Number of properties benefitting through receipt of insulation measures and energy efficiency products from Energy Supplier obligations

Introduction

This article estimates the number of properties in Great Britain which have benefitted from 'Supplier Obligations' through the receipt of insulation measures and energy efficiency products since the introduction of the Energy Efficiency Commitment (EEC) in 2002 to the current day through the Carbon Emissions Reduction Target (CERT) and the Community Energy Saving Programme (CESP). It also considers the number of additional properties expected to benefit to the end of CERT/CESP and through the Energy Company Obligation, that would not already have benefitted from EEC/CERT/CESP.

Two levels of benefit are considered:

1. Properties that have benefitted from receiving at least one major insulation measure (Cavity Wall Insulation, Loft Insulation or Solid Wall Insulation)
2. Properties that have benefitted from an insulation measure or other products delivered through EEC/CERT (such as energy efficient appliances, energy efficient lighting, heating controls, boilers, real time displays etc)

This is the first attempt to provide an estimate of the overall reach of supplier obligations to individual properties in the domestic sector. Previously estimates were limited to the number of individual measures delivered or were related to a specific policy.

As a provisional estimate with a number of assumptions, these may be subject to revision if better evidence becomes available. Users are encouraged to use the scenario tool to test their own assumptions and feedback on any points for improvement.

Key messages

At the start of April 2012, we estimate that 9.7 million properties have benefitted from at least one major insulation measure under EEC/CERT/CESP.

By the end of 2022, we estimate that an additional 4.8 million properties (that have not already received at least one insulation measure through EEC/CERT/CESP) would receive one or more major insulation measures.

This would mean 14.5 million properties will have benefitted from at least one major insulation measure through supplier obligations. Note this excludes any properties not already included that benefit from measures installed under Green Deal without ECO.

Four million of the 14.5 million properties will have benefitted from both wall and loft insulation over this period.

With 30 million new energy efficient appliances being subsidised through EEC, and nearly 450 million energy efficient light bulbs being delivered under EEC and CERT it is likely that nearly every property in Great Britain has received something through the supplier obligations, however small.

Data collection and methodology

The data used in this analysis is based on the following sources:

- Review of the EEC 2002-2005 (Office of Gas and Electricity Markets, August 2005) www.ofgem.gov.uk/Sustainability/Environment/EnergyEff/PrevSchemes/Pages/PrevSchemes.aspx
- The EEC Annual Report 2008 (Office of Gas and Electricity Markets, August 2008) – also available through link above
- CERT Update (OFGEM, June 2012) www.ofgem.gov.uk/Sustainability/Environment/EnergyEff/CU/Pages/CU.aspx

- Estimates of Home Insulation levels in Great Britain (DECC, June 2012) www.decc.gov.uk/en/content/cms/statistics/energy_stats/en_effic_stats/home_ins_est/home_ins_est.aspx
- Green Deal and ECO final impact assessment (DECC, June 2012) www.decc.gov.uk/assets/decc/11/consultation/green-deal/5533-final-stage-impact-assessment-for-the-green-deal-a.pdf

We have had to make a number of assumptions to estimate the overlap between delivery of major insulation measures to properties. The main assumptions are:

- For EEC, properties receiving a professionally installed major insulation measure received on average 1.3 professionally installed major insulation measures (generally cavity wall insulation and loft insulation) – this is based on assumptions used in the EEC impact assessment, and is similar to that recorded in HEED for CERT (see below).
- For CERT, this average was 1.2 – this is based on analysis of property level data within the Homes Energy Efficiency Database, held by the Energy Savings Trust.
- 10 per cent of DIY loft insulation was fitted in properties which had wall insulation fitted sometime during EEC/CERT. We have no direct evidence on which to base this assumption, but is based on the assumption that DIY loft insulation was not taken out at the same time as CWI/SWI, and therefore would be randomly distributed through the housing stock that had not already had loft insulation prior to EEC. More detail on the underlying assumptions and calculations are included in Annex A.
- No significant overlap between EEC/CERT (i.e. a property receiving a major measure in EEC did not then get a different major measure in CERT) – this was tested with available property data in the Homes Energy Efficiency Database and suggested between 0.2 to 0.5 million properties may have received major measures under both EEC and CERT (this analysis was limited due to the lack of data on measures installed under EEC in the HEED database and some of this overlap may actually be due to the date being recorded for measures which were carried over from EEC to CERT). An overlap of 1.05 measures per property has been used (which reduces the number of properties to date by 0.2m)
- Given the number of properties which have received measures through EEC/CERT, we assume a more significant overlap between EEC/CERT and ECO periods. This is outlined in Annex B. Twenty per cent of loft insulations, and 35 per cent of cavity and solid wall insulations are assumed to be in properties which received a major measure during EEC/CERT.

All of these assumptions can be tested for sensitivity in an excel workbook using a scenario testing tool which can be found under the related documents section on the following link: www.decc.gov.uk/en/content/cms/statistics/energy_stats/en_effic_stats/en_effic_stats.aspx

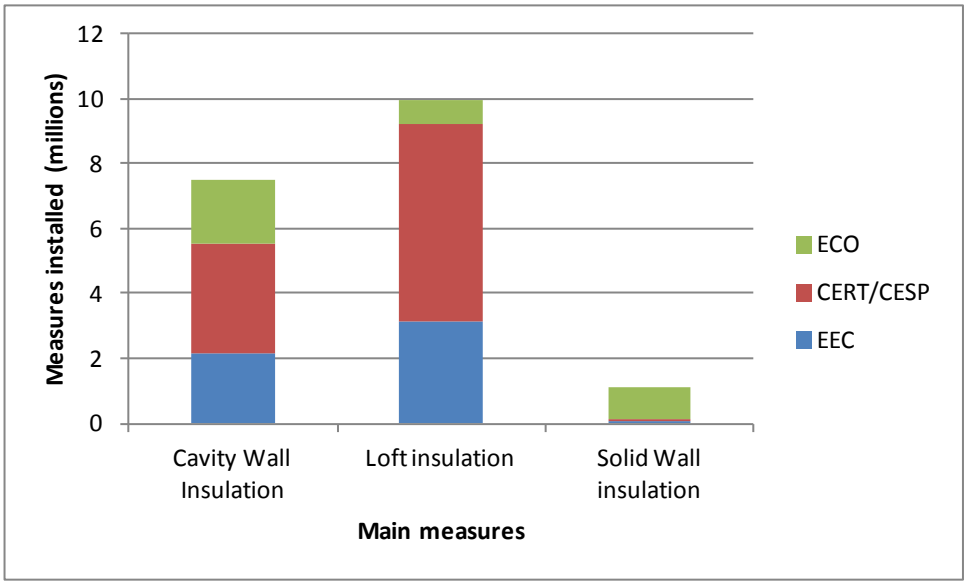
Other points for information

- During each phase of EEC, some of the measures were carried over to count against the next phase of the policy – for the purposes of this analysis, they have been assigned to the period in which they were installed, rather than the period they counted towards the suppliers obligations.
- Delivery numbers between April 2012 and end 2012 (end of CERT/CESP) are based on assumption that suppliers meet their obligations.
- ECO numbers are sourced from projections in the Green Deal/ECO final impact assessment, and based on the main measure to be installed (i.e. we do not need to apply the 1.2 or 1.3 measures per home factor used for EEC and CERT)
- No assessment has been made of the contributions of the Energy Efficiency Standard of Performance, the obligation which ran prior to EEC from the mid 1990's to 2002 due to a lack of available evidence.

Summary of Measures delivered

Chart 1 shows the number of measures delivered or projected to be delivered under each supplier obligation. Note, CERT/CESP figures includes assumed delivery in the rest of 2012 based on the assumption that suppliers will meet their targets. ECO figures are based on data from the final Green Deal/ECO impact assessment and include delivery to 2022.

Chart 1 – Main insulation measures installed under supplier obligations between 2002-2022



Number of loft insulations under ECO referred to in the chart relate only to properties where wall insulation would not also be installed

As at the start of April 2012, 7.7 million lofts; 4.2 million cavity walls and 120,000 solid walls have been insulated through these supplier obligations. Based on the assumptions above, we estimate that 9.7 million properties have benefitted from at least one major insulation measure under EEC/CERT/CESP to April 2012.

Based on projections of delivery to the end of the CERT/CESP schemes and through ECO, we estimates that by 2022 10.0 million lofts; 7.5 million cavity walls and 1.1 million solid walls will have been insulated through supplier obligations. This leads to an additional 4.8 million properties benefitting (that have not already received at least one insulation measure through EEC/CERT/CESP). In total this leads to an estimate of 14.5 million properties benefitting from at least one major insulation measure through supplier obligations between 2002 and 2022.

Note that these estimates exclude properties that receive measures only through Green Deal (i.e. with no ECO contribution).

The detailed calculations can be seen in the scenario testing tool linked above.

<u>Sensitivity testing the number of properties benefitting from major measures</u>

By applying a number of tests on the assumptions used, we estimate that there is a range of broadly +0.5 million to -1.0 million properties on the 9.7 million estimate as at April 2012, and a range of +0.7 million to -1.5 million properties on the estimate of 14.8 million properties benefitting by 2022. There is greater uncertainty in the 2022 estimate due to the increased likelihood of assumptions of overlap between the EEC/CERT period and the ECO period being incorrect.

Properties benefitting from insulation measures or wider measures

Beyond the major insulation measures (Cavity and Solid Wall insulation and Loft insulation), a range of other measures and products were supported through EEC and CERT including: energy efficient appliances, energy efficient lighting, heating controls, boilers, real time displays etc.

Table 1 shows the numbers of these main other measures/products delivered through EEC and CERT.

Table 1 – number of other measures/products delivered through EEC and CERT

Measure/product	EEC1	EEC2	CERT	Total
Energy efficient light bulbs	39,738,000	101,876,000	303,555,000	445,169,000
Heating controls	2,366,000	2,236,000	0	4,603,000
New boilers	366,000	2,083,000	0	2,449,000
Energy efficient products/appliances	6,602,000	22,855,000	55,000	29,512,000
Real time displays	0	0	2,413,000	2,413,000

Again, there are a number of assumptions needed to convert these numbers of products/measures into numbers of properties benefitting:

- Energy efficient light bulbs. These were given out in batches of 4 or 6 at a time to households. However, it is likely that some households did not use these bulbs. Given the overall numbers of energy efficient bulbs delivered though, it is reasonable to assume that nearly every property in the country would have had the chance to benefit.
- Heating controls. Evidence from review of EEC suggests that in general, these were delivered at the same time as a major insulation measure so will not add to the number of properties benefitting.
- New/energy efficient boilers. No evidence available on whether these were delivered at same time as insulation measures, but no reason to assume they would be, therefore assume a random distribution across all properties.
- Energy efficient appliances/TV's. These were mainly available through discounts in stores, so no reason to assume they were linked with insulation measures. Therefore, assume a random distribution across all properties. The main unknown here would be how many energy efficient appliances would have been purchased per household that bought at least one. There is no evidence available, but given the range of products covered it is likely that a property would have replaced some white goods at the same time, and a significant number of new televisions were purchased over the EEC/CERT period. We therefore assume an average of 3 products per property.
- Real time displays. From CERT reports, it seems these were not linked to insulation measures being delivered, so assume a random distribution.

Even accounting for the assumptions above (and significant likely error in the assumptions), with 30 million new energy efficient appliances being subsidised through EEC, and nearly 450 million energy efficient light bulbs being delivered under EEC and CERT it is likely that nearly every property in Great Britain has received some form of benefit from these policies, however small.

Supplier Obligations

A brief summary of the supplier obligations included in this analysis is included below.

Energy Efficiency Commitment (EEC)

EEC required gas and electricity suppliers to achieve energy savings in domestic households in Great Britain. EEC ran in two stages: EEC1 from 2002-2005 and EEC2 from 2005-2008. Overall reduction targets of 62 TWh and 130 TWh were set respectively. In addition half of these targets had to met by delivery to priority group customers (defined as those in receipt of certain income related benefits and tax credits).

Carbon Emissions Reduction Target (CERT)

CERT requires all domestic energy suppliers with a customer base in excess of 250,000 customers to make savings in the amount of CO_2 emitted by householders in Great Britain. Suppliers meet this target by promoting the uptake of low carbon energy solutions to household energy consumers, thereby assisting them to reduce the carbon footprint of their homes. This policy, originally scheduled to run from the end of EEC in 2008 to March 2011, was extended to run to December 2012 with a greater focus on insulation. This policy also requires delivery through priority and super priority groups.

Communities Energy Savings Programme (CESP)

CESP targets households across Great Britain, in areas of low income, to improve energy efficiency standards, and reduce fuel bills. There are 4,500 areas eligible for CESP. CESP is funded by an obligation on energy suppliers and electricity generators. CESP promotes a “whole house” approach i.e. a package of energy efficiency measures best suited to the individual property. The programme is delivered through the development of community-based partnerships between Local Authorities (LAs), community groups and energy companies, via a house-by-house, street-by-street approach.

Energy Company Obligation (ECO)

ECO will begin in October 2012 and will be the new supplier obligation (taking over from CERT and CESP), but will also integrate with the Green Deal allowing supplier subsidy and Green Deal finance to come together in one seamless offer to the consumer.

For further information on insulation statistics please contact:

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Annex A – Detailed calculations on DIY loft insulation assumption

There are a number of different assumptions to cover here.

Loft size
Data for DIY loft insulation is reported in terms of square meters of loft insulation material sold.

This is converted into number of lofts treated using an estimated square meterage per loft.

In EEC this was assumed to be $40m^2$; CERT assumed this to be $50m^2$

This assumption has not been tested – but the impact of increasing the EEC m^2 per loft to $50m^2$ would be to reduce the number of DIY lofts by 0.25m.

Distribution of DIY loft insulation
Note for simplicity there is a degree of rounding throughout these calculations.

The housing stock (in Great Britain) at start April 2012 was 26.7 million.

4.3 million properties have received CWI/SWI during EEC/CERT to April 2012.

By assuming an average overlap across EEC/CERT of 1.25 professionally installed measures per property, we estimate ¼ of these 4.2 million properties also had professionally installed loft insulation through EEC/CERT period.

Therefore there are roughly 3 million properties that had CWI/SWI during the EEC/CERT period that did not get professionally installed loft insulation in that period.

Of the 23.3 million properties that have lofts, removing those that already had loft insulation prior to EEC, and those professional installed during EEC/CERT, there are roughly 12m properties where this DIY insulation could have been fitted.

Of the 3 million properties that got wall insulation but not professionally installed loft installation during EEC/CERT, assuming these were randomly distributed between properties which had/had not already had loft insulation, then roughly half of them may have uninsulated lofts.

If we assume that the DIY loft insulation was randomly distributed between cavity wall and solid wall properties, then the proportion of DIY loft insulation going into properties which also got wall insulation during EEC/CERT would be 1.5/12.

This can be rounded to roughly 1/10 of DIY loft insulation could be expected to go into properties which had wall insulation under EEC/CERT.

By adjusting this assumption to be 2/10, it would reduce the number of properties benefitting by 0.3 million; by adjusting to 3/10, it would reduce the number by 0.6 million.

Annex B – Detailed calculations of overlap between EEC/CERT and ECO periods

Note for simplicity there is a degree of rounding throughout these calculations.

At the end of CERT/CESP we assume 67% of cavity wall properties will have wall insulations, and 68% of properties with lofts will have loft insulation. 2% of solid wall properties will have wall insulation.

Of these percentages, 29 percentage points of 67 per cent of cavity walls would have been insulated in the EEC/CERT period. Likewise, 39 percentage points of the 68 per cent of properties with lofts would have been insulated in the EEC/CERT period. Nearly all the solid wall insulation would have been delivered in the EEC/CERT period.

We therefore expect that (again assuming a random distribution of the measures) for the loft only insulations installed under ECO going into cavity wall homes, 29 per cent will be in properties which already received CWI under EEC/CERT. For the loft insulations going into solid wall homes, 2 per cent will be in properties that already received SWI under EEC/CERT. This gives an estimate of 21 per cent of lofts installed under ECO will be in properties that already had wall insulation under EEC/CERT. This is rounded to 20 per cent for simplicity.

For cavity wall insulation under ECO, considering 39 per cent of properties with lofts received loft insulation during EEC/CERT, and adjusting this for the 3.3 million properties that do not have lofts. We assume that 35 per cent of cavity walls insulated under ECO will be in properties which had loft insulation under EEC/CERT.

For solid wall insulation under ECO, we assume the same as for cavity walls.