

Dave Mitchell

To: 'sap2009@bre.co.uk'
Subject: FW: HBF response to proposed changes to the Government's SAP
Attachments: SAP Background_and_consultation_questions.doc

Dear Mr Christie,

Please find attached the HBF's response to the consultation regarding the proposed changes to the Standard Assessment Procedure.

Kind regards,
Dave



Dave Mitchell
Technical Director

Home Builders Federation Ltd
1st Floor Byron House
7-9 St James' Street
London SW1A 1EE
Tel: 020 7960 1600
Fax: 020 7960 1601
Email: dave.mitchell@hbf.co.uk
Website: www.hbf.co.uk

A consultation on proposed changes to the Government's Standard Assessment Procedure (SAP)

Introduction by DECC

This consultation is being undertaken by BRE on behalf of the Department of Energy and Climate Change (DECC) to set out the changes that are being proposed to improve the accuracy of SAP assessments and provide a mechanism whereby stakeholders can give feedback and influence the development of the SAP methodology.

It is anticipated that an amended version of the SAP methodology (SAP 2009) will be published in the last quarter of 2009 and that it will come into force in 2010, as determined by legislative changes such as the forthcoming Amendment to Part L of the Building Regulations for England and Wales. Further reviews and revisions of the SAP are expected in 2012 and 2015, prior to expected amendments to Part L in 2013 and 2016, which are the announced steps to zero carbon homes.

Whilst the timing of the SAP reviews and revisions are being driven by the forthcoming amendments to Part L of the Building Regulations for England and Wales, the SAP and its base model BREDEM are used to underpin a number of other key energy and environmental related policy initiatives, such as Warm Front, Carbon Calculator, Stamp Duty Land Tax Exemption for Zero Carbon Homes, Energy Performance of Building Directive and the production of Energy Performance Certificates, local authority stock reporting, Building Regulations in Scotland and Northern Ireland, Code for Sustainable Homes, Carbon Emissions Reduction Target, etc.

Consequently, it is important that all stakeholders are made aware of and take advantage of this opportunity to influence the development of this important energy performance assessment tool. You are, therefore, cordially invited to respond to this consultation.

Please bring this consultation to the attention of others you know that may have an interest in this matter.

Alan Christie DECC
Whitehall Place
London

Proposed changes to SAP

The Standard Assessment Procedure (SAP) is used to assess the energy performance of dwellings and thereby helps deliver many of Government's energy and environmental policy objectives.

For new dwellings SAP is used as the vehicle for demonstrating compliance with the relevant building regulations for England and Wales and for the Devolved Administrations. Energy standards for new homes are being amended in 2010 in England and Wales (Part L), in Scotland (Section 6) and in Northern Ireland (TB F). Such proposed changes will in due course be the subject of separate consultations by the Administrations responsible.

To support the forthcoming 2010 Amendment to Part L of the Building Regulations for England and Wales (conservation of fuel and power), the changes of which will be subject to a separate consultation, and which is a step towards delivering zero carbon homes in 2016, DECC has undertaken a review of the SAP. This review has indicated that a number of improvements are required to better deal with extremely low energy dwellings, and the proposed changes aim to address this. Other improvements have also been introduced wherever possible. Thus, a separate consultation is being undertaken regarding the proposed changes to SAP.

There are a number of documents that form a part of this SAP consultation. The key one is the revised SAP specification but there are also some technical documents that provide details of the reasoning behind the main changes. A general guidance document on SAP is also included in the consultation (this is largely included for additional information rather than as a formal consultation document, but feedback on it would nonetheless be welcome).

All of these documents can be accessed at www.bre.co.uk/sap2009.[†] Further more-detailed research documents on a number of specific topics are available on request to sap2009@bre.co.uk.

The reviews of SAP that are envisaged in 2012 and 2015 will primarily address improvements to the procedure to take account of developments in technology and to incorporate experience gained from the application of SAP to very low energy dwellings. Improvements may be possible also through the availability of new data (for example, there is a proposal for an Energy Follow up Survey to the English Housing Survey to take place in 2011, and this could provide useful data for refining some aspects of SAP).

* Note that any impacts from the proposed changes to SAP will be assessed as part of the Impact Analysis for the Building Regulations Part L amendment and will form part of that consultation.

[†] Paper copies are available on request: please contact Alan Christie, DECC, 3 Whitehall Place, London, SW1A 2HD.

This consultation document also indicates some potential future developments, in particular relating to options regarding the weather data to be used for calculating SAP ratings, and invites comments on these. Various other issues that might affect future development, including the approaches used by other low energy assessment methodologies and how these differ from SAP, and proposals for change that might come via Europe, are also briefly mentioned either in this document or in the accompanying technical documents. Views on any of these issues would be welcome.

How to respond

This document is intended to provide the mechanism for submitting responses to the consultation. It lists the main changes that have been proposed and asks questions relating to them. The responses to these questions will be used to review the proposals and to prepare a final version of SAP, to be known as SAP 2009, for use in connection with revised UK Building Regulations.

Comments are invited and should be sent:

either by e-mail to:

sap2009@bre.co.uk

or in writing to:

Alan Christie

Department of Energy and Climate Change

3 Whitehall Place

London SW1A 2HD

not later than 4 September 2009.

Technical queries should be sent to sap2009@bre.co.uk

Other queries should be addressed to alan.christie@decc.gsi.gov.uk

If responding by e-mail please simply type responses to individual questions within the relevant boxes. The boxes will expand to accommodate your entries.

For written responses please also write within the boxes. If a box is not big enough to contain your response then simply continue on a separate sheet (or sheets) and indicate clearly that you have done this, numbering any continuation sheets sequentially, and clearly indicating at the top which question they refer to.

Amendment 1 – adoption of a monthly calculation

For conventional dwellings the calculation of energy use can be undertaken using a simple seasonal method and this will generally be of sufficient accuracy for the purposes. Thus, SAP has previously adopted this approach, using a degree-day based methodology. For the very low energy dwellings that are now envisaged such an approach is likely to become unsatisfactory and the energy balance should be considered at different times through the year. Thus, a monthly calculation has been proposed for SAP 2009. This has a number of ramifications for various parts of the calculation.

Q1: Do you agree that a monthly calculation basis is now required for SAP 2009? Are there any negative impacts from such a change?

We struggle with this question as it will add a further degree of complexity to an already complicated process.

Amendment 2 – use of updated weather data

SAP has previously made use of long term (20 year) average weather data dating from the 1960s and 1970s. Given the marked warming that has happened since then, for SAP 2009 it was considered important to update the weather data. Therefore, the Met Office was commissioned to provide the necessary data. Temperature data, solar radiation data and wind speed data have all been updated to represent recent long-term averages.

There has been no attempt made to project the weather data for the purposes of SAP. This could be considered for any future updates (although it must be recognised that the accuracy of such projections diminishes the further one projects, so it would probably be appropriate to limit any projection to the period for which the particular version of SAP was in use).

Q2: In future updates, would you think it useful for SAP to make use of projections of the weather data? *(see also Q12 regarding the possible use of regional weather data for SAP calculations)*

We do not believe that future weather projections should be used in SAP.

Amendment 3 – carbon dioxide emission factors

A comprehensive methodology has been developed for determining the CO₂ emissions associated with a range of different fuel types[‡]. These revised emission factors take account of the impact of CO₂ and other greenhouse gases (N₂O and CH₄) in terms of CO₂ equivalent[§]. They also take in a much wider consideration of the upstream emissions, which includes fugitive emissions as well as emissions from energy used during extraction, processing, transformation and delivery to the final user^{**}. A consistent methodology has been applied across all fuel types (including a range of biofuels) and is based on the most recent data on emissions and UK fuel supply^{††}. Inevitably there are some areas in which full data is not available and suitable estimates have had to be made. It is intended that these factors will remain fixed for the life of SAP 2009, which is expected to be from 2010 to 2013. The emission factors will be reviewed again in 2012.

Q3: Do you agree that the carbon dioxide emission factor methodology that has been developed is appropriate?

We do not feel able to comment on this.

Q4: Please indicate any other fuel types which you think should be included?

The most common fuel types all appear to have been included.

Q5: Do you have any information that could be used to address areas where there is missing data and thereby further improve the proposed emission factors?

No.

[‡] Technical Document STP09/CO202 - Methodology for the Generation of UK Emission Factors for Use in the National Calculation Methodologies

[§] Considered over a 100 year time horizon.

^{**} The consideration of emissions does not extend to energy used to produce the infrastructure and machinery and materials used in fuel production, nor does it consider the impact of alternative uses e.g., land use change.

^{††} Technical Document STP09/CO203 – Revised Emission Factors for use in the National Calculation Methodologies: data sources and assumptions (available on request).

Amendment 4 – boiler systems

The proposals include different treatment of heating systems with gas and oil boilers. They affect boiler efficiency, controls, the range of fuels, and community heating, and are explained in more detail in a separate document^{††}. Given the proposed monthly calculation it follows that the boiler efficiencies that are applied need to reflect variations throughout the year. A distinction is required between winter (space and water heating) and summer (water heating only) efficiencies. Separate hot water performance data for combi boilers is expected to become available from recent test standards and should be recognised in SAP. A study has shown that efficiencies in independent boiler tests are consistently lower than those from tests undertaken for manufacturers. Alterations to the SEDBUK boiler efficiency calculation method are needed for these reasons, and proposals have been set out with full technical details in supporting papers.

Q6: Boiler heating systems, including hot water performance, controls, and community heating, need to be handled differently for a number of reasons set out in the supporting papers. Do you consider the proposed new treatment in SAP is the most effective way of dealing with them? If not, what would you propose?

We broadly agree with proposed new treatment of SAP. There are concerns surrounding adequate supply of boilers required at the new SEDBUK level.

Q7: There is evidence to show that the efficiency of boilers is lower than has been previously assumed. Does the proposed methodology compensate for this in an equitable manner? If not, what would you suggest?

Boiler selection is important when calculating a DER. It is also important that the boiler performs to the efficiency stated and used in the DER.

Q8: In community heating schemes the energy performance and distribution losses vary widely but are estimated without reference to specific scheme data. Such data could be collected and made available for assessments via a database (though not in time for SAP 2009). Would that be practicable and effective? If not, what would you propose to improve the method of assessment of community heating schemes? Do you agree that the tabulated distribution heat losses in SAP 2009 Table 12c should be restricted to schemes above a specified linear heat density?

^{††} Technical Paper STP09/01 : *Changes to the treatment of boilers (gas and oil) in SAP 2009* – see www.bre.co.uk/sap2009

This is a problem and robust data as and when available should be used.
Somehow a database needs to be set up.

Amendment 5 – inclusion of thermal mass and cooling calculations

Thermal mass can play an important role in moderating temperature swings in highly insulated dwellings and it is therefore important to include this when considering the need for cooling. Cooling has now been included explicitly within SAP (previously, this was only considered via an assessment of the risk of overheating) following the approach of an ISO Standard. The inclusion of cooling leads to some difficult questions (in particular, it raises the question of whether SAP ratings should continue to always be calculated using UK average weather - which clearly does not make sense as far as cooling is concerned - or whether they should ultimately become regional).

Q9: Do you think the proposed treatment of thermal mass and cooling is appropriate?

Yes, this would seem appropriate.

Q10: Should a cooling load always be calculated, or should it be calculated only when air conditioning is known to be present?

Very small numbers of houses have air conditioning and therefore a cooling load should only be used in these cases.

Q11: If a reversible heat pump is installed for heating, what assumptions should be made about the extent to which it will be used for cooling?

Do not have an opinion on this.

Q12: Looking ahead, should SAP ratings be made regionally dependent?

This could be something to consider for the future.

Amendment 6 – hot water energy use

Supply of hot water can represent the largest single energy use in well insulated dwellings. Thus, for SAP 2009, it was appropriate to review the assumptions about the hot water demand and energy characteristics. Field monitoring undertaken by the Energy Saving Trust (measurements made on over 100 dwellings) provided the evidence for suitable amendments to the procedures, whilst also allowing the calculations to be undertaken each month. The findings of the trial, briefly, were that the volume of hot water used was very similar to what SAP assumed already (but this has nonetheless been modified accordingly), but that the temperature rise assumptions needed changing.

Q13: Do you think the amendments that have been made to the hot water heating procedures are appropriate? *[NB: the water heating efficiency of boilers is dealt with in amendment 4]*

Yes, this is an area which is becoming more and more important.

Q14: SAP makes fixed assumptions as regards primary pipework losses and secondary (distribution) losses. Should either or both of these be made variable according to size of dwelling and/or actual lengths of pipework?

Fixed assumptions would appear appropriate although we know that no two properties will have the same length of pipework.

Amendment 7 – auxiliary energy use (lights and appliances / cooking) and internal heat gains

The energy used for lights and appliances and cooking is important both because it can be significant in its own right and because it contributes to internal heat gains that can offset the amount of energy required for space heating. This is particularly important in very low energy dwellings where the gains can be sufficient to meet the heating requirements in at least a part of the heating season.

Unfortunately, this is an area in which there is limited information available and so it has been necessary to use data from the late 1990s (principally from the Energy Follow-up Survey to the 1996 English House Condition Survey), together with educated estimates of what has happened since then (e.g. making use of Market Transformation Programme material). The gains figures thus derived represent estimates of what is typical within the stock and these are considered entirely appropriate for calculating SAP ratings.

For design purposes (i.e. for calculating the DER) there is an argument for using lower levels of gains so that insulation standards are not reduced on the basis of internal gains which might not be present in practice. Other low energy assessment methodologies, such as the PassivHaus Planning Package, follow such principles. Thus, we have proposed using gains that are about one-third lower than typical for this purpose. This is based on assuming that A-rated appliances and low energy lights are present throughout.

Q15: Do you agree that the lights and appliances and cooking assumptions that we have made are reasonable given the limited data? If not, do you have any data that would allow them to be improved?

This is a difficult area as it is dependent on householder behaviour to a degree. We do however think the assumptions are reasonable.

Q16: Do you agree with the proposal to use lower gains for design purposes or do you consider the same assumptions should be made for all calculations? And do you agree that the reduction applied is appropriate? If not, do you have evidence for using some other assumptions?

No view on this.

Amendment 8 – Number of occupants related to floor area

For SAP it is important to apply various standard assumptions in order that fair and meaningful comparisons can be made between dwellings. This means not taking account of the specific characteristics and preferences of the individual household that might occupy the dwelling. For this reason, the number of occupants is assumed to be related to the floor area of the dwelling. The relationship between number of occupants and floor area has been reviewed and updated for SAP 2009. Data from the English House Condition Survey was used for this purpose.

Q17: Do you agree that it was appropriate to update the relationship between number of occupants and floor area?

Again, another difficult area. Whilst not perfect it is probably the consistent approach.

Other comments on the proposed changes

Q18: Do you have any comments relating to the proposed SAP amendments which are not covered by the above? If so, please elaborate below.

No further comments.