], covering domestic and non-domestic EPCs and DECs up to 31 May 19. We also committed to continuing to publish EPC Open Data at least every six months from 2019 onwards.

EPCs in the Private Rented Sector Energy Efficiency Regulations (Question 21)

In November 2018 we launched the first year of a pilot study with seven Local Authorities aimed at exploring monitoring, compliance and enforcement approaches to the Private Rented Sector Energy Efficiency Regulations. Some of this work touched on availability and use of EPC data. In June and July 2019, we carried out engagement workshops on our Private Rental Sector minimum standards legislation, which is based on EPCs, and gained useful feedback from stakeholders on EPCs.

Innovative products in EPCs (Question 10)

In September 2019 we made an update to RdSAP which meant that innovative energy efficiency products which have been accredited through the 'Appendix Q' process can be used in RdSAP for use in EPCs[49]. Guidance and procedures have also been updated so that evidence from deployment of innovative measures through the ECO Innovation funding route can be used for Appendix Q applications. Together these measures make it easier for new products to be approved for inclusion in the EPC process.

Data warehouse (Question 19/20)

In September 2019 the TrustMark Data Warehouse was launched in public beta[50]. This was designed following the Each Home Counts review to act as the industry-facing repository of information about energy efficiency works in domestic dwellings. Works delivered through ECO and funded though TrustMark Finance panel must be lodged here from 1 Jan 2020. In future the website will also include a Property Hub, a consumer-facing platform where people can access a property 'logbook'. We expect this to be linked to the EPC register in future.

EPCs for new buildings (Question 5)

In October 2019 we published the Future Homes Standard consultation on Part L of building regulations[51], which includes an updated version of SAP, SAP 10.1. This consultation asked about improving the compliance checking process for new build EPCs, requiring photographic evidence, and provision of this evidence and the Building Regulations England Part (BREL) report to homeowners – all aimed at ensuring the 'as built' property is reflected accurately in the EPC. We also proposed showing the version of Part L used for compliance on the new build EPC.

Next steps

Alongside this document we are publishing an EPC Action Plan which sets out how we see EPCs developing in the future and the steps the Government will take to get to that point, taking into account the concerns and suggestions raised in this Call for Evidence.

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[48] https://epc.opendatacommunities.org/
[49] Appendix Q is explained here: https://www.ncm-pcdb.org.uk/sap/page.jsp?id=18
[50] https://www.trustmark.org.uk/ourservices/data-warehouse
[51] https://www.gov.uk/government/consultations/the-future-homes-standard-changes-to-part-l-and-part-f-of-the-building-regulations-for-new-dwellings

Annex – percentage responses for all questions, in order of popularity

Q5 - Access to additional sources of data about the building	
Q10 - New EPC required for extensions and major renovations	
Q13 - Make recommendations more tailored	
Q23 - Providing better information to landlords	
Q5 - Strengthened quality assurance	
Q23 - Providing better information to tenants	
Q17 - Present energy costs as annual costs instead of over 3…	
Q10 - New EPC required for other changes affecting EPC	
Q19 - Allowing building owners access to EPC survey data	
Q23 - Putting greater obligation on estate/letting agents	
Q13 - 'Nudge points' that prompt people to look at EPC	
Q13 - Changing the way recommendations are presented	
Q17 - Better visibility of EPC data on property comparison sites	
Q13 - Additional information relevant to homeowners	
Q5 - Better measurement technologies	
Q23 - Linking EPCs to other requirements on landlords	
Q13 - Enhanced role for assessors in providing information	
Q25 - Drawing in additional data sets	
Q19 - Data warehouse and building logbook	
Q23 - More formal role for accreditation schemes in…	
Q17 - Providing more of the information on the EPC in adverts	
Q23 - Align enforcement authorities for EPCs and PRS	
Q10 - Reduce validity period (3 or 5 years)	
Q19 - Facility for building owners to share survey data with…	
Q23 - Increased role for property comparison sites	
Q10 - Trigger point specific to HMOs	
Q13 - Allowing innovation in EPC formats	
Q13 - Directing people to the digitally led energy advice service	
Q13 - Including operational rating and/or occupancy data	
Q25 - Allowing an EPC assessor to use previous survey data	
Q10 - New EPC required for Green Mortgage	
Q19 - Green building passport	
Q5 - Ability to use survey data from previous EPC	
Q17 - Requiring a link to the digitally led advice service	
Q13 - EPC app	
Q5 - Apps and smart defaults	
Q17 - Providing EPC cost information on adverts	
Q25 - EPC assessor apps with smart defaults	
Q17 - Information about future direction of government policy	
Q17 - Including EPC rating on mortgage statements	
Q17 - Clearer data on ventilation	
Q17 - Provide better information on heat networks	

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

■ Very effective ■ Effective ■ Somewhat effective ■ Not effective ■ Counterproductive ■ Unsure/no opinion