

Energy Company Obligation (ECO) Deemed Scores Consultation Questions

Background

The questions below relate to the ECO2 consultation on deemed scores which can be found on our website :

<https://www.ofgem.gov.uk/publications-and-updates/eco2-consultation-deemed-scores>

Notes For Completion

Please complete all relevant sections of the document by selecting an answer for the question and then providing reasons/evidence for your response in the box provided. The questionnaire should be completed in typeface and returned via email to eco.consultation@ofgem.gov.uk by **close of business on 8 July 2016**.

1. Respondent Details

Organisation Name:	Knauf Insulation
Completed By:	Steven Heath
Contact Details:	07557 740596

2. Methodology

Q1. Do you agree with our selection of the key variables to use as the main inputs for calculating the deemed scores?

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neither Agree Nor Disagree
- ☒ Disagree
- ☐ Strongly Disagree
- ☐ Don't Know

If not, please clarify which aspect you do not agree with and suggest an alternative, with reasoning.

I have picked up our concerns around the potential impact on using default assumptions attached to party walls and their level of insulation in our response to question 5.

3. Property Archetypes

Q2. Do you agree with the method used in developing typical property archetypes in order to remove the need for measuring property dimensions?

- ☐ Strongly Agree
- ☐ Agree
- ☒ Neither Agree Nor Disagree
- ☐ Disagree
- ☐ Strongly Disagree
- ☐ Don't Know

If not, please clarify which aspect you do not agree with and suggest an alternative, with reasoning.

4. Primary Heating Sources

Q3. Do you agree with the approach to accounting for all primary heating sources present in the housing stock?

- ☐ Strongly Agree
- ☐ Agree
- ☒ Neither Agree Nor Disagree
- ☐ Disagree
- ☐ Strongly Disagree
- ☐ Don't Know

If not, please explain your reasoning and evidence your preferred approach.

Q4. Do you agree that we have appropriately accounted for heating systems present in the housing stock either as an input for the deemed scores or in Table 1?

- ☐ Strongly Agree
- ☐ Agree
- ☒ Neither Agree Nor Disagree

- ☐ Disagree
- ☐ Strongly Disagree
- ☐ Don't Know

If not, please clarify which additional heating systems you believe need to be accounted for.

5. Measure Types

Q5. Do you agree that the deemed scores include all main measure types?

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neither Agree Nor Disagree
- ☒ Disagree
- ☐ Strongly Disagree
- ☐ Don't Know

If not, please clarify which additional measure type you expect will be installed.

We are pleased to see that Party Wall Insulation has been included in the deemed score process. Given its prominence in the recent DECC ECO 2 'Help to Heat' consultation, it is clear Government and DECC see a role for the measure in offering a more complete whole house solution to fuel poor households.

However, we are very concerned about two issues that potentially fallout from the deemed scores process that could seriously hinder the roll out of party wall insulation to the existing housing stock.

To put the impact on home energy bills of not driving roll out of the measure in context, up to 3.5 million homes have one type of party wall (party wall cavity to roof level). A similar number of UK homes have party wall cavities to ceiling level (with solid walls in the roof space 'capping' a cavity party wall). The potential for energy bill savings, or indeed unrealised savings if the measure is not promoted by installers, is up to £465m a year.

The two issues are:

1. Does the deemed score methodology replicate an error on start and end U values attributed to uninsulated and insulating party wall cavities (to roof level)?
2. Does the deemed score methodology assume a default U value on party walls that means the heat loss through the party wall will either be 0.25 W/m2K higher or lower than it otherwise should be?

Question 1

As background to the first question, through our trade body (the Mineral Wool Insulation Manufacturers Association) we commissioned Leeds Beckett University to carry out 'in-situ' testing in a series of properties to investigate the impact of party wall by-pass and the improvement offered through insulation.

Across a sample of properties, **the uninsulated U Value aggregated around 0.6 W/m²K** while the **insulated U value aggregated around 0.05 W/m²K**. The graph below developed by Leeds Beckett is one example of the improvements seen. We are happy to provide further evidence on request although this has been submitted to DECC.

U Value in-situ pre and post insulation measurement of party wall U value (Leeds Beckett)

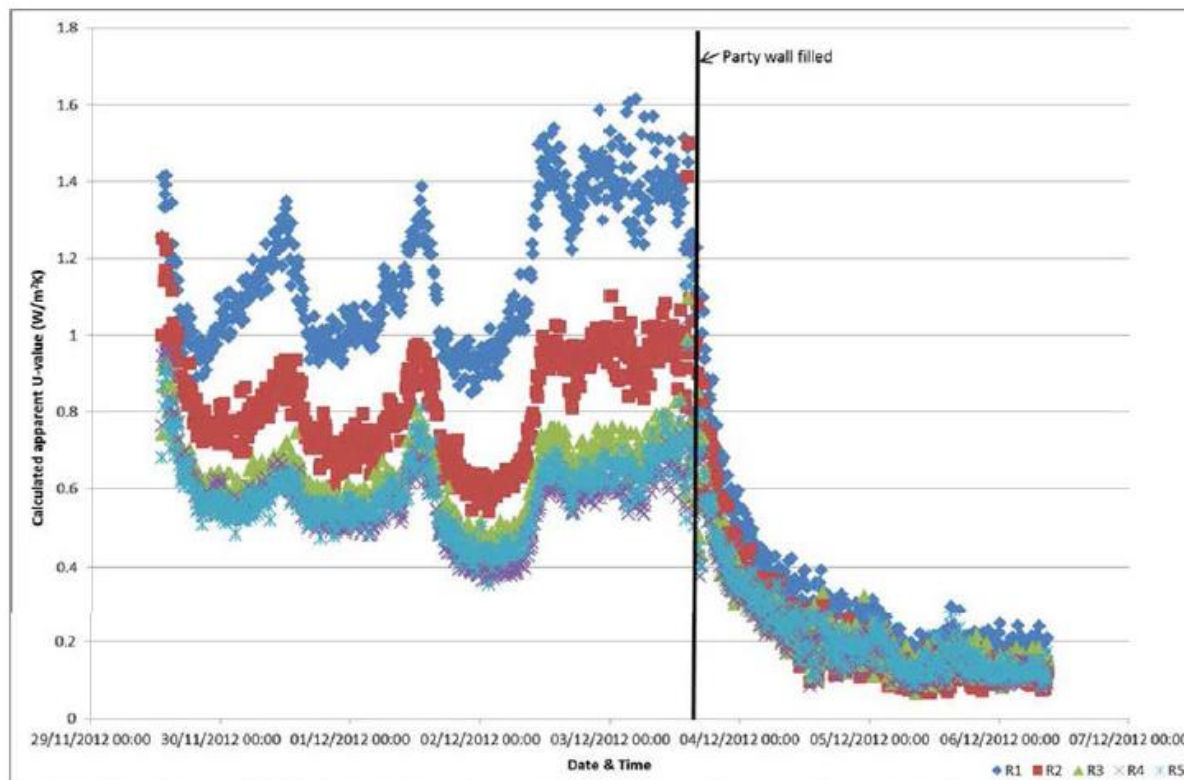


Figure 7 Cutnook Lane Calculated apparent U-values, based on heat flux in Figure 6 and using external temperature North from Figure 4.

Rather than reflecting these 'real world' measurements in RdSAP, CLG indicated that the standard SAP values as applied to new build would be used in RdSAP. The means a starter U value of 0.5 and an insulated U Value of 0.2 (as no edge sealing can be included in retrofit). These numbers for new build SAP are set out in the table below. In a report for MIMA, BRE calculated the impact of this decision in a typical home would wipe out up to 33% of the saving attributed to party wall insulation to BOTH properties with the shared wall when not using Leeds Beckett University's in-situ measured values.

It is good news that DECC in the latest ECO consultation have lowered the In Use Factors for party wall to 15% and made it a primary measure for the carbon saving element of the ECO. However, if party wall insulation is to benefit the fuel poor households in the Affordable Warmth segment (where IUFs are not applied), then it should be incentivised in line with the in-situ data rather than being reliant on inherited flawed assumptions built into SAP.

DECC has told us that wall u-value will be a specific question explored for SAP2016 which will be consulted on imminently. We will re-submit our evidence. However, the DECC official also suggested that the ECO deemed scores methodology, although based on SAP 2012 will act as a separate engine

to RdSAP and therefore we would need to make the case through this consultation on our proposed U value change as well as through DECC's SAP one to update RdSAP and the relevant table S8B below. We are however pleased to hear that DECC has updated the new SAP spec to ensure party wall insulation can be a 'recommended measure' on the Energy Performance Certificate as of April 2017.

RdSAP treatment

The U-value of party walls is taken from Table S8B.

Table S8B : U-values of party walls

Party wall type	Party wall U-value
Solid masonry / timber frame / system built	0.0
Cavity masonry unfilled	0.5
Cavity masonry filled	0.2
Unknown, house or bungalow	0.25
Unknown, flat or maisonette	0.0

Question 2

Our second area of concern relates to whether default assumptions built into the deemed scoring methodology as they relate to party wall will either be 0.25 W/m²K higher or lower than they otherwise should be.

An extract from a BRE report drafted for MIMA by BRE and submitted to DECC two years ago highlights our concerns with RdSAP in that DEAs could enter 'unknown' u value for the party wall. When this occurs a default assumption of 0.25 w/m²K is made. This will either be 0.25 W/m²K higher than it should be (if the property party wall is solid) or 0.25 W/m²K lower than it otherwise should be (if the party wall has a cavity to roof level)?

If the property is cavity walled and does have a party wall cavity to roof, it is almost certainly uninsulated given the practice of insulating them has only recently come in to part L of the building regulations. A check to assess whether a party wall to roof level cavity exists takes only a moment;

- open the loft hatch and shine a torch at the party wall brick bond
- assess whether it is of cavity or solid wall construction (exactly as assessors are required to assess whether external walls are of cavity or solid construction)

Thus in RdSAP it is proposed that where a party wall to an existing dwelling can be identified as cavity in the roof space that the area of the party wall between the heated envelopes will be assigned a U-value of $0.5 \text{ W/m}^2\text{K}$ where it is unfilled and $0.2 \text{ W/m}^2\text{K}$ where it is filled. The DEA will enter the total area of the party wall(s) into RdSAP and then assign a proportion as to amount of party wall are that is insulated, i.e. for a mid-terraced dwelling where only one party wall has received PWI, this proportion would be 0.5.

Where the party wall can be identified as a solid wall it will provided with a U-value of $0.0 \text{ W/m}^2\text{K}$ in RdSAP.

Where for whatever reason, the DEA is not able to determine the type of party wall (and provides documentary evidence, photographs etc. to demonstrate why this is the case) they will select 'unknown, house or bungalow' and a U-value of $0.25 \text{ W/m}^2\text{K}$ will be assigned.

The effect of selecting unknown will therefore mean that the heat loss through the party wall will either be U-value of $0.25 \text{ W/m}^2\text{K}$ higher or lower than it otherwise should be. The effect on the SAP rating, if this 'error' was to occur, would be of the order of 2 to 3 SAP points on an EPC. This equates to, half the effect of misidentifying the construction of the external wall to a semi-detached or end terraced dwelling.

Technical Risk Assessment for providing party wall insulation, BRE, 2014

We understand that RdSAP acts primarily as an 'asset rating' tool for property sale or rental, therefore health and safety, among other issues, may preclude requiring assessors to investigate the state of the loft and ascertain whether a party wall cavity to roof level is present. This should not apply to a property assessment by an installer / assessor carrying out work for ECO given they should attempt to assess what measures are most suitable for the house. The deemed score approach is an opportunity to correct this fundamental flaw that was driven as a result of using RdSAP.

The process should require assessors to decide whether the party wall cavity exists, and has been filled. This can be done either through the existing EPC if it's a new build or the presence of a drill pattern in the party wall roof apex in the highly unlikely event it is one of the 100 properties or so that have received retrofit party wall insulation.

We also believe, if no evidence the party wall cavity has been filled exists, the default assumption within the scoring methodology should be a party wall U value of 0.6 and absolutely not 0.25

Q6. Do you agree with our proposals for differentiating within measure types?

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neither Agree Nor Disagree
- ☐ Disagree
- ☒ Strongly Disagree
- ☐ Don't Know

If not, please clarify where alternative differentiation should be applied.

We strongly disagree with the lambda banding linked to cavity wall products. Given the array of cavity wall insulation products in the market and their respective lambda values, setting the 'cut-off' point at 0.033 for the lower band will drive the market to one product type to the exclusion of others which offer the same benefit in terms of CO2 savings.

We would strongly recommend moving the cut off point for improved carbon scores from 0.033 to 0.035 (see the dashed red vertical line in the table below). This would allow the enhanced products of other suppliers into the top band. As the table demonstrates, there are natural groupings of lower lambda enhanced products and higher lambda standard products. Fixing the mid-point at 0.035 will capture that difference

	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26
Standard EPS Bead																				
Standard Mineral Wool																				
Enhanced Mineral Wool																				
Enhanced Bead																				
Polyurethane Foam																				

Enhancing the carbon for 0.33 products alone could potentially constrain 70% of the markets installation capacity.

To demonstrate that no benefit is offered between 0.033 and 0.034 products, I have pasted two U value calculations below. The first uses 0.033 product while the second uses 0.034 yet both products offer the same final wall u value.

U value calculation for a 0.034 product

U-value calculation by BRE U-value Calculator version 2.03 - Printed on 10 Jun 2016 at 12:08

Element type: Wall - Masonry - full cavity fill: injected - Calculation Method: BS EN ISO 6946

Cavity Wall - Bead K=0.033 - 10th June 2016

Layer	d (mm)	λ layer	λ bridge	Fraction	R layer	R bridge	Description
					0.130		Rsi
1	100	0.510			0.196		Blockwork K=0.510
2	65	0.033			1.970		Bead K=0.033
3	102.5	0.770			0.133		Brick outer leaf
					0.040		Rse
	268 mm (total wall thickness)				2.469		

Total resistance: Upper limit: 2.469 Lower limit: 2.469 Ratio: 1.000 Average: 2.469 m²K/W

U-value (uncorrected) 0.405

U-value corrections

Wall ties in layer 2 $\Delta U = 0.004$ (2.50 per m², 12.5 mm² cross-section, $\lambda = 17.0$)

Total ΔU 0.004 (1.0% of U)

U-value (corrected) 0.405 (ΔU not added since it is less than 3% of U)

U-value (rounded) 0.41 W/m²K

U value calculation for a 0.034 product

U-value calculation by BRE U-value Calculator version 2.03 - Printed on 10 Jun 2016 at 12:07

Element type: Wall - Masonry - full cavity fill: injected - Calculation Method: BS EN ISO 6946

Cavity Wall - Supafil 34 - 10th June 2016

<u>Layer</u>	<u>d (mm)</u>	<u>λ layer</u>	<u>λ bridge</u>	<u>Fraction</u>	<u>R layer</u>	<u>R bridge</u>	<u>Description</u>
					0.130		Rsi
1	100	0.510			0.196		Blockwork K=0.510
2	65	0.034			1.912		Supafil 34
3	102.5	0.770			0.133		Brick outer leaf
					<u>0.040</u>		Rse
	<u>268 mm</u> (total wall thickness)				2.411		

Total resistance: Upper limit: 2.411 Lower limit: 2.411 Ratio: 1.000 Average: 2.411 m²K/W

U-value (uncorrected) 0.415

U-value corrections

Wall ties in layer 2 $\Delta U = 0.004$ (2.50 per m², 12.5 mm² cross-section, $\lambda = 17.0$)

Total ΔU 0.004 (1.0% of U)

U-value (corrected) 0.415 (0.4148) (ΔU not added since it is less than 3% of U)

U-value (rounded) 0.41 W/m²K

Q7. Are there any measure types where you think that further differentiation is warranted? If so, please clarify which measure type could benefit from further differentiation and suggest an approach.

Q8. Are there any areas where you could benefit from further guidance in using deemed scores?

6. Scores

Q9. Do you agree with the deemed scores produced?

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neither Agree Nor Disagree
- ☒ Disagree
- ☐ Strongly Disagree
- ☐ Don't Know

If not, please clarify which particular score(s) that you believe do not accurately reflect the savings for a measure.

It's a significant concern that the grid carbon intensity used is from SAP2012. Especially given DECC are re-considering this very question for SAP2016.

Q10. Do you agree that it would be useful to also provide the deemed scores as lifetime savings (i.e. after applying all relevant multiplication factors), to make the relative value of each measure easier to identify?

- ☐ Strongly Agree
- ☐ Agree
- ☒ Neither Agree Nor Disagree
- ☐ Disagree
- ☐ Strongly Disagree
- ☐ Don't Know

7. Percentage of property treated

Q11. Do you agree with the proposal to use 'percentage of property treated' to identify whether 100% of a score should be claimed?

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neither Agree Nor Disagree
- ☐ Disagree
- ☒ Strongly Disagree
- ☐ Don't Know

If not, please explain your reasoning.

We do agree with the proposal to use 'percentage of property treated' to identify whether 100% of a score should be claimed. However, we would return to the party wall cavity issue mentioned in question 5.

Where a party wall cavity to roof level is identified and then left uninsulated because the carbon price wasn't at a level to incentivise it being filled, the home owner has missed a huge opportunity to benefit from the measures that would best suit their home. This particularly applies to terraced homes where there is the potential to claim to have treated 100% of the external cavities but only 50% of the home's walls as the party wall cavities are left uninsulated.

The purpose of the 100% approach I assume is to ensure the home benefits from the best feasible renovation – as well as good accounting. If this is the case, the methodology should explore a mechanism to ensure 100% of the walls are insulated rather than solely 100% of the external walls. Indeed this could be simply applying the in situ measured U values outlined in our response to question five or an alternative whole house multiplier where an installer has sought to address all appropriate measures.

It seems highly likely that the Bonfield Review, under the banner Every Home Matters, will recommend an approach that treats the 'home fabric' as a whole rather than a wall, floor or roof. This approach appears to have the support of academia as well as the supply chain while the unintended consequences of not taking this approach were part of the reason the Review was commissioned in the first place.

It seems incumbent on the new ECO to at least ensure a householder is alerted to the potential benefits of measures they can receive rather than the ones that are attractively priced for the installer on the day the install takes place.

8. New Scores

Q12. Do you agree with our proposed approach for applying for a new score from April 2017?

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neither Agree Nor Disagree
- ☐ Disagree
- ☒ Strongly Disagree
- ☐ Don't Know

If not, please explain your reasoning, which specific parts of the process you do not agree with and inform us of your preferred approach.

We identify two areas of concern in the approach set out.

Firstly, the three bullet points set out on page 19 which identify the circumstances under which existing deemed scores are not available, miss one key potential reason: innovation.

While recognizing the potential for new measures to be developed it fails to recognise the potential for innovation around calculating much improved modeled savings attributable to renovation. In other words a better, more property bespoke, approach than deemed scores themselves.

Indeed, your proposal actually specifies that the approach for the archetypes that already exist within the deemed scores methodology can't be overridden therefore undermining any innovation investment to develop a better more bespoke assessment approach.

Many potential innovations fall within this area ranging from a wholesale alternative to SAP based deemed scores to a more granular approach where innovation allows a tool or 'suite of tools' that permit the contractor, the obligated supplier and the scheme regulator a more bespoke view of the pre and post renovation performance with which to 'overwrite' the assumptions in the deemed score approach.

While we accept it is complex to write guidance that permits innovations that aren't yet developed, the approach could be safeguarded by writing a line within the supplier obligation regulations such as;

"We are aware innovations may complement, or improve, on the proposed deemed scores methodology in calculating savings. We will conduct regular reviews to consider what innovations offer this potential and at what cost throughout the lifetime of the obligation. Should such an innovation offer this potential we will trigger a review on how to best introduce it into the scheme."

Ultimately, the process described in the consultation defines innovation 'as it falls within the parameters of SAP'. Not, as it surely must, what would ultimately work best for individual home owners receiving a renovation.

The slightly opaque reference to being 'unable to take into account the difference between in-situ performance compared with laboratory test results' is very concerning. Our interpretation of this is that the scheme will only permit ...'test results from a UKAS accredited lab' rather than in-situ testing by leading Universities. This approach returns us to the world where innovation is driven to prove 'what works in the lab' and not what works in real life.

The previous use of the Market Transformation Uplift for cavity walls is a case in point. A mock up rig was created on a BRE test site designed to test products against a range of quality outputs. In the end it tested products in a way they would never be used in the field; both in terms of material nature (in one example) and in the information installers were allowed to gather about the cavity before attempting to fill it (in all tests as far as we are aware).

Ultimately, the test rewarded a product that worked best for the test and proved little else.

This flawed thinking pushed Knauf Insulation to invest significant sums in real world 'in-situ' testing to try and understand all the dynamics at work in the field from product type, installation process, motivations of the installer and tools to assess quality both for the installers and auditors of those installers.

This approach accepts that the fundamental design of a supplier obligation is that it 'drives measures at lowest cost'. This means there are incentives and drivers built in to the scheme delivery process that can never be recreated in a lab, so incumbent on any innovation process **must be** a demonstration of **how the benefits will be re-created at scale in the field.**

Our real performance projects are a work in progress but have already delivered Party Wall Insulation to retrofit – a measure that has the potential to wipe £465 million a year off UK home energy bills if all the cavities were insulated. Were we to return to an approach focused on 'working to the test' and abandon our real performance programme, these innovations would be lost. The approach also does not serve the principle that 'Every Home Matters..' as set out in the Bonfield Review.

Knauf Insulation has already presented some of that real performance work to DECC and Ofgem officials Conor Molphy, Amanda Webb and Phillipa Hulme.

We would be happy to present it again.

Q13. Do you agree that we should determine whether or not to accept an application, and specifically what is a 'significant' improvement in score, on a case-by-case basis?

- ☒ Strongly Agree
- ☐ Agree
- ☐ Neither Agree Nor Disagree
- ☐ Disagree
- ☐ Strongly Disagree
- ☐ Don't Know

Our reasoning on this question is set out in the response to question 12

9. Score Monitoring

Q14. Do you agree that a DEA is not required to check inputs used when identifying a deemed score for a measure?

- ☐ Strongly Agree
- ☐ Agree
- ☒ Neither Agree Nor Disagree
- ☐ Disagree
- ☐ Strongly Disagree
- ☐ Don't Know

If not, please clarify why you do not agree and provide an alternative approach with your reasoning.