

Consultation Response

27th January 2017



HHIC response to proposed changes to government's standard assessment procedure (SAP)

About HHIC

The Heating and Hotwater Industry Council (HHIC) are the leading representative body for the UK domestic heating and hot water industry, worth £3-4 billion per year. HHIC's membership base covers approximately 94 per cent of heating and hot water solutions available in the UK. HHIC are a division of the Energy and Utilities Alliance (EUA).

Full Response

Many of the changes proposed in this consultation will adversely impact the calculation of regulated energy associated with heating systems, among other aspects of building performance, thereby making compliance with Target Emission Ratings (TER) more difficult. In order to adopt any of the proposed changes the impact would have to be defined and costed under a review of Building Regulations Approved Document L and a regulatory impact assessment produced.

1. Do you agree with the proposal to use the methodology set out in the technical working paper for calculating carbon emission factors and update the figures?

HHIC note the importance of accurately calculating projected Carbon Emission Factors (CEF), particularly given their impact on Government policy and climate change targets.

We do not agree with the proposed method for calculating carbon emission factors, as we are concerned that the annual method of calculating CO₂ emission savings by renewables (rather than monthly calculations) is out of character for the SAP, unrepresentative of the truth, and may favour certain technologies.

The bulk of the SAP calculations are done on monthly divisions, with different outcomes expected from Jan to July (as the weather changes). This is necessary to allow for a more accurate picture of heat/energy use of a dwelling over the year than you would get from a single annual number. Why then is the SAP CO₂ emission offset (Grid CO₂ average value in this case) for renewables not also calculated monthly? It is clear that the grid value of CO₂ changes a lot from Summer to Winter also, so by the same logic, calculating monthly would be necessary for accuracy. In the past, this inaccuracy perhaps was trivial when energy saving measures were a smaller fraction of the total dwelling energy demand, but would seem increasingly distorting as dwellings approach 'net-zero'.

CONSP:07 (page 32) draws the reader's attention to the fact that forecast CEF values for electricity have in recent times been under-estimated (extract from CONSP:07, p32 seen below):

"Comparing the projected value for 2016-2018 for SAP 2016 of 0.399 kgCO₂/kWh which is based on the 2014 updated energy projections with the projected value for the same period based on the 2011 updated energy projections (which were used to inform the SAP 2012 factors) show that the SAP 2012 factor was 7% below the actual value over the period (2013-2015), see Table 12."

In light of the above, we would suggest the proposed reduction of CEF for electricity by 23% is unrealistic, and would strongly suggest a more credible, conservative figure be applied.

HHIC note the importance of electricity produced through renewable means (e.g. solar) but would comment that these sources will often not be generating at times of peak demand. A single annualised figure for the grid CO₂ emission factor (KgCO₂/KWh) does not correctly reflect the true CO₂ saving in cases where the renewable technology applied to the dwelling has a seasonal bias. For instance a KWh of electricity generated in Summer does not give the same CO₂ saving as a KWh of electricity generated in Winter (roughly worth 440gCO₂/KWh Oct-Mar and 400gCO₂/KWh Apr-Sept)¹. This may lead to over-reporting on energy saving. Over-reporting undermines all points of the SAP and frustrates true energy saving methods being used. Therefore, an annual method may consequently favour certain energy saving technologies over others, skewing the market for technologies.

Monthly values for the grid average CO₂ emissions (KgCO₂ per KWh) should be used instead of an annual value as this would give a clearer picture, be more accurate and be fairer between CO₂ saving technologies. Historical data could be used as a starting point for further investigation.

HHIC note that the SAP 2016 changes proposed to CEF for electricity will naturally increase the attractiveness of electrical Central Heating and Hot Water solutions for developers and specifiers. At a time UK Government have made Fuel-Poverty a key focus-area, this could potentially lead to more people becoming entrenched within, or pushed into fuel-poverty, once the higher fuel-cost of electricity is considered.

As the carbon intensity of electricity approaches that of gas, developers may be more inclined to move to electrical resistive technologies, which in turn will drive higher electricity demand and make the task of further grid decarbonisation that much more difficult and costly. There is the real situation that if additional load was placed on the grid to provide space heating this could not be provided by the same balance of renewables to fossil fuel generation as assumed.

¹ Average data over 2015, 2014, 2013. http://www.earth.org.uk/_gridCarbonIntensityGB.html

In principle, marginal CO2 emissions grid values could be considered (e.g., the saving by reducing the grid demand by an amount), instead of CO2 averages, as at certain times of the year there is a disparity.

2. Should we keep the current set of heating patterns set out in SAP or move to using two heating periods every day of the week? Please provide supporting information for your view.

HHIC would prefer to maintain the status-quo with regards SAP heating patterns.

While BRE recognise the difference in heating patterns and suggest that the current timings are maintained, SAP has never used a weekday 9 hr heating pattern with 2 'on' periods and a single 16hr pattern for weekends. It has always averaged this to an 11hr pattern each day.

The move towards a more detailed analysis for boiler and heat pump operating efficiency calculations gives an opportunity for this to be corrected however this opportunity hasn't been taken.

3. Do you agree with the proposal to amend default Distribution Loss Factors for Heat Networks?

HHIC have no firm view on this proposal.

We note the importance of calculations being as accurate as possible, and would support the use of standards and verified data in preference to default values.

We understand there are no real "standards" for HIU's currently, and believe the CIBSE guide, for example, drives up installation quality and performance.

4. Do you agree with the proposal to change the way that lighting is calculated in SAP?

HHIC have no comment to make.

5. Do you agree with the proposal to remove the default values in Table K1, review default values as proposed, and recognise Certified Thermal Details and Products schemes? Do you agree with the proposal in due course to amend the default y-value to 0.2?

HHIC note the importance of accurately modelling thermal loads on buildings, but have no further comment to make.

6. Do you agree with the proposals to adjust U-values and Ψ -values for elements next to unheated spaces?

HHIC have no comment to make.

7. Do you agree with the proposal to change the default U-values for walls for existing buildings in RdSAP?

HHIC have no technical disagreement with the proposals and feel the impact assessment to be fair and accurate.

8. Do you agree with the proposal to amend the hot water methodology in SAP?

HHIC support the fact that this proposal now takes into account the electricity used by electric showers.

HHIC note that within the methodology, a factor is introduced to take account of the occupant behaviour aspect. This is intended to make up for the difference between effect of cold water seasonal temperature variation and the 20% estimated from the EST data. The introduction of a factor in this way seems to defeat the objective of trying to increase the accuracy of the methodology.

To base the whole calculation on a field sample of 112 properties is very unsatisfactory particularly as it is known that hot water demands vary so much between households.

The 20% variation was used in the 2012 SAP calculations but in that case there was little attempt to get an accurate value of water demand. In addition, one of the fundamental principles of SAP is that it is not meant to take into account occupant behaviour, it is meant as a comparative tool only.

In general, we are in favour of the direction of travel for the proposed changes, but feel the importance of substantial underpinning evidence to support change should not be overlooked.

A key result of these changes is that the hot water load will vary considerably from one dwelling to another depending on the type of shower fitted, which also makes for a more complex SAP calculation. On an initial analysis it appears that on average the energy requirement will increase significantly.

BRE would seem to recognise that developers may fit a low water flow rate shower, or fit a restrictor, to get a better SAP rating. When the occupants find the shower unsatisfactory it may immediately be replaced (or restrictor removed).

HHIC note the potential for this proposal to encourage developers to place greater emphasis on Hot Water storage solutions, to maximise the SAP rating of the dwelling. Seemingly not noted in the impact assessment, HHIC would flag the potential impact on manufacturers, developers and specifiers. With specifications agreed long before building commences, and the potential for long-standing supply arrangements to exist, any rapid market change or variations in demand may offer insufficient time for these parties to react and adapt accordingly.

9. Do you agree with the proposals to change the questions in the assessment of internal temperature in summer (Appendix P)?

HHIC have no comment to make here.

10. Do you agree with the proposal to amend the treatment of Mechanical Ventilation Systems in SAP?

HHIC have no comment to make here, as the nature of the proposal fall outside of our core remit.

11. Do you agree with the proposal to change the assumed air flow rate for chimneys and flues in SAP?

The paper referred to in this section CONSP-15 is based on a limited study completed by Gastec in 2006. There are several issues with this document. For example it refers to a 10 Kilowatt heat input for a gas fire. The building regulations refers to gas fires of up to 7 Kilowatts and most products on the market today are rated between 3 and 5 Kilowatts. Also the opening of a gas fire is detailed in CONSP-15 as 9000mm² which is not the case for modern day high efficiency products.

The consultation does not take into account the latest designs of Glass Fronted gas fires and gas stoves that are on the market. These products take their air from the room space in a similar way to a wood burning stove. The additional benefit of the various models of gas fires as a source of secondary heating is the balanced flue gas fire where the air required for combustion is taken from the outside of the building. These are already recognised in SAP. These products are also more efficient, much cleaner burning than wood burning stoves and more user friendly.

Therefore the changes to SAP should include a ventilation rate of 10m³ /hr for a closed fronted gas fire and a gas stove in addition to the balanced flue gas fire that is already recognised in SAP.

Shouldn't there be a lower penalty for flues <200mm? The area of a 5" flue is just 2/5th that of a 200mm so shouldn't that be a penalty of 14m?

With more people working from home, and the issue of fuel poverty, a review of the benefits of a gas fire and the increased use by the home owner of secondary heating when the main heating system is not required should be undertaken. E.g. when only one person is at home and the rest of the family are at work or school.

12. Do you agree with the proposal not to alter assumptions on storage heating secondary fractions in SAP?

HHIC have no comment to make.

13. Do you agree with the amendments proposed to solid fuel heating efficiencies?

HHIC have no comment to make.

14. Do you agree with the proposal to amend the procedure for determining overshadowing of solar PV installations?

HHIC have minimal comment to make but would observe that this seems a sensible approach and would seem to complement existing MCS requirements and procedures.

15. Do you agree with the approach to adjust the carbon savings where solar PV electricity is used in the home to heat water or where it is put into battery or other storage? Do you have a view on the correct export tariff for PV electricity exported to the grid? Do you have ideas on how solar thermal space heating, or storage of solar PV or hot water through a battery or other medium can be modelled?

HHIC note potential benefits to the consumer from this proposal but the possibility of negative consequences for the developer (reduced carbon savings), as noted in the impact assessment.

With the possibility for increased developer costs, we feel this may inhibit the uptake of these technologies (PV diverter, battery storage) as developers and specifiers move away from them.

16. Do you agree with the proposal to provide a series of seasonal efficiencies for boilers on the Product Characteristics Database dependent on the controls they use and the design flow temperature of the system? Do you agree with the proposed change to the Energy Balance Validation method?

HHIC are aware BEIS wish to align SAP with ErP wherever possible, as evident in the separate "Heat in Buildings – The Future of Domestic Heat" consultation, where it is proposed to replace a minimum SEDBUK efficiency with a minimum ErP value (seasonal efficiency).

We therefore find it slightly confusing that this proposal would introduce ErP control classes, but deviate from the EU-wide accepted efficiency credits, irrespective of UK bi-modal heating assumptions. We see little in the way of supporting scientific evidence to justify the revised control efficiency credits proposed for SAP 2016. HHIC would again reiterate the primary purpose of SAP as a comparative tool, and not as a medium suitable for making assumptions on occupant behaviour, particularly where the fickle nature of consumer interaction with heating controls is concerned.

HHIC note that for validated performance of specific boiler & control combinations, both appliance and control would need to be listed on the PCDB. Whilst this is common practice for appliances, it is not for controls, and would rely on a commitment from controls manufacturers to invest in a costly approvals process for their product ranges, so introducing a new cost burden to industry. If controls manufacturers decided not to adopt this approach then it could leave appliance manufacturers own controls as the only "validated" option, limiting customer choice and potentially stifling innovation and product performance improvements.

Not noted in the impact assessment, HHIC observe that the impact on SAP percentage points is in many cases significant (3-4 percentage points in some cases). We would again draw attention to the fact that long-term contractual supply arrangements may exist (e.g. developer contracts with controls manufacturers), which may be unrealistic or cost-prohibitive to disengage from, whilst also introducing considerable cost burdens to “recoup” SAP efficiencies (points) elsewhere.

Given that the vast majority of new build developments specify a gas fired heating system, and the changes proposed will adversely impact on regulated energy calculations, we do not believe that they can be adopted without a fully costed, clear and considered regulatory impact assessment.

HHIC disagree with the proposed changes to the EBV method.

The maximum theoretical efficiency curve used by BRE in the calculations has been produced separately from the calculative spreadsheets made available for the consultation. HHIC are therefore unable to comment on its accuracy, or to assess the validity of the assumptions made. Hence, we also cannot comment on whether the data presented is reflective of a “true” maximum efficiency value.

HHIC object to the current sliding scale approach to limiting maximum efficiencies. It is not a fair system and disadvantages the majority of appliances with genuinely high efficiencies. Such appliances will have their efficiencies reduced, whilst any products claiming unrealistically high efficiencies may well benefit.

HHIC feel there should be further investigation of using the EBV method to validate data submissions to the PCDB, although we recognise that there are potential difficulties to overcome due to the tolerances that have to be applied. Now is the ideal time to make changes to this system as it would be extremely difficult to make changes to this aspect on its own at a later date.

17. Do you agree with the proposal to amend the default values for some heat pumps based on evidence from RHPP field trials?

HHIC are not able to say if the revised performance values are realistic or not.

18. Do you have any evidence on the technology costs used in RdSAP?

HHIC have no comment to make here.

19. Do you have any evidence to update the assumptions that SAP makes about heating controls?

HHIC have no comment to make here

20. Can you provide any evidence on the cost and benefits to business of revisions to SAP independent of changes to any particular set of Buildings Regulations?

HHIC feel that a joined-up approach to changes to SAP and Building Regulations is desirable. This affords manufacturers, developers and specifiers the most opportunity to establish how they will be impacted, and plan accordingly. It is incredibly challenging to manage disjointed, incremental change, with all the problems it brings regarding specification and legislative compliance.

The implementation of changes to SAP and Building Regulations also need to be phased in appropriately. Changes impacting compliance once plans are approved (e.g. those which impact the Dwelling Emission Rate - DER) could result in non-compliance once inspection against design is carried out, potentially causing huge disruption to the construction industry.

We do not believe that the proposals should, or could, be adopted independent to a review of Building Regulations. As previously mentioned developers will need to fully understand the associated impact and cost in order to agree or disagree with proposals.

It is certainly the case that the proposals herein would incur additional build cost in terms of TER compliance but also additional time for SAP assessors in order to do carry out the more detailed modelling required, together with impacts on scheme operators and software providers; thereby representing a cost to business.

In order to derive more productivity from the new build sector, in line with overarching Government aims, the regulatory framework needs to be clear, transparent, consistent and stable. Introducing fundamental changes to SAP must be undertaken in line with a review of Approved Document L, be fully evidenced, and an associated regulatory impact assessment produced.

Contact

If BEIS wishes HHIC to clarify any of the points outlined in this consultation please contact Neil Macdonald, Technical Manager at neil@eua.org.uk, 01926 513746 or HHIC, Camden House, Warwick Road, Kenilworth, Warwickshire, CV8 1TH.