

# **Energy Companies Obligation (ECO): Consultation on how to account for the percentage of measure installed when calculating ECO scores**

## **About National Energy Services (NES)**

National Energy Services operates the NHER EPC Accreditation scheme, and has been at the forefront of energy rating since 1990 when the NHER voluntary energy rating scheme was launched. NES has played a key role in formulating and refining the RDSAP and SAP methodologies and has for the past 6 months been focussed on developing tools for calculating Eco scores for forecasting and reporting purposes.

## **National Energy Services (NES) consultation response**

We agree that 'P' should be removed from the formula for scoring measures. Where less than 100% of a measure is installed, the percentage should be applied before calculating the 'after' annual CO<sub>2</sub> or cost savings. When implementing an alternative to 'P', we think consideration should be given to the ECO software providers that are writing automated tools for scoring. An automated tool is much less prone to human error in transferring data.

We have explored various options and believe that an area weighted U-value approach will provide an accurate solution that can be used by both automated and manual tools. The benefits of this approach are as follows (and discussed in detail below).

1. Provides an accurate calculation that produces the same result as using the alternative wall method
2. Provides a solution that allows multiple measures to be assessed from the same base-line RDSAP data file
3. Provides a solution for calculating ECO scores both manually and via an automated tool
4. Does not require the dwelling to be subdivided into (possibly) arbitrary 'extensions' that would affect floor U-value calculations

### **Accuracy**

Our analysis, and that carried out by Ofgem, clearly shows that scores calculated using P are inaccurate and consistently higher than scores calculated correctly. This puts those calculating an accurate ECO score at a commercial disadvantage and damages the reputation of ECO scoring.

We have considered the possibility of allowing the use of 'P' and applying a penalty factor, of say 0.80 - 85, to prevent users of P benefitting from inaccurate calculations. However, we believe that this undermines the integrity of ECO, by allowing these inaccurate calculations.

The table below shows some of NES' findings when analysing the use of 'P'.

Method 1 – DEA divides house into main/ext or main + alt wall to account for a 60% installation

Method 2 – DEA creates a % weighted U-value for use in the calculation

Method 3 – DEA creates before and after case and the multiplies the resulting difference by 0.6

The table below lists the Carbon scores (including lifetime and IUF)

	Method 1	Method 2	Method 3	Difference between method 1 and method 3
Loft insulation 50mm to 250mm	3.601	3.598*	3.623	+0.6%
EWI from 2.1 to 0.3	34.634	34.624*	36.979	+6.8%

\* The minor difference between this and method 1 is due to method 1 sub-dividing the floor to create an extension and hence the floor U-values are re-calculated

### Multiple measures

In addition to the inaccuracy of using 'P', there is also the issue of multiple measures. If a property has more than one measure applied, and the first measure has less than 100% of the measure installed, once P has been applied there is no starting point for the second measure. For example; consider a property that has 70% EWI applied, and then a new boiler. Using 'P', the score for the EWI would be based upon insulating 100% of the suitable walls; the 70% is dealt with outside of the RDSAP calculation. Therefore, there would be no RDSAP data set reflecting the 70% upon which to assess the subsequent measure. We believe that to preserve integrity of the data, the original RDSAP survey data should be the starting point for all measures, with previously installed measures being applied to the dataset before calculating the next measure in the sequence. Using 'P' prevents this method of calculating more than one measure.

### Alternative wall/extensions

The ECO consultation (23<sup>rd</sup> November) states that RDSAP should be used for the calculations of scores. Where less than 100% of a measure being installed, RDSAP would require that alternative walls, or subdivision of the dwelling into extensions, be used to account for the differing thermal performance of the walls.

This method was also published in the latest ECO software approvals guidance and specification.

RDSAP allows for 1 alternative wall per building part and up to 4 extensions. There can be an issue sub-dividing a property into many smaller building parts (extensions) as the floor U-values are calculated by RDSAP using the ratio of area to heat loss perimeter. Therefore, sub dividing in this way can lead to unrealistic assumptions about the floor U-value. RDSAP allows for only 1 alternative wall per building part, adding in additional alternative walls in a building part would be outside of the current scope of RDSAP.

In addition to the issues of multiple alternative walls and unrealistic floor U-values, this approach cannot be automated easily. A software program is unlikely to sub divide a dwelling in a sensible way, sub dividing requires human input.

### **Area weighted U-values**

Apart from 'P' and alternative walls/extensions, there is another option. This option eliminates the issue of multiple measures and of unrealistic floor U-values. It will also calculate accurate scores. Our analysis found the same results for this option as those obtained when using alternative walls. If less than 100% of a measure has been installed, an area weighted 'effective' U-value can be calculated and used for the ECO score. For example; consider a 100m<sup>2</sup> solid brick wall with a U-value of 2.1 W/m<sup>2</sup> K that has insulation to a U-value of 0.3 applied to 65% of the wall. The effective U-value that can be applied would be  $(0.65*0.3) + (0.35*2.1) = 0.93$  W/m<sup>2</sup> K.

Using this method means a second measure can easily be applied, and an accurate score calculated for both measures. This also removes the necessity to attempt to automate human "judgement" in subdividing a dwelling.

Whilst using area-weighted U-values is not currently an RDSAP convention, area weighted loft insulation thickness is allowable in RDSAP. A new convention in RDSAP is currently being drafted stating that this method is allowable. This would keep ECO in line with RDSAP conventions.

### **Re-calculating scores that have used 'P'**

Our conviction is that scores that have used 'P' should be re-calculated. They are inherently inaccurate and have put suppliers correctly calculating percentages at a disadvantage.