

Association for the Conservation of Energy

Westgate House
2a Prebend Street
London N1 8PT
020 7359 8000
pedro@ukace.org

Dead CERT

Framing a sustainable transition to the Green Deal and the Energy Company Obligation

Pedro Guertler, Darryl Croft & Jack Carrington

Supported by:



Executive Summary

Remaining uninsulated lofts and cavity walls

At the end of 2012, when the Carbon Emissions Reduction Target (CERT) ends and the new Energy Company Obligation (ECO) commences, there will remain approximately 6.2 million cavity walls and 8.5 million lofts suitable for insulation in British homes. Approximately 3.7 million of these cavities do not face any cost-incurring technical barriers and are considered 'conventionally easy' and low cost to insulate.

This remaining insulation potential is very large, indicating that the high rates of cavity wall and loft insulation that will be seen throughout 2012 to meet the CERT obligation need not collapse for a lack of fillable lofts and cavities in 2013. Because under current proposals the ECO will target only a small fraction of this remaining potential (in low income and vulnerable households), the insulation of all remaining cavities and lofts by 2020 – as is deemed necessary by the Committee on Climate Change and the Government's Carbon Plan – will be entirely reliant the Government's flagship Green Deal programme.

Expected delivery 2013-2022

Figures within the Impact Assessment accompanying the Green Deal / ECO proposals confirm that the Green Deal is not expected to deliver more than a small proportion of these lofts and cavities. Just 1.7 million cavity walls, and far fewer lofts, are expected to be insulated through to 2022. At such a rate, even the low cost cavities would not be insulated until almost 2040, with the more expensive cavities not filled until 2050.

Figure 1 and Figure 2 present the change in delivery rates through CERT to date, expectations to the end of CERT, and what is likely to follow through to 2022. Conversely, the dashed black line presents the smooth achievement of the ambition within the Government's Carbon Plan: that all practicable cavities and lofts are filled by 2020. Clearly the expected delivery under the Green Deal and ECO is incompatible with the UK's carbon reduction targets and energy security objectives.

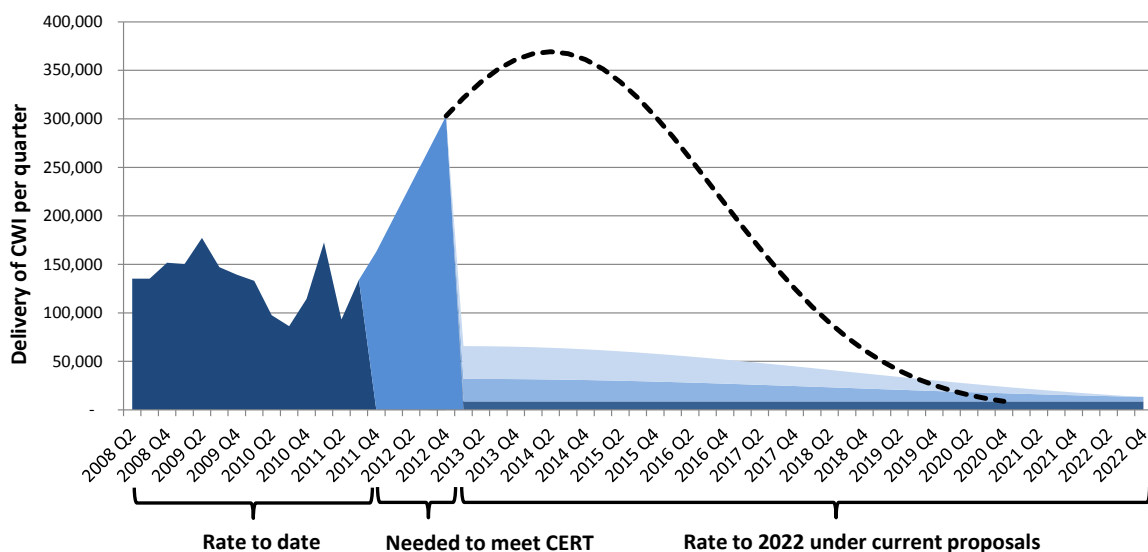


Figure 1: Quarterly rates of cavity wall insulation to date and projected to 2022

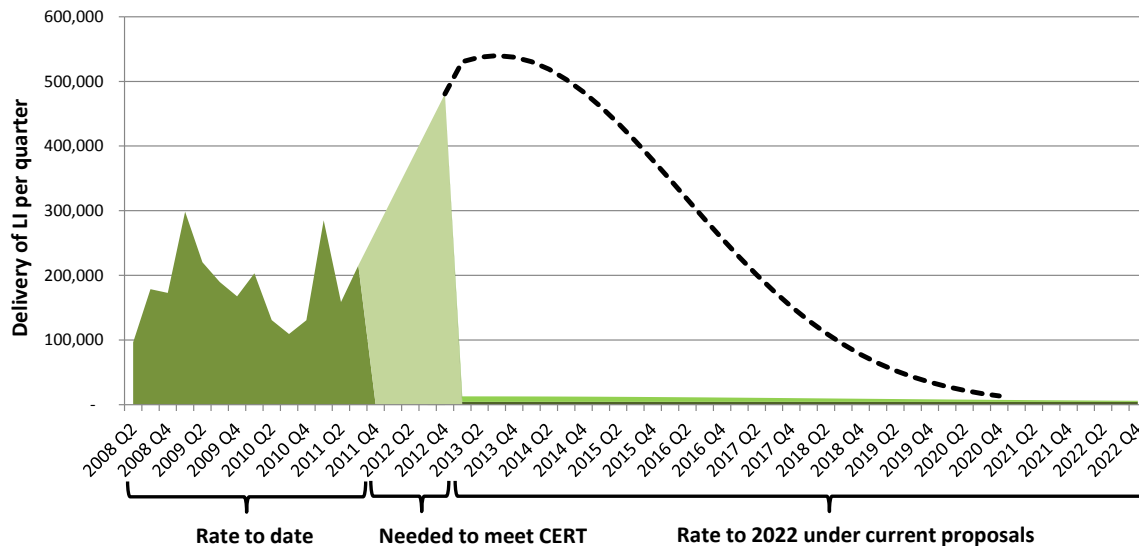


Figure 2: Quarterly rates of loft insulation to date and projected to 2022

Impact of existing Green Deal and ECO proposals

The radical and imminent collapse in the delivery of loft and cavity wall insulation in 2013 creates serious risks to Government policy and the insulation industry itself:

Government Policy

- Carbon budgets: the evidence within the consultation demonstrates that existing plans are inadequate to meet the ambition of the Carbon Plan, could make meeting them more costly to consumers, and have been publicly criticised by the Committee on Climate Change (CCC, 2011).
- Fuel poverty: Existing proposals would see just 25% of ECO support directed to those within the Affordable Warmth group, which targets those most likely to be in fuel poverty. By redirecting remaining funds to supporting SWI, it is only after the obligation is finished and no longer being supported by bill payers that the programme reduces the number of households in fuel poverty; and by only 350,000-500,000 – far fewer than the 4.1m currently fuel poor (DECC, 2011e).
- Green Deal: the policy requires confidence from households, the industry and from investors. Designing policies that harness the benefits of mass delivery of tried, tested and well-understood energy efficiency measures is key to maximising early uptake of Green Deal. Confidence that sufficient loan volume will be generated is also essential for the institutional providers of Green Deal finance to have a viable business case in the first place.

Insulation industry

- The absence of any planned transition between the delivery of cavity wall insulation and solid wall insulation poses particular challenges to businesses being asked to make the short-term investments needed to the end of 2012 in order to ramp up delivery to ensure the Insulation Obligation under CERT is met.
- The expected collapse of activity post-2012 under current proposals would severely restrict the breathing room needed for the industry to continue to develop hard-to-treat solutions (for both cavity and solid walls), training programmes and the capacity necessary to deliver carbon budgets and the ambitions for solid wall market transformation.

Enabling a sustainable transition

The policies we recommend are aimed at mitigating the risks that current proposals pose to the aims of Government within the Energy Act, namely carbon savings, fuel poverty eradication and the successful roll-out of the Green Deal. They are also intended to address the negative impact that DECC's plans will have on the delivery of cavity and loft insulation that could impede transformation of the solid wall insulation market. We do *not* wish to overcome these problems by proposing to continue in the same policy vein, such as could be achieved by a 'Son of CERT' approach. Rather, the guiding principle behind these recommendations is to underpin the new Green Deal and ECO framework and enable a sustainable transition which builds confidence in the industry and leads to a successful outcome for Britain's policy objectives.

Aligning Green Deal and the ECO

- **Allow cavities and lofts delivered through Green Deal finance to contribute to the ECO Carbon Saving obligation – including those cavities and lofts delivered by non-obligated Green Deal providers.** At little to no cost to bill-payers, this would encourage suppliers to offer Green Deal packages that included familiar measures, and improve confidence regarding likely Green Deal take-up rates.
- Ensure the inclusion of loft and cavity wall insulation doesn't affect other ECO objectives by **placing a solid wall minimum upon suppliers.**

Fiscal Incentives

- **Use the £200m allocated by Treasury** to incentivise the take-up of Green Deal packages and to increase the reward in line with the size of the package financed.
- **Allow all Green Deal measures installed by Green Deal accredited installers to be installed at 5% VAT.**
- **Link Stamp Duty and council tax to home energy ratings** to create incentives for households to improve the energy efficiency of their homes.

Regulations

- **Ensure minimum standards for FIT and RHI** eligibility as has now been proposed for both schemes. All Green Deal-able measures should be installed.
- **Consequential Improvements** through the Building Regulations to ensure that Green Deal-able measures are installed prior to extensions and conversions.
- **Mandatory minimum standards** to require homes to have all Green Deal-able measures installed before they can be sold.

Helping low income and vulnerable households

- **Increasing the amount of the ECO targeted at low income and vulnerable households,** and concurrently **widening the eligibility** group beyond the very narrow eligibility criteria currently proposed. Both can be achieved by introducing a distributional safeguard within the Carbon Saving obligation.

Fully addressing hard to treat homes

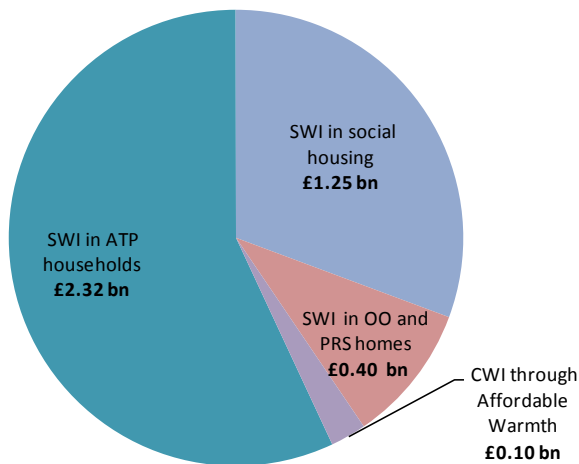
- **Include more costly cavity wall insulation** (i.e. hard to treat) as an eligible treatment contributing to ECO's Carbon Saving obligation, **treated according to the same principles as solid wall insulation,** to enable the blending of Green Deal finance and ECO support.

An alternative outcome

Looking at DECC's approach to the ECO in detail sees that the bulk of energy supplier support will be directed at solid wall insulation (SWI) within the homes of able-to-pay (ATP) households. Our alternative for the first four years of the ECO (to the end of 2016), illustrated on the right-hand side of Figure 3, is just one of many permutations that can be constructed and made possible by our policy recommendations. It seeks to:

- Create a sensible transition from low cost to high cost insulation measures, delivering a volume of both that will see Government meet its aims within the Carbon Plan;
- Enable the insulation industry to achieve the market transformation for solid wall insulation systems;
- Save more carbon across the ECO period;
- Increase the equity of the ECO by seeing more support directed to low income households, particularly for solid wall insulation and for low income owner-occupied (OO) and private-rented sector (PRS) homes;
- Achieve these objectives without increasing costs for bill payers.

DECC proposals



ACE alternative scenario

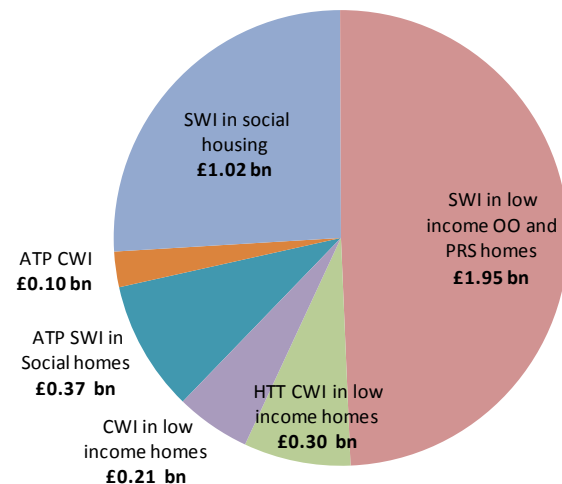


Figure 3: DECC proposals and ACE alternative for ECO spending; cumulative over first four years to 2016

Our scenario meets these objectives by allowing cavity wall insulation delivered through Green Deal to contribute to the ECO, with 500,000 insulated each year, along with a proportionate number of lofts topped up. This generates a large volume of very low cost carbon savings, allowing the remainder of the ECO budget to focus on low income and hard-to-treat properties:

- An additional 75,000 harder to treat cavities and 175,000 conventional cavities can be insulated each year within a broader low income and vulnerable household group.
- Over 140,000 solid wall insulations each year, the bulk of which occur in the homes of the most vulnerable: low income owner-occupiers and private renters.

In all, such an approach sees more than twice the proportion of ECO monies spent in the homes that need it most, saves 55% more carbon over the period, and manages to see 80% of the solid wall insulation numbers delivered under the DECC scenario, installed at a rate that remains ambitious: 140,000 a year. It does this at a lower cost to bill payers than the DECC scenario.

Contents

Executive Summary	2
Remaining uninsulated lofts and cavity walls	2
Expected delivery 2013-2022	2
Enabling a sustainable transition.....	4
An alternative outcome.....	5
Contents.....	6
Introduction.....	7
1 Delivery to the end of 2012: what is expected to happen under CERT	8
1.1 Remaining lofts and cavities to be filled in April 2009.....	9
1.2 Delivery from April 2009 to December 2012 – Meeting the Insulation Obligation	13
2 What remains to be done after 2012? What is projected to happen?.....	17
2.1 Remaining cavities and lofts at the end of 2012	17
2.2 Market after 2012 – based on DECC’s Impact Assessment.....	21
3 Implications of current Green Deal and ECO proposals	24
3.1 Risks to Government policy	24
3.2 Risks to the insulation industry	25
4 Enabling a sustainable transition to a successful Green Deal / ECO framework	27
4.1 Aligning ECO and Green Deal to deliver lofts and cavities for the ‘able to pay’	28
4.2 Introducing fiscal incentives and backstop regulation.....	29
4.3 More fully helping low income and vulnerable households and hard to treat homes..	31
5 A successful Green Deal and ECO framework.....	33
5.1 Tension at heart.....	34
5.2 DECC solution	34
5.3 ACE Scenario	37
5.4 Comparing scenarios	40
5.5 Conclusion.....	40
Bibliography	41
Appendix I – Review of data sources and estimates: past, present and future.....	42
Appendix II – Modelling CERT eligibility criteria.....	52
Appendix III – Delivery of insulation measures from EHS to 2013	54
Appendix IV – Deconstructing the Green Deal / ECO Impact Assessment figures.....	58

Introduction

The installation of cavity wall and loft insulation into homes has been the focus of supplier obligations since their inception in the form of the Energy Efficiency Standards of Performance (EESoP) programme in 1994. The focus has sharpened over time, with the extended Carbon Emission Reduction Target (CERT) featuring a sub-target: the Insulation Obligation was introduced with the intention of guaranteeing a proportion of the target is achieved through the provision of insulation measures.

Supplier obligations to date have worked by creating an incentive for the obligated parties to deliver their obligations in the most cost-effective way possible. In practice, this has meant the provision of free or subsidised energy efficiency measures for households. Between April 2008 and September 2011, CERT has delivered the insulation of 1.8 million cavity walls and 2.4 million lofts.

At the end of 2012, CERT will end. Three months prior to this, a new framework for the delivery of energy efficiency improvements will be launched. The Green Deal will combine a financing mechanism for able-to-pay households, with an Energy Company Obligation (ECO) focused not on the most cost-effective solutions, but on those households and technologies where financing will struggle to deliver the necessary improvements. For the most part, delivery of loft and cavity wall insulation will rely on households taking up the new financing scheme; no more will those measures be subsidised and promoted by energy companies as under CERT.

This report, Dead CERT, seeks to critique the transition from CERT to the Green Deal and ECO, and investigate the implications of this shift in policy direction. In particular it addresses the following questions:

1. What is the nature of cavity wall and loft insulation potential and what is likely to happen between now and the end of 2012, when CERT ends?
2. How many lofts and cavities in Britain will still need filling or topping up by then? What is the likely installation rate of these measures through the Green Deal framework as currently proposed?
3. What are the implications of the current proposals for the insulation industry, and Government objectives and targets for energy efficiency, carbon reduction and fuel poverty eradication in the British housing stock? What are the risks?
4. What policy tools could help overcome any negative implications, 'de-risk' and ensure a smooth transition to a successful Green Deal framework?
5. What does a successful outcome look like and entail?

1 Delivery to the end of 2012: what is expected to happen under CERT

Chapter summary

Cavity wall insulation (CWI)

- There were 9.0m homes with uninsulated walls suitable for CWI as of April 2009 in Great Britain. 7.0m of these could be considered low-cost cavities.
- Delivery through various programmes reduced the remaining potential to 7.7m by September 2011, of which 5.7m were low-cost cavities.
- Our estimates suggest an additional 1.2m cavities will be insulated from October 2011 to the end of CERT, in order for the Insulation Obligation to be met.
- This rate represents a near doubling of the average quarterly rates over the life of CERT to date.

Loft insulation (LI)

- There were 13.5m homes that could benefit from LI as of April 2009 in Great Britain. 3.2m of these required full insulation (i.e. currently less than 60mm), with an additional 10.3m in need of 'top-up' insulation.
- Delivery through various programmes reduced the remaining potential to 10.7m by September 2011, of which 1.8m required full insulation, and 8.9m were in need of 'top-up'.
- Our estimates suggest an additional 1.5m lofts will be insulated from October 2011 to the end of CERT, in order for the Insulation Obligation to be met: 1.2m receiving full insulation, and 0.3m in receipt of 'top-ups'.
- This rate represents a near doubling of the average quarterly rates over the life of CERT to date.

In order to assess whether the Government's policy approach towards loft and cavity wall insulation (CWI) is broadly correct, it is important to know the remaining insulation potential for these measures once CERT draws to a close at the end of 2012. To that end, this chapter presents our estimate for the remaining potential. In simple terms, our methodology for estimating this is as follows:

- a) Establishing the baseline potential from the most comprehensive survey of the English housing stock using the English Housing Survey (EHS) 2009's housing stock dataset.
- b) Scaling up the remaining potential from the English housing stock to Great Britain, in this way creating a snapshot of loft and cavity insulation potential in April 2009, the mid-point of the survey data.
- c) Accounting for the insulation measures reported under CERT, the Community Energy Saving Programme (CESP) and Warm Front since April 2009 by 'subtracting' them from the above snapshot.
- d) Projecting the number of additional cavities and lofts likely to be filled between September 2011 (the date of the latest available quarterly CERT report) and December 2012 under different programmes, in order to estimate the remaining potential at the start of 2013.

1.1 Remaining lofts and cavities to be filled in April 2009

Headline statistics for cavity wall and loft insulation potential often need to simplify the more complex picture painted by housing stock surveys into a binary choice of 'insulated' / 'not insulated'. The EHS 2009 reports cavity wall and loft status as presented in Figure 4.

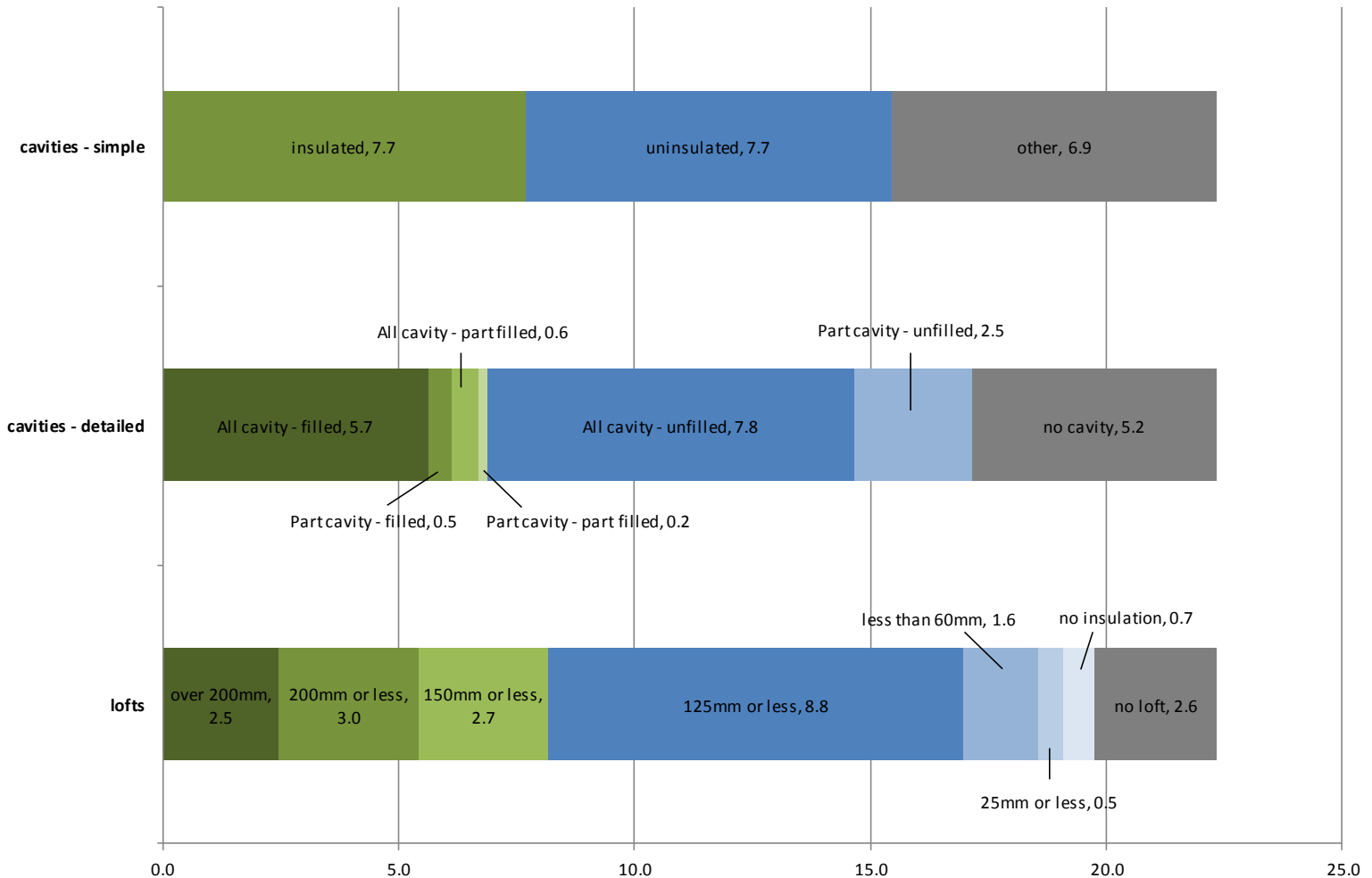


Figure 4: Status of cavities and lofts in England according to the EHS 2009 [millions of dwellings]

Lofts with less than 60mm insulation are generally regarded as being able to benefit from 'full' loft insulation. Those more than 60mm and less than 125mm of insulation are usually deemed able to benefit from top-up insulation. Additional considerations affect the opportunity for and cost of cavity wall insulation. Not all cavities are the same. To date, the insulation of cavity walls has focused on properties built since 1945 with wider cavities. Older cavities or cavities within non-traditional constructions have largely been avoided, since they are more costly and require more technically advanced solutions. Similarly, access issues can affect the ease and costs of filling cavities. In order to assess the number and nature of remaining cavities, they have been assigned into three groups, focusing on properties of *predominantly* one wall type (defined as two thirds or more of the outer walls) throughout:

- Conventional cavities, which cover all properties with cavity walls built since 1945
- Narrow cavities, which cover those properties with cavity walls built in or before 1945

- Non-traditional cavities, which cover non-traditional construction types (including timber frame and steel construction) which have a cavity

In addition, each group has been sub-divided into lower and higher cost opportunities, according to the ease of access for each property:

- 'Lower cost', consisting of:
 - 'Easy' where properties have no access problems
 - 'Potentially additional cost' where a garage or conservatory is present
- 'Higher', or 'additional cost', where the property has more than two storeys but no more than ten

The full logic behind grouping unfilled cavities is presented in Figure 5, which also presents the breakdown of opportunities in England in 2009. Using the above categorisation method, fill-able cavities in the English housing stock have been estimated and presented in Table 1.

Table 1 – England: EHS estimate of potential for cavity wall insulation as of April 2009

	Conventional cavity	Narrow cavity	Non-traditional cavity	Total
Lower Cost	4,927,000	1,071,000	185,000	6,183,000
Higher Cost	1,259,000	167,000	74,000	1,500,000
Total	6,186,000	1,238,000	259,000	7,683,000

In Table 2, the above estimates have been scaled up to cover Great Britain – the geographical scope of CERT, the new Green Deal / ECO regime, and this project. The scaling up is simply on a pro-rata basis according to the number of properties in Great Britain as a whole compared to England. As a result, our estimates do not account for differences in the devolved nations' housing stocks¹. The scope of 'Dead CERT' has not allowed for a fuller analysis incorporating the other housing surveys, and whilst this is imperfect, the objective is to gain a sense of the scale of the overall market that CERT, the Green Deal and the ECO are tapping into. On this basis, nearly nine million homes (close to a third of the British housing stock) stood to gain from some form of cavity wall insulation in 2009.

Table 2 – Great Britain: derived estimate of potential for cavity wall insulation as of April 2009

	Conventional cavity	Narrow cavity	Non-traditional cavity	Total
Lower Cost	5,749,000	1,249,000	216,000	7,214,000
Higher Cost	1,469,000	195,000	86,000	1,750,000
Total	7,218,000	1,444,000	302,000	8,964,000

¹ Although these are discussed in Appendix I, section A.iii.

² At time of writing, the latest CERT quarterly update covered the period to the end of September / start

The EHS 2009 does not say which homes of non-traditional wall construction have cavities. We have estimated, based on anecdotal evidence, that half of them do. Even so, solid wall systems may be more appropriate insulation solutions for some non-traditional cavities. As such, we do not deal with non-traditional cavities in the same way as the other fillable cavities in subsequent Chapters. There are also significant additional insulation potentials in party wall and partially filled cavities. Although they are not part of the immediate scope of 'Dead CERT', they are discussed further in the Appendix I, sections A.iv and A.v.

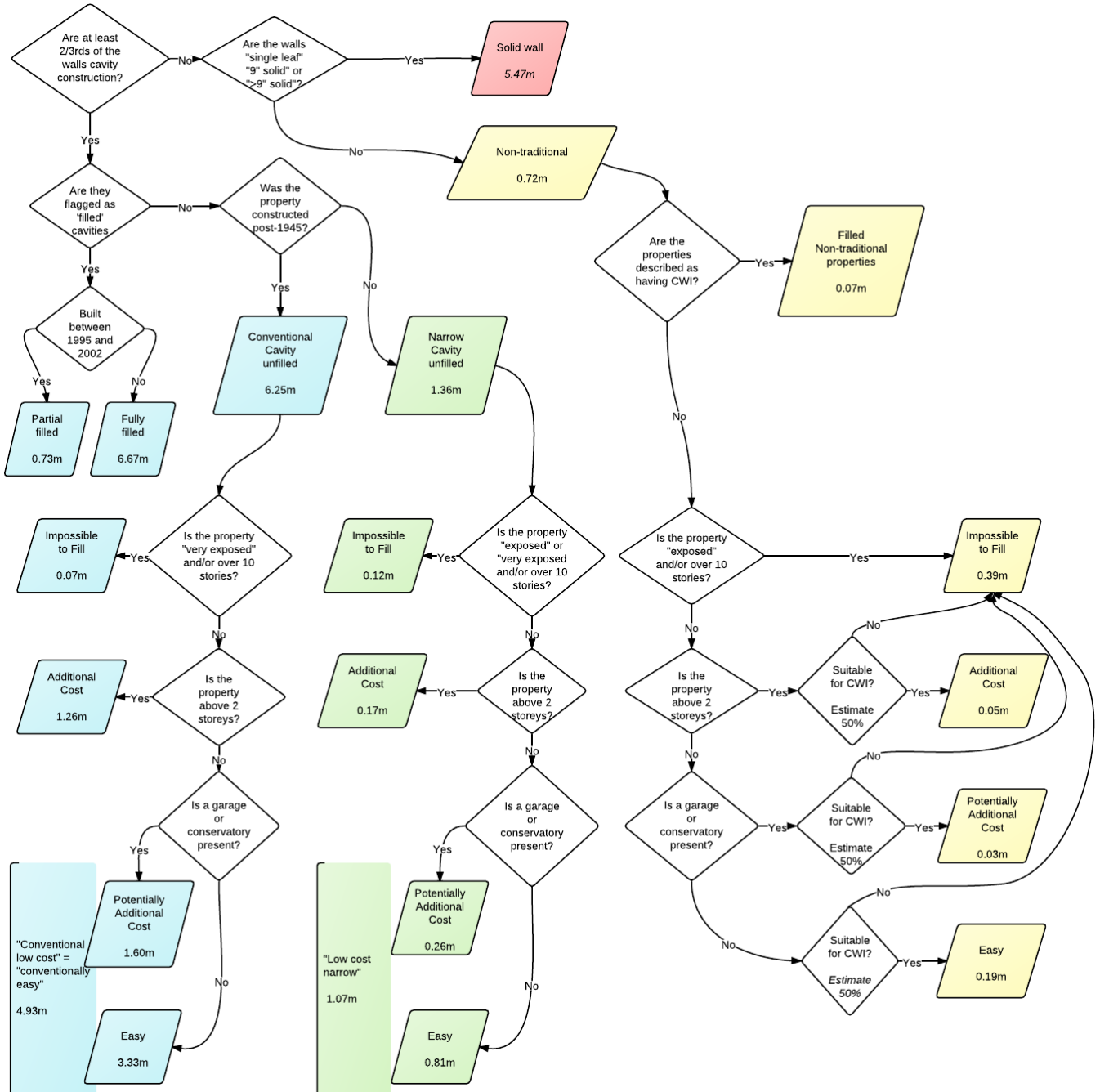


Figure 5: Logic of defining cavity walls (along with numbers for each category) using the EHS 2009

The EHS was also used to assess the remaining potential for lofts to be filled in the English stock in 2009. As illustrated in Figure 4, almost 5.5m dwellings had more than 150mm of loft

insulation in 2009. By contrast, almost 1.2m dwellings had 25mm or less, and an additional 1.6m had less than 60mm. These latter groups are suitable for 'full' loft insulation (i.e. 200mm or more).

A further 8.8m dwellings had 125mm or less of loft insulation and are suitable for a top-up, with an additional 2.7m with 150mm or less that could also benefit (albeit less cost-effectively). Above this existing thickness, lofts are deemed to be fully insulated for policy purposes.

Table 3 summarises the loft insulation potential in England. Three quarters of this potential was for loft top-up insulation. This potential rises to four fifths if lofts with less than 150mm of insulation are included.

Table 3 – England: EHS estimate of potential for loft insulation as of April 2009

Full Installation (from <60mm)	Top-up (from < 125mm)	Total	Additional Top-up Potential (from <150mm)
2,768,000	8,803,000	11,571,000	2,732,000

Table 4 scales these estimates up in the same way as for cavity wall insulation potential. At least half of the British housing stock stood to gain from some thickness of loft insulation in 2009.

Table 4 – Great Britain: derived estimate of potential for loft insulation as of April 2009

Full Installation (from <60mm)	Top-up (from < 125mm)	Total	Additional Top-up Potential (from <150mm)
3,231,000	10,273,000	13,504,000	3,188,000

1.2 Delivery from April 2009 to December 2012 – Meeting the Insulation Obligation

In order to assess the likely remaining potential for loft and cavity wall insulation at the start 2013, it is necessary to ‘update’ the figures for April 2009 with the measures that have been and are likely to be delivered in the intervening years. Our method for doing this takes two steps. First, we add the number of installations that are reported to have taken place under CERT, CESP and Warm Front to the most recent reported quarter – in effect to the present day². Table 5 and Table 6 present the remaining insulation potential for cavities and lofts respectively.

Table 5: Great Britain: derived estimate of potential for cavity wall insulation at end of September 2011

	Conventional cavity	Narrow cavity	Non-traditional cavity	Total
Lower Cost	4,687,000	1,016,000	216,000	5,919,000
Higher Cost	1,469,000	195,000	86,000	1,750,000
Total	6,156,000	1,211,000	302,000	7,669,000

Table 6: Great Britain: derived estimate of potential for loft insulation at end of September 2011

Full Installation (from <60mm)	Top-up (from < 125mm)	Total	Additional Top-up Potential (from <150mm)
1,818,000	8,900,000	10,718,000	3,188,000

In the second step, we add the measures which are likely to take place between now and the end of 2012, at which point Green Deal finance will have been launched and the new Energy Company Obligation will be about to begin. Central to this second step is what is predicted to happen under CERT to the end of 2012. The extension of CERT from April 2011 to December 2012 saw a pro-rata increase in the overall carbon target, as well as a new Super Priority Group, and a minimum share of carbon savings that must come from professionally installed insulation – an Insulation Obligation (IO). This means that a reasonably confident estimate can be made of the remaining insulation activity under CERT.

The Impact Assessment for the CERT Extension presented the following illustrative mix of insulation measures (Table 7), intended to constitute a plausible means of attaining the minimum contribution from insulation to the extended CERT carbon target (68% of 104 life-time MtCO₂, i.e. 73.4 MtCO₂).

² At time of writing, the latest CERT quarterly update covered the period to the end of September / start of October 2011. A quarter-by-quarter breakdown and assumptions for how Table 5 and Table 6 are arrived at are presented in Appendix III.

Table 7: Illustrative mix of measures to meet the CERT Extension's Insulation Obligation

	Cavity Wall	Loft Insulation (top up)	Loft Insulation (full install)	SWI	Flat Roof Insulation	Under Floor Insulation
Average score/property (lifetime tCO₂)³	25.03	5.34	17.07	61.48	53.49	11.36
Number of Installations⁴	1,400,000	800,000	1,326,667	115,000	75,000	25,000
Total (lifetime MtCO₂)	35.04	4.27	22.65	7.07	4.01	0.28

For the 21 month period of the CERT Extension (from April 2011 to December 2012), the mix notionally implied an average quarterly installation rate for cavities of 200,000, and 300,000 professionally insulated lofts. When the Impact Assessment was published, these implied rates were above the peak levels seen since the start of CERT.

In practice however, suppliers were able to claim contributions to the IO from the time at which the legislation was introduced – the start of August 2010. DECC stated that providing an extra eight months to meet the 73.4 MtCO₂ target would '*smooth delivery profiles and help overcome any local supply chain restrictions that may exist*'⁵.

As a result, delivering this number of installations over 29, rather than 21, months (August 2010 to December 2012) would have required 147,000 cavities and 224,000 lofts per quarter. These rates are indeed in keeping with the delivery profile seen under CERT at the time the Impact Assessment was published⁶. On the face of it, it would appear that the aim of the IO, framed in this way, was to ensure consistency and continuity in delivery of cavity wall and professional loft insulation, whilst delivering more over a longer period of time. However, a challenge to increase the amount of carbon savings was implicit in the number of solid wall insulation jobs presented in the illustrative mix. The 115,000 solid wall jobs translate into nearly 12,000 per quarter – more than three times the rate seen under CERT up to that point. Solid wall's illustrative contribution to the IO's carbon target was approximately ten per cent. Other things being equal, fewer solid wall jobs would necessitate more cavity wall and loft insulation (relatively less challenging in terms of increased rates), and vice-versa.

Including the last available (September 2011) quarterly CERT update, Table 8 shows the numbers of insulation jobs counting towards the IO to date. It also shows a likely scenario of how the remainder of the IO can be delivered, and the average quarterly installation rates it would necessitate. It is important to note that solid wall insulation is falling far short of the expectations for it in the illustrative mix. In Table 8, the measure is assumed to contribute to the IO at installation rates seen to date, whilst the expectations for flat roof and under floor

³ Based on an average three-bedroom semi-detached house from Ofgem CERT scheme spreadsheet (Ofgem, 2012).

⁴ Illustrative mix DECC's CERT Extension Impact Assessment, Table E1 (DECC, 2010a).

⁵ (DECC, 2010b)

⁶ See Appendix I, section C.i, and Appendix III.

insulation are assumed to be met. In order to meet the IO, higher rates of cavity wall and loft insulation are assumed to compensate.

Table 8: The Insulation Obligation - how it has been met so far, and how it may be met by the end of 2012

	Cavity Wall	Loft Insulation (top up)	Loft Insulation (full install)	SWI	Flat Roof Insulation	Under Floor Insulation
Illustrative mix	1,400,000	800,000	1,326,667	115,000	75,000	25,000
Counted towards IO to end September 2011	408,826	640,198		8,176	unknown	
Assumed to be still needed and achievable to meet IO from Oct 2011 on⁷	1,150,000	325,000	1,150,000	15,000	37,500	12,500
Average quarterly rate from October 2011 on	230,000	65,000	230,000	3,000	unknown	

These quarterly rates for cavity wall (blue) and professionally installed loft insulation (green) require a large and consistent increase in activity from the last reported quarter⁸, and represent a near doubling of the average quarterly rates over the life of CERT to date, illustrated in Figure 6.

⁷ Based on the assumptions presented in Appendix III.

⁸ 132,570 cavity walls and 207,456 lofts insulated professionally in Q14 (Ofgem, 2011).

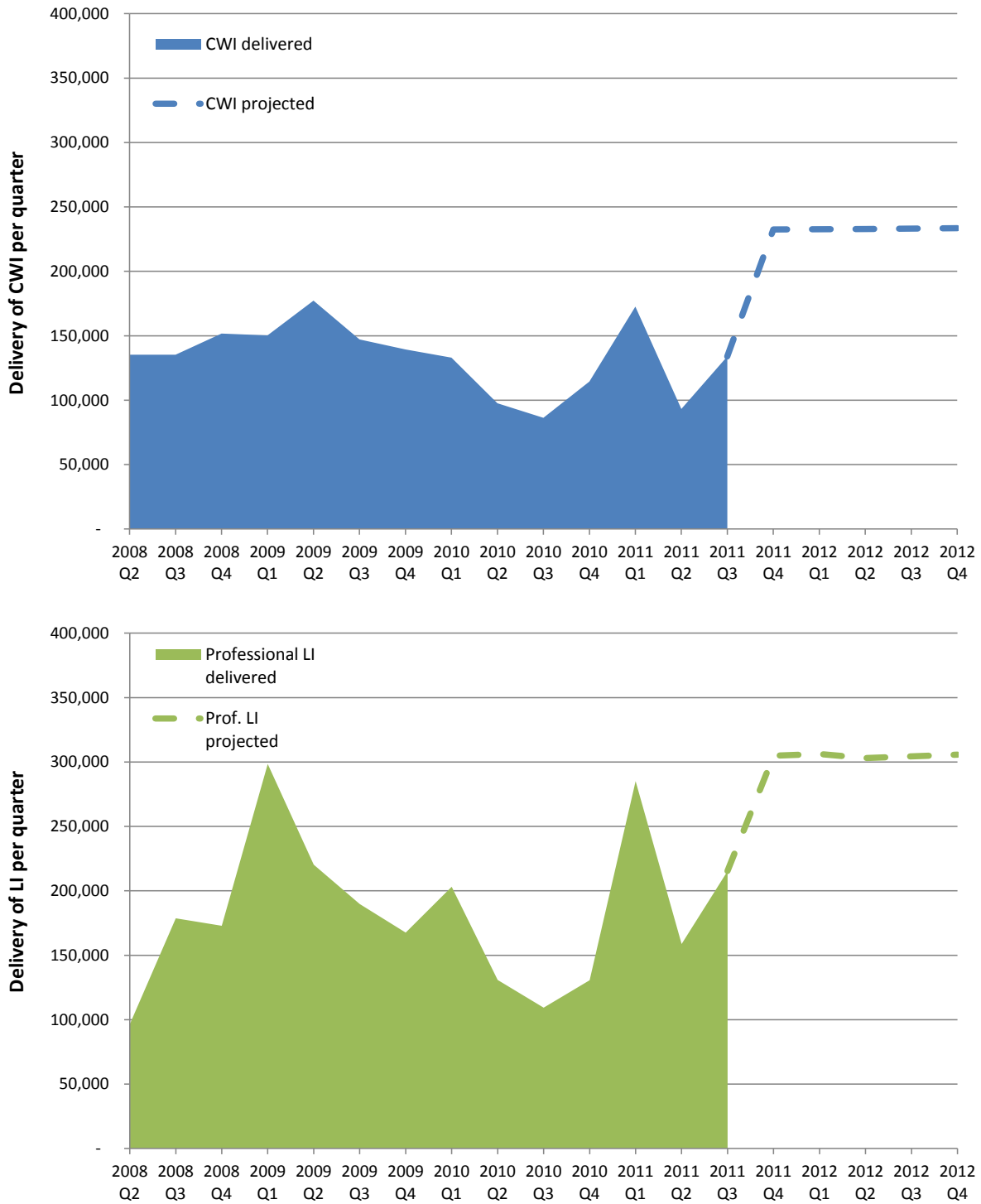


Figure 6: Historic (shaded) and projected (dotted) quarterly installation rates to meet the IO under CERT

Chapter 2 uses this projection of activity to the end of 2012 to assess what the remaining potential for loft and cavity wall insulation will be at the start of 2013. It compares this with predicted levels of activity under the Green Deal and ECO and considers the implications of the transition to the new policy framework.

2 What remains to be done after 2012? What is projected to happen?

Chapter summary

Potential end of 2012

- By the end of 2012 and the start of the ECO, there will be 6.5m homes with uninsulated walls potentially suitable for CWI. 4.5m of these can be considered low-cost cavities, of which 3.7m are standard, or 'conventionally easy' cavities.
- Just 350,000 of these low-cost cavities are within the Affordable Warmth group as proposed.
- By the end of 2012 and the start of the ECO, these will be 8.5m homes that could benefit from LI, of which 0.6m will require full insulation, and 7.9m will need a 'top-up'.
- Just 575,000 of the lofts are within the Affordable Warmth group as proposed.

Market after 2012

- DECC predict a total of 1.7m cavities and 350,000 lofts will be delivered across the ECO period 2013-2022. This includes 'business as usual' delivery in the absence of policies.
- Assuming a linear ramp-up to deliver the Insulation Obligation, the market for CWI will drop from 300,000 to 70,000 installations per quarter. The cut in LI is even more dramatic: 480,000 to just 9,000 per quarter.
- This is far below the rates needed to achieve the Carbon Plan objective that '*all cavity walls and lofts in homes, where practicable, are expected to be insulated by 2020*' (DECC, 2011d). An average of 140,000 installations of CWI and 270,000 installations of LI would be needed for these ambitions to be met.

2.1 Remaining cavities and lofts at the end of 2012

Assuming the Insulation Obligation is met as discussed in section 1.2, and taking CESP and Warm Front into account⁹, then it is possible to paint a picture of remaining fillable cavities and lofts at the end of 2012, when CERT ends. This picture is presented in Table 9. As a reminder:

- Its starting point is the English Housing Survey 2009, scaled up to Great Britain
- It includes installations reported under CERT, CESP and Warm Front since April 2009 (the Survey's mid-point), and likely future installations discussed in Chapter 0.
- It breaks down the number of remaining lofts and cavities into broad archetypes, initially explained in section 1.1.

Table 9: Fillable cavities and lofts in Great Britain at the end of 2012

	Fillable cavities in homes with <i>predominantly</i> cavity walls			Fillable lofts		
Total	6,500,000			8,515,000		
<i>Of which...</i>	<i>Conventional cavity</i>	<i>Narrow cavity</i>	<i>Non-traditional cavity</i>	<i>Virgin loft (<60mm)</i>	<i>Top-up-able loft (<125mm)</i>	
Sub-Total	5,200,000	1,000,000	300,000	630,000	7,885,000	
<i>Of which...</i>						
	<i>Conventionally easy</i>	<i>More costly / hard to treat</i>	<i>Lower cost</i>	<i>More costly / hard to treat</i>	<i>Lower cost</i>	<i>Higher cost</i>
Sub-total	3,730,000	1,470,000	805,000	195,000	215,000	85,000

⁹ Assuming that future activity in these programmes is in line with expectations; see Appendix III.

Excluding non-traditional cavities¹⁰, there would remain approximately 6.2 million homes of predominantly cavity-walled construction and 8.5 million lofts suitable for insulation in Britain at the end of 2012. Approximately 3.7 million of these cavities don't face any cost-incurring technical barriers and can be considered 'conventionally easy'. A further 805,000 narrow cavities can be deemed relatively low cost – adding up to just over 4.5 million 'lower cost' cavities. All in all, the remaining insulation potential is very large, and supports the notion that the (what are likely to be) high rates of cavity wall and loft insulation at the end of 2012 need not collapse for a lack of fillable lofts and cavities in 2013.

These 6.2 million cavities are very close to the number assumed by DECC to remain at the end of 2012 in their Green Deal / ECO consultation Impact Assessment. However, the categorisation of the remaining cavities according to 'hard' and 'easy' is markedly different – as Figure 7 shows – although the Impact Assessment does state that 'there is unpublished evidence currently under consideration that this might be an overestimate of the proportion that are hard to fill' (DECC, 2011a).

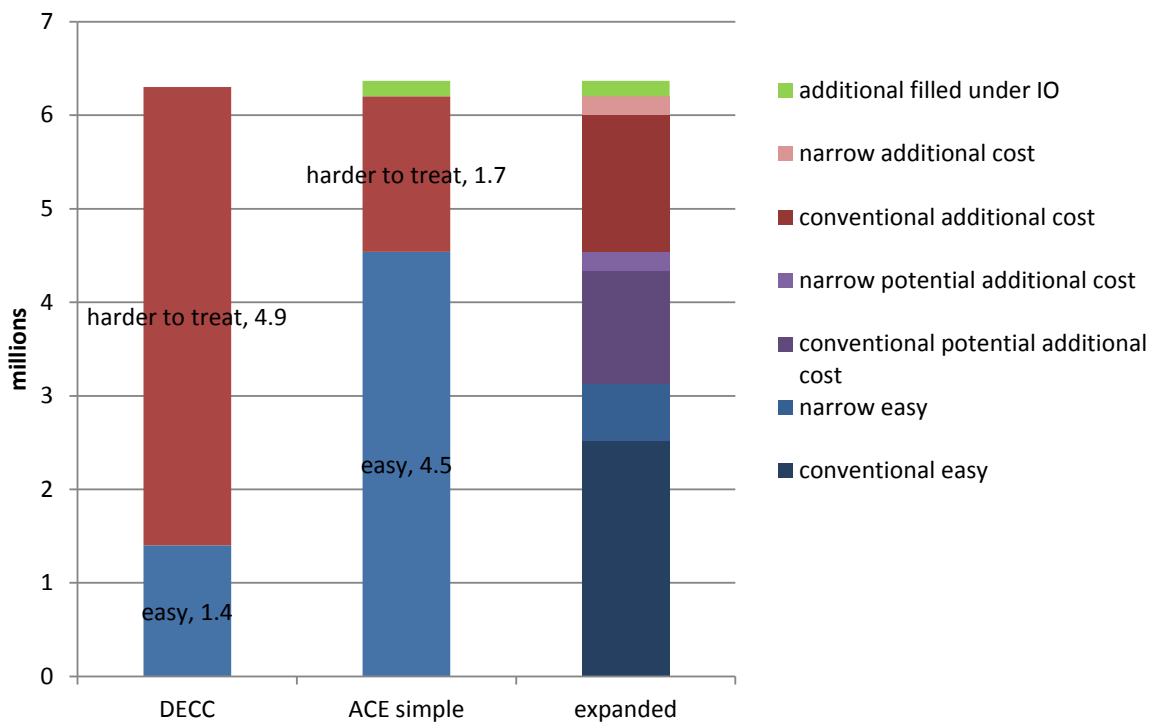


Figure 7: Remaining cavity wall insulation potential after 2012 – contrast between DECC and ACE

¹⁰ For reasons explained in section 1.1.

On lofts, DECC's and ACE's estimates of the remaining potential clearly diverge. DECC does not consider there to be any remaining virgin lofts to fill, but most significantly, the number of lofts that could benefit from a top-up are nearly two million fewer in DECC's view than in ACE's (see Figure 8). The most likely explanation for this is that a different cut-off point for the existing loft insulation thickness suitable for a top-up has been used, possibly 100mm rather than 125mm.

Nevertheless, DECC's latest statistical release on insulation levels in the British housing stock states that 'A threshold of 125mm is used in these statistics since homes with less than this would expect to see significant improvements in energy efficiency from a top-up.' (DECC, 2011b). The potential for loft top-ups from above 125mm but below 150mm of existing insulation thickness (two shades of purple) has been included in Figure 8 not least because some of these lofts are assumed by DECC to be currently filled under CERT¹¹, and because they may be cost-effective to fill as part of a whole-house approach facilitated by the Green Deal.

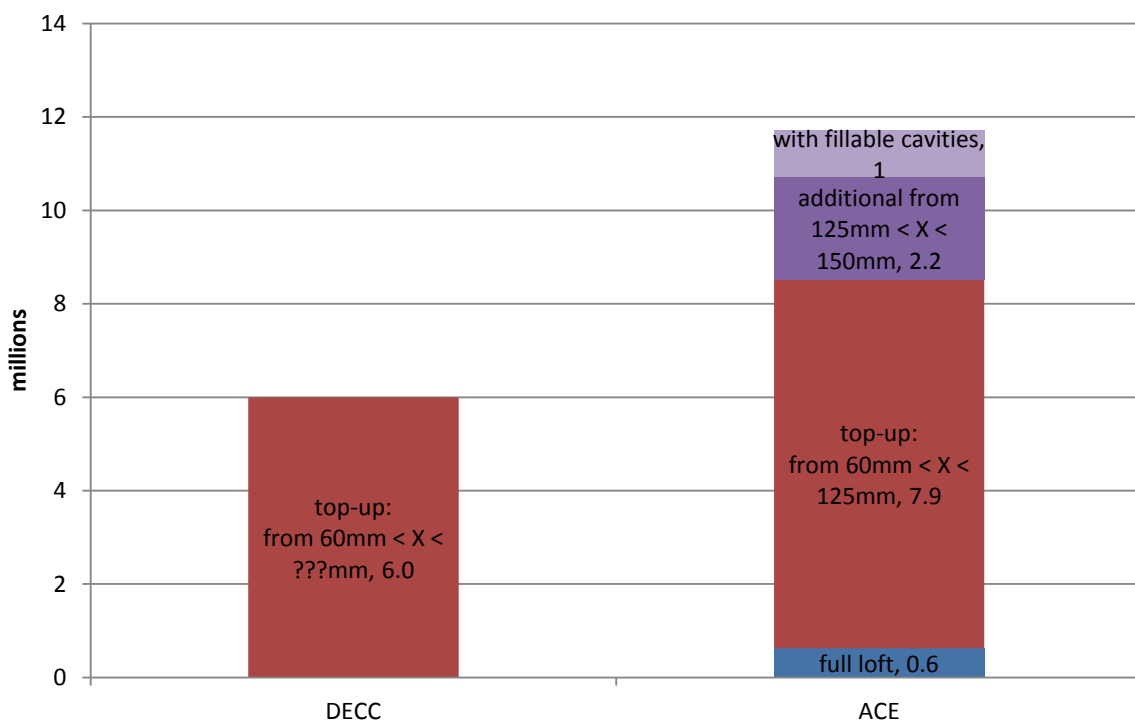


Figure 8: Remaining loft insulation potential after 2012 – contrast between DECC and ACE¹²

¹¹ The methodological note accompanying DECC's latest statistical release on insulation levels in the British stock says that 'An assumption has been made that 10 per cent recent of insulations [sic] are top-ups from above 125mm.' (DECC, 2011c).

¹² As the DECC threshold for loft top-ups is unknown, this is represented by '???mm' in the chart.

Table 10 takes the remaining lofts and the lower cost cavities and breaks these numbers down further according to various eligibility groups seen under CERT, and proposed for the ECO. This is accompanied by carbon saving potentials associated with insulating these lofts and cavities in different groups – totalling nearly 3.6 MtCO₂ per annum for the lifetime of the measures. What is also significant, in the last row of the table, is how few low income and vulnerable households would maximally stand to gain from cavity wall or loft insulation under the ECO.

Table 10: Remaining insulation potential in various eligibility groups at the end of 2012¹³

	Convention ally easy CWI	Carbon saving potential [MtCO ₂ /a]	Lower cost narrow CWI	Carbon saving potential [MtCO ₂ /a]	Empty loft (<60mm)	Carbon saving potential [MtCO ₂ /a]	Top-up-able loft (<125mm)	Carbon saving potential [MtCO ₂ /a]
Total in household sample	3,410,000	2.17	750,000	0.32	420,000	0.17	7,460,000	0.91
In 'able to pay'	2,300,000	1.51	540,000	0.24	225,000	0.10	3,990,000	0.53
In Priority Group	1,110,000	0.66	210,000	0.08	195,000	0.07	3,470,000	0.38
In Super Priority Group	440,000	0.26	110,000	0.04	110,000	0.04	1,340,000	0.15
In SPG excl. social housing / proposed ECO Affordable Warmth group	250,000	0.15	100,000	0.04	45,000	0.02	530,000	0.06

¹³ Appendix II explains how the size of these groups is estimated and presents assumptions made relating to which shares of CERT delivery go to which eligibility groups up to the end of 2012.

2.2 Market after 2012 – based on DECC’s Impact Assessment

Using the analysis presented in the Impact Assessment accompanying the Green Deal / ECO consultation document, we have charted DECC’s assessment of the markets for cavity wall and loft insulation post-2012 to ascertain the nature of the transition from CERT to the Green Deal and ECO. Figure 9 presents quarterly cavity wall insulation rates under CERT to date, the amount of activity necessary to meet the Insulation Obligation to the end of 2012, and delivery anticipated by DECC post-2012. The latter is juxtaposed with the green (‘high’ scenario) and red (‘low’ scenario) dotted lines representing the Energy Act’s Impact Assessment, which is very broadly comparable. The black dotted line envelops, using an idealised trajectory, the remaining cavities which DECC’s 2011 Carbon Plan states must be filled by 2020 to meet carbon budgets.

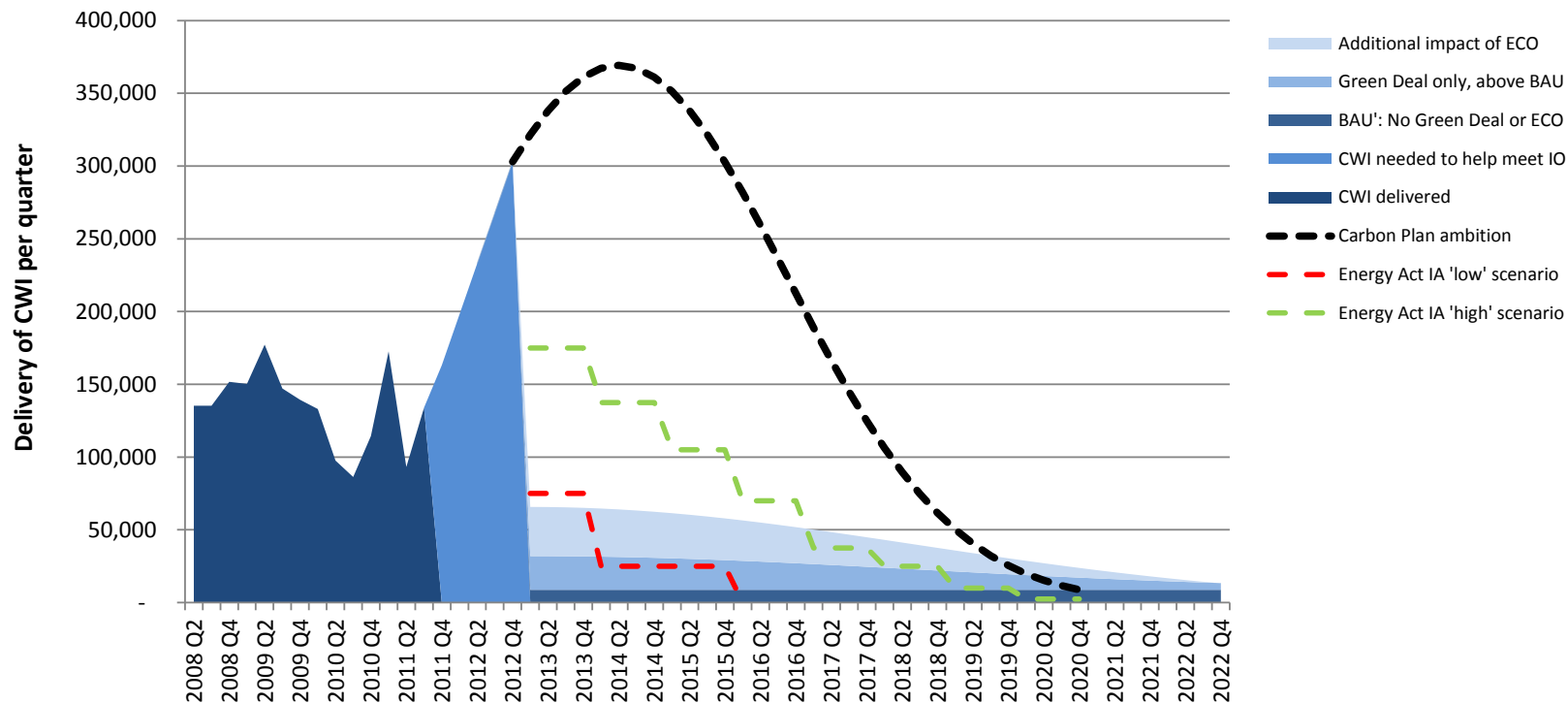


Figure 9: Historical, anticipated and projected rates of cavity wall insulation, April 2008 to December 2022

There are two things that are most striking about Figure 9. First is the dramatic reduction in anticipated delivery after 2012, to levels lower than at any time under CERT (1.7 million to 2022). The second is that this is projected to happen despite the huge remaining insulation potential (6.2 to 6.3 million), and despite the fact that DECC's Carbon Plan (published shortly after the Impact Assessment) requires that all practicable cavities (and lofts) are filled. Figure 10 presents the equivalent information for loft insulation. The conclusions that can be drawn from Figure 9 apply even more strongly here. DECC's expectations for the Green Deal and ECO suggest that there will be virtually no take-up of loft insulation under current proposals.

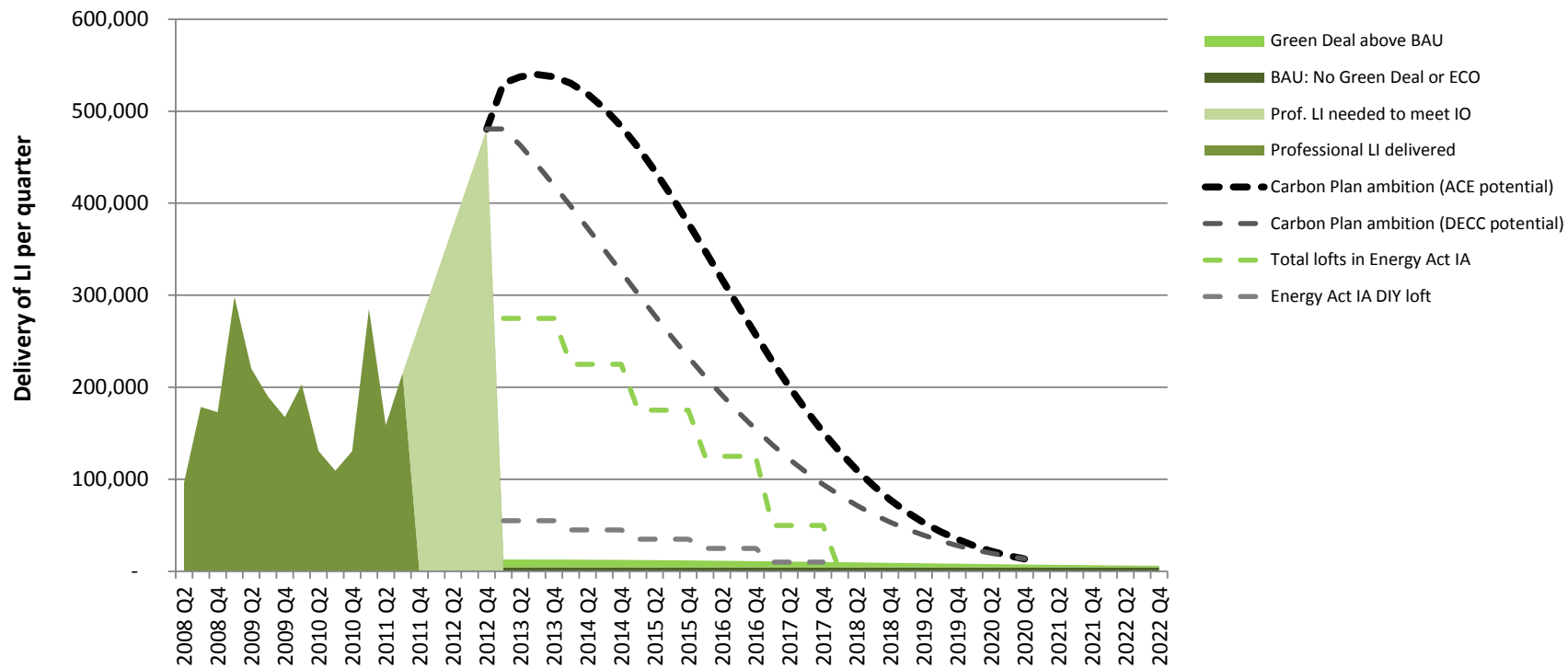


Figure 10: Historical, anticipated and projected rates of loft insulation, April 2008 to December 2022

In marked contrast, the Impact Assessment's expectation for solid wall insulation delivery is 1.5 million to 2022 – the large light orange area in Figure 11 – which is almost entirely consistent with the Carbon Plan's ambition for the technology (which aims for 1.5 million by 2020; black dotted

line). For the first three years after 2012, both ambitions are in excess of what the industry estimates it can deliver with full and proper training. The Solid Wall Insulation Guarantee Agency (SWIGA) estimates the industry could deliver according to the orange dotted line, building on anticipated delivery of solid wall insulation under CERT and CESP to the end of 2012. If intensive fast-track training were able to be brought forward with Government support across 2012, the industry could ramp up more quickly (red area and dotted line), but would even then fall 90,000 short of the 380,000 installations DECC envisage by March 2015. The collapse of cavity wall and loft delivery poses risks to achieving SWIGA's capacity scenarios, let alone DECC's solid wall ambitions – further exacerbating the combined shortfall of cavity, loft and solid wall delivery when compared to the Carbon Plan's objectives as well as undermining the ability to meet the comparatively modest targets for the Green Deal and ECO.

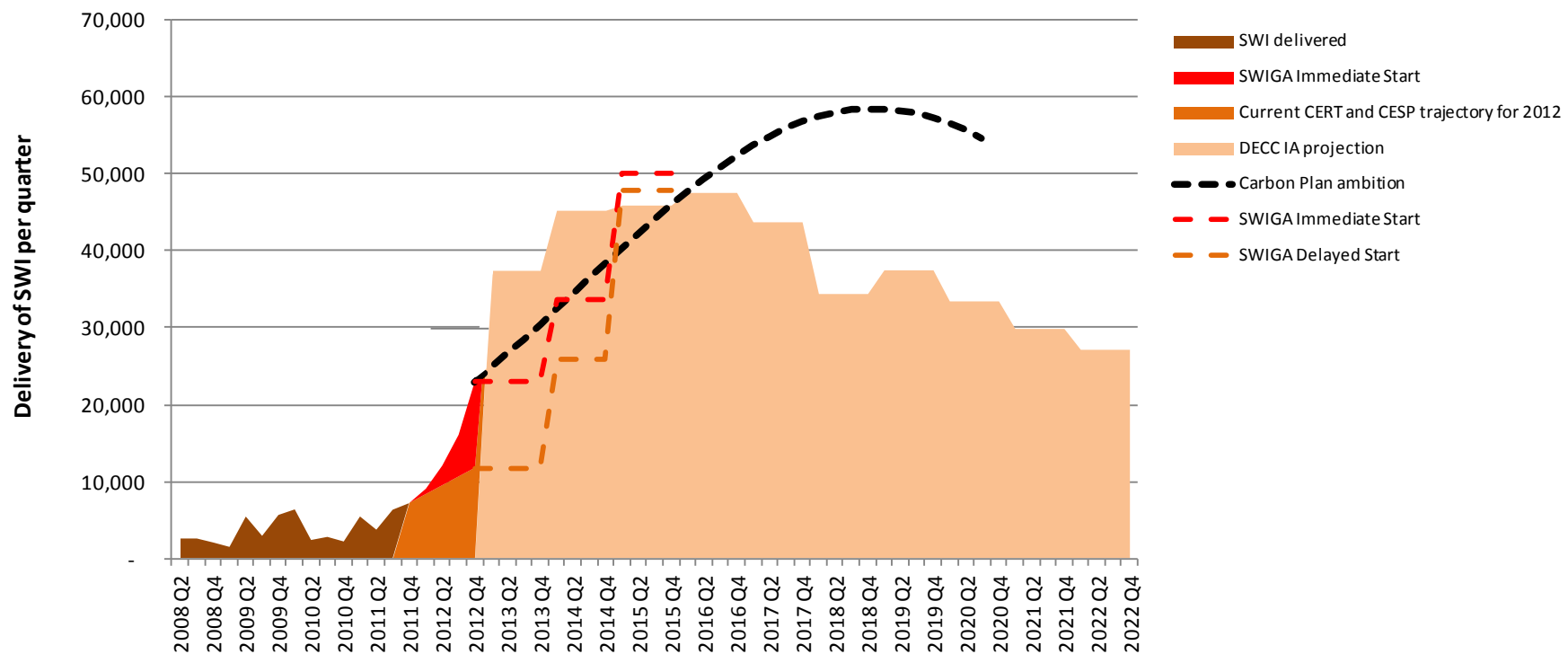


Figure 11: Historical, anticipated and projected rates of solid wall insulation, April 2008 to December 2022

So what are the implications of Green Deal and ECO proposals as they currently stand? Chapter 3 considers possible risks to Government and industry.

3 Implications of current Green Deal and ECO proposals

Chapter summary

The radical drop in the delivery of loft and CWI during the ECO period presents key risks to Government policy and the insulation industry itself:

Government Policy

- Carbon budgets: existing plans are inadequate to meet the ambition of the Carbon plan, could make meeting them more costly to consumers, and have been publicly criticised by the Committee on Climate Change
- Fuel poverty: Existing proposals would see just 25% of ECO support directed to those within the Affordable Warmth group, most likely to be in fuel poverty. By redirecting remaining funds to supporting SWI, it is only after the obligation is finished and no longer being supported by bill payers that the programme reduces the number of households in fuel poverty; and by only 350,000-500,000 – far fewer than the 4.1m currently fuel poor.
- Green Deal: the policy requires confidence from households and from investors, and would benefit from mass-delivery of tried, tested and relatively well-understood energy efficiency measures. Confidence in sufficient volume is essential for the institutional providers of Green Deal finance to have a viable business case in the first place.

Insulation industry

- The absence of any planned transition between the delivery of CWI and SWI is making it difficult for the industry to make the short-term investments needed for the end of the CERT period in order to ramp-up to ensure the Insulation Obligation is met.
- The expected collapse of activity post-2012 under current proposals would severely restrict the breathing room needed for the industry to continue to develop the hard-to-treat innovations (for both cavity and solid walls), training programmes and capacity necessary to deliver carbon budgets and the ambitions for solid wall market transformation.

3.1 Risks to Government policy

3.1.1 Carbon Budgets, energy bills and energy security

Current proposals pose a significant risk to the housing sector's contribution to meeting Carbon Budgets and could make meeting them more costly to consumers. Anticipated activity will fall far short of the ambition in the Government's Carbon Plan that '*all cavity walls and lofts in homes, where practicable, are expected to be insulated by 2020*' (DECC, 2011d). The Committee on Climate Change shares this ambition, but the Green Deal / ECO proposals have led it to publicly express its concern to Secretary of State Chris Huhne and recommend that the Government '*should seriously consider including full potential for loft and cavity wall insulation in the ECO*' to achieve carbon budgets and mitigate energy bill impacts, stressing that '*other policy objectives to contain funding costs and develop new markets for energy efficiency*' would still be achievable (CCC, 2011).

In addition, not improving the housing stock as far as is possible by tapping least cost insulation potential places additional burden on efforts to maintain energy security and places strain on the ambitions for renewable heat.

3.1.2 Fuel poverty eradication

In the Green Deal / ECO consultation, DECC affirms the Government's commitment to 'eradicating fuel poverty as far as reasonably practicable in England by 2016'. Current proposals suggest that one quarter of the ECO's £1.3 billion annual budget to March 2015 will be spent on households eligible for Affordable Warmth support, with the remainder spent on subsidising solid wall insulation under the ECO's Carbon Saving obligation. By the end of 2022, there are anticipated to be between 350,000 and 550,000 fewer households in fuel poverty – *after* the ECO is no longer levied on energy bills (DECC, 2011e). In 2011, there were 4.1 million households in fuel poverty in England alone. On this basis, the fuel poverty target will be comprehensively missed.

By imposing two mutually reinforcing constraints, current proposals seriously undermine the ability to eradicate fuel poverty. The first of these is the tightly defined Affordable Warmth group – there are few low cost opportunities in the group to meaningfully improve energy efficiency and reduce heating costs: likely as few as 250,000 conventionally easy cavities and 530,000 lofts to top up. In the wider Priority Group, there are four times as many cavities and seven times as many lofts that could still be filled after 2012. The second constraint is the Carbon Saving obligation's proposed exclusive focus on supporting solid wall insulation – which comes at the expense of low income and vulnerable households who need heating cost reductions, irrespective of how widely or narrowly the Affordable Warmth group is defined.

3.1.3 Green Deal

Ambitions for the Green Deal – one of the Government's 'flagship' policies supporting the claim to be the 'greenest Government ever' – are high. Chris Huhne has stated that the Green Deal '*will kick start £14 billion investment over the next decade, supporting at least 65,000 insulation and construction jobs by 2015*' (DECC, 2011f). Loft and cavity wall insulation are expected to be the main measures driving volume take-up of Green Deal packages in 'able to pay' households. This volume, encompassing tried, tested and relatively well-understood and trusted energy efficiency measures, is crucial to establish the credibility of the Green Deal and its market players. Confidence in sufficient volume is also essential for the institutional providers of Green Deal finance to have a viable business case in the first place. Without this, there is a risk to the ability to provide finance at a cost low enough to make the Green Deal an attractive proposition to consumers and achieve the levels of investment and job creation aimed for. The Green Deal consultation's proposals serve to undermine investor confidence in this flagship, and this in turn is borne out by the accompanying Impact Assessment.

3.2 Risks to the insulation industry

3.2.1 Investment in delivery to 2012

The industry accepts that the residential energy efficiency market will shift away from energy supplier subsidy for 'cheap' measures towards a more market-driven approach. However, the lack of a planned transition and consequent abruptness of this change at the end of 2012 will create serious problems for the insulation industry (and threaten Government objectives as described above).

The industry is expected, able and has the resolve to ramp up delivery rapidly in the coming months. The Insulation Obligation under CERT has been a welcome signal of investable

confidence, and was much bolstered by the Secretary of State's recent statement urging energy suppliers to redouble efforts to meet it. However, absent a transition plan and without any confidence in adequate volumes of cavity and loft insulation delivery just 12 months from now, this ramp-up risks not making business sense. The fact that there will remain so many lofts and cavities that could benefit from insulation after 2012 underscores how absurd and unnecessary is a situation in which the industry ramps up to the extent outlined in this report only to then evacuate the capacity created. This ultimately undermines 'UK energy efficiency plc's' ability to attract inward investment.

3.2.2 Investment in innovation, capacity and training for solid wall delivery

The expected collapse of activity post-2012 under current proposals would severely restrict the breathing room needed for the industry to continue to develop the hard-to-treat innovations (for both cavity and solid walls), training programmes and capacity necessary to deliver carbon budgets and the ambitions for solid wall market transformation. Not only does this entail the possibility of solid wall capacity not ramping up as quickly as is hoped for, it also runs the risk of a market developing with sub-par standards in products, systems, installation and customer satisfaction.

A snap poll of 38 insulation installer companies conducted by the Instagroup in late 2011, in response to a request by ACE Research, encompassed 333 cavity wall and loft insulation crews from around Britain. The responses presented in Figure 12 confirm that these concerns also take hold at the grass roots of the insulation supply chain.

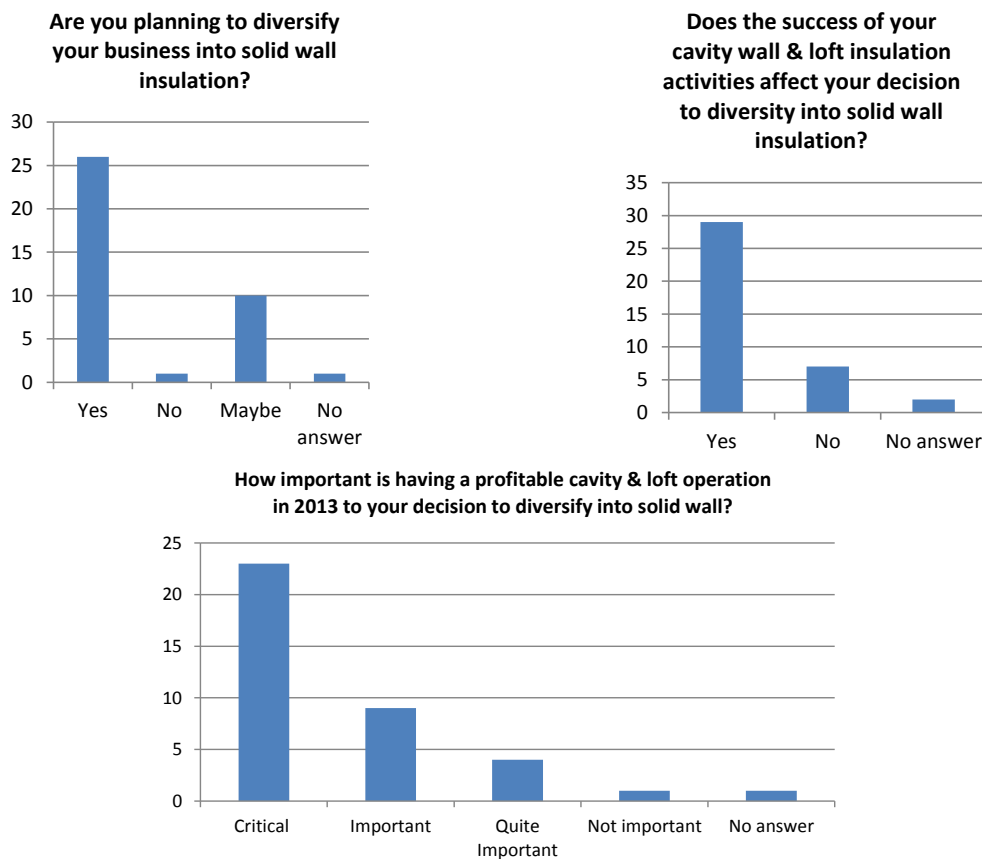


Figure 12: Response to Instagroup snap poll

4 Enabling a sustainable transition to a successful Green Deal / ECO framework

Chapter summary

The policies we recommend are aimed at mitigating the risks current proposals pose to the aims of Government within the Energy Act, namely carbon savings, fuel poverty eradication and the successful roll-out of the Green Deal. They are also intended to address the negative impact that DECC's plans will have on the delivery of cavity and loft insulation and the transformation of the solid wall insulation market.

We do not wish to overcome these problems by proposing to continue in the same policy vein, such as could be achieved by a 'Son of CERT' approach. Rather, the guiding principle behind these recommendations is to underpin the new Green Deal and ECO framework and enable a sustainable transition which builds confidence in the industry and leads to a successful outcome for Britain's policy objectives.

Aligning Green Deal and the ECO

- Allow cavities and lofts delivered through Green Deal to contribute to suppliers' ECO targets, even if delivered by non-obligated parties. This would give the Green Deal market some confidence in take-up rates and add very little cost to consumers, since only an incentive payment to encourage take-up would be required.
- Ensure the inclusion of loft and cavity wall insulation doesn't affect other ECO objectives by placing a solid wall minimum upon suppliers.

Fiscal Incentives

- Use the £200m allocated by Treasury to incentivise the take-up of Green Deal packages and to increase the reward in line with the size of the package financed.
- Allow all Green Deal measures installed by Green Deal accredited installers to be installed at 5% VAT.
- Link Stamp Duty and council tax to home energy ratings to create incentives for households to improve the energy efficiency of their homes.

Regulations

- Ensure minimum standards for FIT and RHI eligibility as has now been proposed for both schemes. All Green Deal-able measures should be installed.
- Consequential Improvements through the Building Regulations to ensure that Green Deal-able measures are installed prior to extensions and conversions.
- Mandatory minimum standards to require homes to have all Green Deal-able measures installed before they can be sold.

Helping low income and vulnerable households

- Increasing the amount of the ECO targeted at low income and vulnerable households, and concurrently widening the eligibility group beyond the very narrow eligibility criteria currently proposed. Both can be achieved by introducing a distributional safeguard within the Carbon Saving obligation.

Fully addressing hard to treat homes

- Include more costly cavity wall insulation (i.e. hard to treat) as an eligible treatment contributing to ECO's Carbon Saving obligation, treated according to the same principles as solid wall insulation, to enable the blending of Green Deal finance and ECO support.

This Chapter puts forward four groups of key policy recommendations which can smooth the transition to the new Green Deal / ECO policy environment. Chapter 5 then goes on to present an alternative approach to the ECO that would significantly mitigate the risks to Government and industry described in Chapter 3.

4.1 Aligning ECO and Green Deal to deliver lofts and cavities for the 'able to pay'

DECC have stated that, with the introduction of Green Deal finance, they no longer see a role for the supplier obligation in supporting the delivery of loft and cavity wall insulation for the able to pay. We agree that continuing in the same policy vein – by continuing past practice with a 'Son of CERT' programme – would be wrong and run counter to the market transformation we all want to see. However, there is a real opportunity to use the ECO in a way that ensures lofts and cavities in able to pay households are filled, incentivises all players to get the Green Deal up and running, ultimately adds little to no cost to the programme and consumers, and significantly improves confidence in the Green Deal framework by underpinning it.

This is achievable through inclusion of loft and cavity wall insulation as allowable measures to meet the Carbon Saving obligation of the ECO, in order to capture the large carbon saving potential remaining in the homes of the able to pay. For a transitional period, to be kept under review, carbon savings achieved through cavity and loft insulation in this group may count towards the target whether households take them up through direct, but strictly limited, subsidy¹⁴ or, at no cost to the wider bill-paying public, through commercial Green Deal finance. A blending of limited subsidy and Green Deal finance, akin to the Committee on Climate Change's recommendations to DECC (CCC, 2011) would of course also be possible and desirable. The Green Deal being a commercially viable proposition, it is likely that suppliers would seek to limit the use of even a capped subsidy wherever possible. Further crucial aspects would safeguard Government targets and the ambition for solid wall delivery, the Green Deal philosophy as well as avoid the possibility of 'crowding out' wider Green Deal provision:

- A solid wall insulation minimum at the heart of the Carbon Saving obligation, in line with the ambition for solid wall insulation take-up;
- An increased Carbon Saving obligation under the ECO to cover a sustainable rate of loft and cavity wall insulation in keeping with the effort required to meet Carbon Budgets
- A requirement for cavities and lofts which are to count toward the Carbon Saving obligation to be installed as part of a package;
- Subject to the same requirement, cavities and lofts filled by non-'Big Six' Green Deal providers must also be allowed to contribute to meeting the increased Carbon Saving obligation, facilitated by the brokerage mechanism and retaining the same subsidy limits.

This approach would have several significant benefits:

- Early uptake of Green Deal finance packages would be characterised by well-established and understood energy efficiency measures, building consumer confidence in the Green Deal.
- The 'able to pay' households with fillable cavities and lofts have not responded to supplier obligation discounts previously. They now face a different proposition, whereby the customer no longer needs to contribute upfront, and has greater confidence in the installation process / measure than previously was the case, owing to much more publicly recognised Green Deal accredited installation.

¹⁴ Primary legislation already enables this to be limited. In ACE's alternative scenario (Chapter 5), it takes up 2.5% of the ECO's budget. It could alternatively be functionally restricted, such as repaying the cost of independent Green Deal assessments which result in take-up.

- It would facilitate investable levels of confidence in the size and rate of growth of the Green Deal finance market, lowering the cost of Green Deal finance which in turn would reduce the levels of subsidy needed to ensure solid wall insulation uptake.
- Concurrently, the approach would not ‘crowd out’ Green Deal-financed cavities and lofts. New Green Deal providers would be boosted by this confidence, as well as actively encouraged by obligated energy suppliers to deliver, in this way resulting in a more widely competitive market. The proposed brokerage mechanism already offers a readily available means of allowing this to happen.

4.2 Introducing fiscal incentives and backstop regulation

To bolster Green Deal finance take-up from the outset, and to ensure continued and growing uptake after the initial phase of ECO support, a comprehensive suite of complementary policies that combines incentives in the early years with the backstop of regulation in later years must be introduced.

4.2.1 Introduced as soon as possible: fiscal incentives

4.2.1.1 £200m capital fund

The Treasury announced a £200 million capital fund in its 2011 Autumn Statement to support early uptake of the Green Deal in its first 18 months from autumn 2012 (HM Treasury, 2011). The money is to be spent on supporting the capital cost of measures, and is intended to facilitate the take-up of as many Green Deal packages as possible. As discussed before, cavity wall and loft insulation are core to the Green Deal’s initial attractiveness to customers, especially in terms of their ability to create ‘head-room’ under the Golden Rule and enable larger packages to be financed. As such, we recommend that the fund be designed to incentivise the take-up of *packages* of measures and to increase the reward in line with the size of the package financed. This would have the additional benefit of complementing the proposal set out in section 4.1. It is essential that the fund mobilises considerably more Green Deal investment than £200m, and in this way makes its contribution to securing the economic viability of low cost finance provision.

4.2.1.2 VAT reductions

A policy that allowed all Qualifying Energy Improvements installed by Green Deal accredited installers to be installed at 5% VAT (irrespective of whether Green Deal finance is used) would not create a loss for Treasury, as most of these measures are already installed at the lower rate. However, the explicit marketing of Green Deal packages as being eligible for this reduced rate could help stimulate demand and take up. The Green Deal framework provides a unique opportunity to categorise, ‘brand’ and promote a distinct set of well-defined and carefully selected measures and systems as ‘specially’ eligible for the reduced rate.

4.2.1.3 Stamp Duty incentive

Offering an incentive to households in the form of a Stamp Duty reward could encourage take-up of the offer. The reward could be coined in different ways:

- a) Stamp Duty rebate: This would see those purchasing a home offered a rebate on the Stamp Duty they have paid if they take up a package of Green Deal measures within a short period of time after occupancy, including insulating unfilled lofts and cavities.
- b) Energy Efficiency Stamp Duty: In order for the fuel costs associated with a property to be reflected in its property value, the rate of stamp duty payable could be adjusted by EPC

rating. This would ensure that energy efficient properties with a Green Deal charge attached are better perceived and provides an incentive to improve energy efficiency. This approach to Stamp Duty can be designed to be revenue neutral.

- c) Reduced rate for Green Deal properties: As with the Energy Efficiency Stamp Duty, this would offer a reduced rate of Stamp Duty but only to those properties improved through the Green Deal.

4.2.1.4 Council tax rewards

As with Stamp Duty, rewards involving council tax could include specific reductions for take up of the Green Deal or a variable rate depending on the energy efficiency of homes more generally.

4.2.2 Announced as soon as possible: the backstop of regulation in later years

The above recommendations create incentives for households to take up the Green Deal, either by offering reduced costs through VAT reductions, implicit increases in the value of efficient homes, or providing additional benefits from undertaking the Green Deal. However, it is likely that incentives alone will not be sufficient in getting all lofts and cavities filled, or driving deeper refurbishment.

Because Green Deal finance provides a mechanism for energy efficiency improvements at no upfront cost to households, and at on-going benefit (under the Golden Rule), it presents an option for Government to use regulation without causing hardship. This is particularly palatable when considered in conjunction with incentives for take up in the early years. Indeed, Government have already chosen to regulate private sector landlords as part of the Energy Act by requiring a landlord from 2018 to improve an F or G rated home before it can be rented. In this case, a combination of Green Deal finance and ECO support will ensure that landlords do not have to make payments upfront.

4.2.2.1 Minimum standards for FIT and RHI eligibility

Eligibility for the programmes supporting both micro-generation and renewable heat must require that lofts and cavities are filled. This regulation can be introduced easily and immediately, as well as ensure increased value for the budget/money spent on the RHI and FIT, for taxpayers and energy consumers respectively.

Changes to the feed-in-tariff (FIT) have recently been consulted upon in order to introduce a minimum standard, but at present the FIT can be accessed by a household without requiring any basic energy efficiency measures. In electrically heated properties this means that a household is being paid by all other consumers to generate electricity that might be escaping unnecessarily through the building fabric. For homes heated by other fuels, this still represents a lost opportunity for using the attractiveness of the FIT to deliver further fuel bill savings for the household and carbon savings for the UK. The Renewable Heat Incentive (RHI) will be extended to households alongside the introduction of the Green Deal. Government has indicated that a minimum energy efficiency standard will be required in order to access the taxpayer funded support. As yet, it is unclear how ambitious or how rigorously verified this support will be. We recommend bringing these incentive payments together with Green Deal finance. Doing so would allow for the following:

- Green Deal finance allows the introduction of minimum standards that ensure all 'Green Deal-able' energy efficiency measures are installed before access to either payment mechanism is granted.
- The success of the FIT (in terms of consumer uptake) suggests that these revenue schemes are attractive to households. Linking them to Green Deal could drive further interest and investment in measures that have far better economic returns.
- Use of the FIT and RHI payments in assessing the 'savings' as part of the 'Golden Rule' calculation, thus potentially increasing the scope of the energy efficiency package that can be delivered.

4.2.2.2 Consequential improvements

As part of the changes to the Building Regulations in 2013, Government should ensure that consequential improvements are introduced to help drive Green Deal take-up. The most recent Communities and Local Government impact assessment showed that consequential improvements would be of £705 million net benefit to the economy (reported in (CIBSE, 2010)). Property extensions and loft/garage conversions would require the homeowner to implement low-cost energy efficiency measures including cavity wall insulation and insulating the loft fully.

4.2.2.3 Mandatory minimum standards at point of sale

In order to ensure that all lofts and cavities are filled, DECC should regulate to prevent the sale of any property with an unfilled cavity or un-lagged / top-up-able loft, setting out a timetable to indicate the implementation of this. As DECC highlights in its argument for not supporting loft and cavity wall insulation for able-to-pay households through the ECO, these are low cost measures that *can* be installed at no upfront cost through Green Deal. However, our research has highlighted the importance that they *are* installed. DECC should regulate to ensure this.

4.3 Extending ECO support to more fully meet its objectives of: helping low income and vulnerable households; and hard to treat homes

The ECO, beginning in 2013, is expected to feature two targets: an Affordable Warmth obligation designed to focus support on vulnerable and low income households in order to reduce their heating costs, and a Carbon Saving obligation which will offer support to measures delivered into hard-to-treat homes.

The Affordable Warmth target is, as previously discussed, expected to cover a narrow eligible group similar in nature to the Super Priority Group but excluding those living in social housing. Those eligible for support could benefit from a suite of improvement measures not least because they may also stand to benefit from activity under the Carbon Saving target. The Carbon target itself is expected to support just a narrow set of measures, largely solid wall insulation.

4.3.1 Helping low income and vulnerable households

This study has highlighted the approximately 250,000 unfilled conventionally easy cavities and 530,000 fill-able lofts that are likely to exist in households eligible for support under the Affordable Warmth target come 2013, if eligibility is restricted to those within the super-priority group in private sector homes. These cavities and lofts represent just seven per cent respectively of all that would remain to fill conventionally and cheaply from 2013 onwards, assuming the Insulation Obligation is met between now and then.

ACE have long argued that, for reasons of equity, support for low income and vulnerable households should make up the vast majority of the ECO, particularly in the early years. However, based on the current state of knowledge regarding households that are likely to be covered by the Affordable Warmth obligation, just 2.5 to three million households in Britain might be considered eligible for support under this part of the ECO. This is why it captures only a small share of remaining unfilled cavities and lofts. There are many more households who could benefit from low cost major measures to reduce home heating costs, enabling the same Affordable Warmth budget to go much further and deeper in meeting its stated objective. Broadening eligibility to reflect the current Priority Group under CERT would in total cover 10.7 million households, for whom over one million conventionally easy cavities and 3.6 million lofts could be filled. With ECO support for cavities and lofts under the Carbon Saving obligation, the complementary approach is to introduce a distributional safeguard within it, directed at this broader group.

4.3.2 Fully addressing hard to treat homes

The Carbon Saving obligation is expected to focus on the delivery of solid wall insulation, to support the improvement of hard-to-treat homes that are typically the least efficient in the housing stock, and which have received the least support from supplier obligations so far. However, not all hard-to-treat homes are solid-wall – many are non-traditional constructions that have a cavity wall, and a greater number have fill-able cavities more expensive to treat for a variety of reasons touched upon in Chapter 1.

At the end of this 2012, there are likely to be around 1.7 million dwellings with hard (i.e. more costly) to treat cavities able to benefit from insulation in Britain. There could be at least an additional 300,000 cavity-walled properties of non-traditional construction. Excluding wall insulation solutions for these properties from the possibility of ECO support would severely risk forgoing very large energy saving potential which is likely on average to be more cost-effective than insulating solid-walled properties.

In some cases, treating these cavities will not require ECO support to meet the Golden Rule. In other cases, they would require ECO subsidy. Proven solutions exist to insulate all types of hard to treat cavity. The inclusion of these measures in the ECO's Carbon Saving obligation is essential, given the energy and carbon saving potential. What is needed in order to enable their delivery (whether under Green Deal finance alone or Green Deal with ECO subsidy) is a meaningful way of distinguishing between different types of hard to treat cavity and the specific products necessary to treat them. The flowchart in Chapter 1 presents a simple set of rules for distinguishing between different types of cavity (and the cost of insulating them) under a Green Deal assessment. Coupled with reasonably robust estimated costs for insulating each type and circumstance of cavity wall, mapped out against property size, it is certainly possible to devise a method for clearly identifying appropriate solutions and any additional support needed.

Conceptually, these homes are no different to solid wall properties. As a result, it is both necessary and desirable that non-standard cavity wall insulation should be considered as allowable under the ECO. Potentially, but not necessarily coupled with an appropriate solid wall insulation minimum, this would help more fully meet the ECO's stated objective of providing support for hard to treat homes, and help attain significant carbon saving and innovation potential.

5 A successful Green Deal and ECO framework

Chapter summary

Looking at DECC's approach to the ECO in detail sees that the bulk of energy supplier support will be directed at SWI within the homes of able-to-pay households.

We present an alternative, one of many potential permutations, which seeks to achieve several things:

- Create a sensible transition between CWI and SWI, delivering a volume of both that will see Government meet their aims within the Carbon Plan and allow the CWI to manage its development into SWI technologies.
- Save more carbon across the ECO period
- Increase the equity of the ECO by seeing more support on low income households
- Achieve these objectives without increasing costs for bill payers

The scenario meets these objectives as follows:

- Allowance of CWI delivered through Green Deal to contribute to the ECO, with 500,000 insulated each year. Such an inclusion generates a large volume of very low cost carbon savings, allowing the remainder of the ECO budget to focus on low income and hard-to-treat properties.
- An additional 75,000 hard-to-treat cavities and 175,000 conventional cavities insulated within a wider Affordable Warmth group
- Over 140,000 SWI installations, the bulk of which occur in the homes of the most vulnerable: low income owner-occupiers and private renters.

In all, such an approach sees more than twice the proportion of ECO monies spent in the homes that need it most, saves 55% more carbon over the period, and manages to see 80% of the solid wall insulation numbers delivered under the DECC scenario, installed at a rate that remains ambitious: 140,000 a year. It does this at a lower cost to bill payers than the DECC scenario.

The policies recommended in Chapter 4 are aimed at addressing the negative impact that DECC's plans will have on the delivery of cavity and loft insulation, and mitigating the risks current proposals pose to the aims of Government within the Energy Act: carbon savings, fuel poverty eradication and the successful roll-out of the Green Deal.

In their Green Deal consultation document DECC have made clear that they think any ECO support that would allow able-to-pay households subsidised access to loft and cavity wall insulation would compromise DECC's aims of channelling support to hard-to-treat households (i.e. subsidised solid wall insulation) and those in need of Affordable Warmth.

In a similar manner, ACE's findings in previous ECO research – that support for solid wall insulation should be targeted at those low income households most in need (ACE, 2011a) – is thought by DECC to jeopardise efforts to reduce carbon emissions: low income households tend to under-consume energy, meaning that both potential savings are reduced, and that these households are more likely to take up a portion of the savings in improved comfort.

5.1 Tension at heart

These examples illustrate the tension between the objectives within both the Energy Act and the DECC Green Deal consultation: in order to deliver upon their carbon objectives whilst achieving a desired delivery of solid wall insulation DECC are simultaneously unable to allow a large proportion of ECO to target low-income households, yet need to direct a portion of the pot to those most in need in order for the policy to retain a semblance of fairness – as illustrated by Figure 13. The result is a proposal that sees just one quarter of ECO funds focused on those in need of ‘Affordable Warmth’, with the remainder restricted to solid wall delivery in social housing and able-to-pay owner-occupiers.

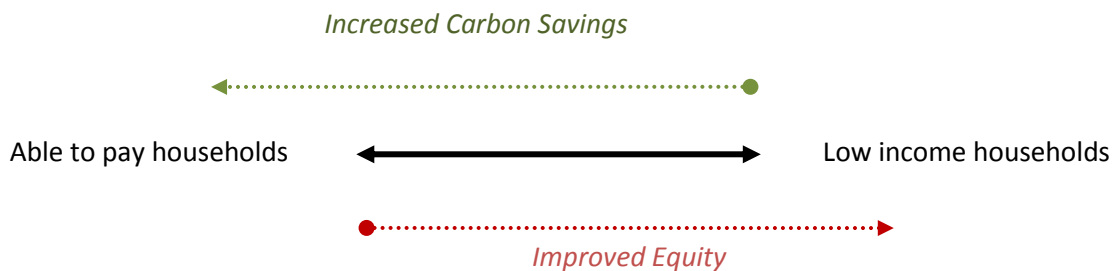


Figure 13: Fundamental tension in the Green Deal / ECO's policy objectives

5.2 DECC solution

DECC have presented their plan for the Green Deal and ECO in the recent consultation document, with 25% of the overall ECO targeted at low income household via the ‘Affordable Warmth’ metric, and the remainder focussed on supporting solid wall insulation through the carbon target. In the following section we analyse this scenario more closely¹⁵.

5.2.1 Solid wall insulation

Figure 15 of the Impact Assessment for the Green Deal consultation illustrates the DECC estimate that 1.525m solid walls would be insulated through Green Deal and ECO through to 2022 (DECC, 2011a). Combining this with the take-up rates for solid wall insulation across different tenures between 2013 and 2022 in Figure 17 of the same document, we can derive a more detailed picture of the likely solid wall delivery profile over the next four years, presented in Table 11.

Table 11: DECC profile of solid wall delivery across tenure and household groups

Total SWI delivered 2013-2016:	706,000
<i>Of which:</i>	
Social	302,000
PRS	171,000
OO	233,000
<i>Equating to¹⁶:</i>	
Able to Pay	412,000
Low Income/Vulnerable	294,000

¹⁵ The full logic behind the derived figures in this section is presented in Appendix IV.

¹⁶ See Appendices II and IV for the methodology underlying this breakdown (same applies for Table 12).

DECC expect these installations to be targeted at those households who can finance a large portion of the works through a Green Deal package, and at those in social housing where the costs of delivery are lowered by the effects of scale. Both of these would offer energy suppliers a cost-effective route to delivering their ECO Carbon Saving obligation.

The 'able to pay' group therefore includes owner-occupiers and private renters that are prepared to take on finance, and the small proportion of 'able-to-pay' households who live in social housing and would in most cases receive support as part of a block of flats.

'Low-income and vulnerable' households cover the majority of those in social housing, and those in privately rented homes who either agree to financing or have landlords willing and able to improve properties using their own investments (perhaps prior to the introduction of mandatory minimum energy efficiency standards for the sector).

5.2.2 Cavity wall insulation

DECC's estimate of the numbers of cavity walls insulated through Green Deal and the ECO can be derived from Figures 15 and 16 and Table 8 of the consultation's Impact Assessment. Table 8 indicates an expectation of 350,000 installations delivered through to 2022 under a business as usual (BAU) scenario. Figure 15 presents the uptake above BAU under Option 1 (Green Deal only) and Option 2 (Green Deal and ECO) (*Ibid.*). Since the ECO scenarios modelled by DECC only see cavity wall insulation being supported in those households within the 'Affordable Warmth' group, the difference in installations between these two options represents the number of installations supplied by the Affordable Warmth element of the ECO.

Figure 16 presents the installation rates expected for cavity wall insulation through to 2022 through BAU and the Green Deal (excluding Affordable Warmth). The trajectory sees a steady decline in cavity wall installations over time. Using this information and an assumption that the Affordable Warmth cavities are delivered evenly to 2022, we calculate the expected delivery from 2013 to 2016 in Table 12.

Table 12: DECC profile of cavity wall insulation delivery across tenure and household groups

Total CWI delivered 2013-2016	736,000
<i>Of which:</i>	
BAU Baseline	140,000
Additional through Green Deal	307,000
Affordable Warmth cavities	289,000
<i>Equating to:</i>	
Able to Pay	392,000
Low Income/Vulnerable	344,000

5.2.3 Costs and carbon saving

Table 13 summarises the wall insulation measures delivered through the DECC scenario, together with the likely carbon savings and costs that would result.

Table 13: DECC – cavity wall and solid wall carbon savings and cost; 2013-2016

	# Installations	Carbon Saving (MtCO ₂ /a)	Cost (£bn)	
CWI (Green Deal and BAU)	392,000	0.25	£	0
SWI (ATP)	412,000	0.87	£	2.32
SWI (low income social housing)	222,000	0.17	£	1.25
SWI (low income PRS)	72,000	0.06	£	0.40
CWI (Affordable Warmth)	344,000	0.02	£	0.10
TOTAL		1.36	£	4.07

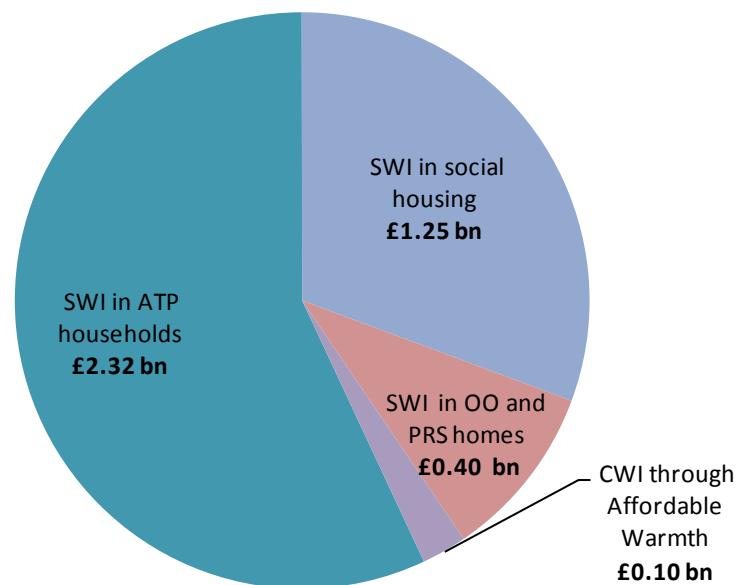


Figure 14: Split of ECO expenditure through DECC's current proposals; 2013-2016

The DECC approach to the ECO can be summarised as per Figure 14: high cost measures supported into higher income households, with the exception being social housing. It is important to note however that under the current proposals it is far from certain that social housing will receive such a share of solid wall installations. As previous ACE research illustrates, there are a relatively small number of social homes with solid walls¹⁷, and myriad factors including financial constraints, planning consents, permissions and leaseholders combine to make the installation of solid wall insulation in social housing more difficult than might be expected (ACE, 2011b).

¹⁷ 680,000 dwellings in 2009 in England have solid or non-traditional walls according to the English Housing Survey 2009.

Even so, the DECC proposals will see no wall insulation delivered to a large group of households that have been under-served by energy efficiency programmes to date and yet have the least efficient homes: the low income and vulnerable owner-occupiers and private tenants who live in solid wall homes. According to the EHS, in 2009 there were 1.8m such households England alone. Figure 15 illustrates the focal points of DECC's current proposals.

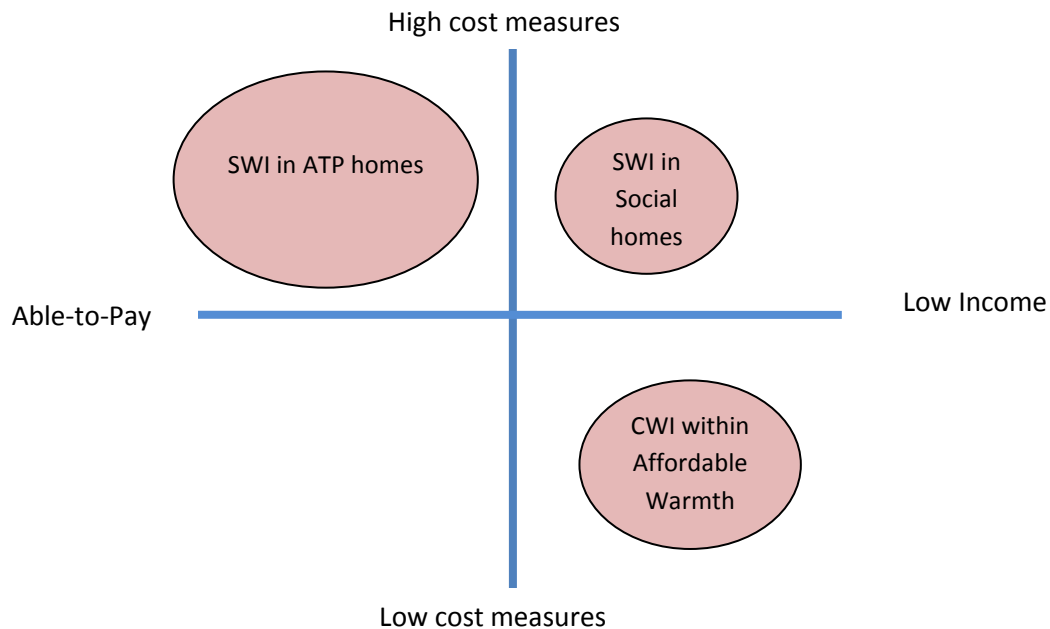


Figure 15: Relative emphases of DECC's current proposals

We have developed an alternative scenario for the Green Deal and ECO that seeks to replicate DECC's ambitions for the policy: delivering upon carbon saving objectives, alleviating fuel poverty, getting the solid wall market up and running, and helping support the roll-out of the Green Deal. However, this scenario seeks to achieve these ambitions more effectively, more equitably, all at no greater cost to energy consumers.

5.3 ACE Scenario

5.3.1 Cavity wall insulation

Our scenario sees 750,000 cavity walls insulated each year for the first four years of the ECO. Two thirds of these are delivered in able to pay households, with the other third delivered through Affordable Warmth and covering both hard to treat and conventional cavities as shown in Table 14.

Table 14: ACE profile of cavity wall delivery across type and household groups

Total CWI delivered 2013-2016	3,000,000
<i>Of which:</i>	
ATP Cavities	2,000,000
HTT CWI - Affordable Warmth	300,000
Conventional CWI – Affordable Warmth	700,000
<i>Equating to</i>	
Able to Pay	2,000,000
Low Income/Vulnerable	1,000,000

5.3.2 Solid wall insulation

As will be described in section 5.4, the inclusion of able to pay cavity wall insulation within our scenario secures a large amount of highly cost effective carbon savings. By reducing the pressure on carbon reduction, it therefore allows a greater proportion of the remaining monies to focus on those households most in need of energy efficiency support: low income owner occupiers and private renters in solid walled homes.

Table 15 sets out the numbers of solid wall installations that are delivered under this scenario:

Table 15: ACE profile of solid wall delivery across type and household groups

Total SWI delivered 2013-2016	565,000
<i>Of which:</i>	
ATP without subsidy through the Green Deal	69,000
Social housing – Low/Income	182,000
Social housing – ATP	65,000
OO/PRS – Low Incomes	248,000
<i>Equating to</i>	
Able to Pay	135,000
Low Income/Vulnerable	430,000

5.3.3 Costs and carbon saving

Table 16 presents the carbon savings and costs to the ECO that accrue from the measures delivered under the ACE scenario. Of note is the estimation that the 500,000 cavity wall installations in able to pay households can be delivered each year at a very low subsidy – just £50 on average. The logic behind this is that these measures are most likely to be financed by households through the Green Deal, and require just a small subsidy as an incentive payment alongside any Golden Rule margin that can be capitalised as an upfront payment. As set out in previously, this measure exists to offer some security to DECC over Green Deal uptake and that a reasonable trajectory towards the UK's carbon targets is maintained.

Table 16: ACE – cavity wall and solid wall insulation carbon savings and cost; 2013-2016

	# Installations	Carbon Saving (MtCO ₂ /a)	Cost (£bn)	
ATP Cavities	2,000,000	1.27	£	0.10
HTT CWI - Affordable Warmth	300,000	0.07	£	0.30
Conventional CWI – Affordable Warmth	700,000	0.16	£	0.21
ATP without subsidy through the Green Deal	69,000	0.15	£	-
Social housing – Low/Income	182,000	0.14	£	1.02
Social housing – ATP	65,000	0.14	£	0.37
OO/PRS – Low Incomes	248,000	0.19	£	1.95
TOTAL		2.12	£	3.96

As set out in Figure 16, under the ACE scenario, low income and vulnerable owner-occupiers and renters in solid wall homes are the biggest recipients of ECO support, with social housing also receiving a significant share of ECO spend. Despite two million cavity walls being insulated in able to pay households, this accounts for less than two per cent of the ECO's budget.

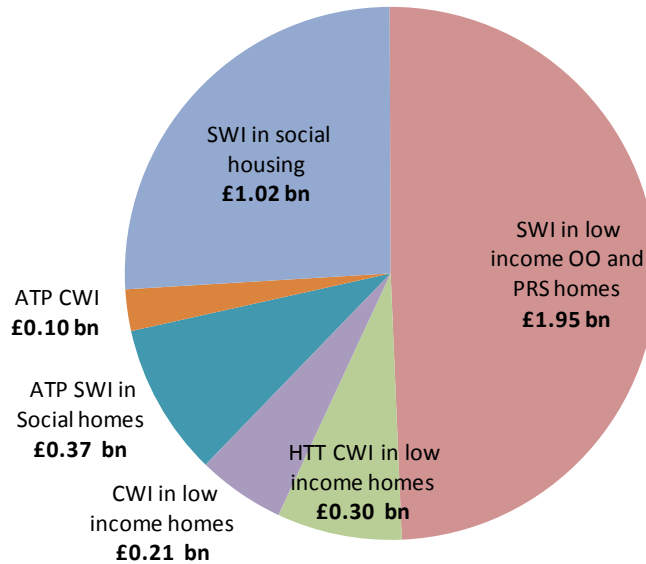


Figure 16: Split of ECO expenditure through ACE's scenario; 2013-2016

From a different perspective, Figure 17 illustrates the relative emphases of ACE's scenario compared to DECC's proposals. The main distinction is that low-cost, not high-cost measures, are supported for able to pay households.

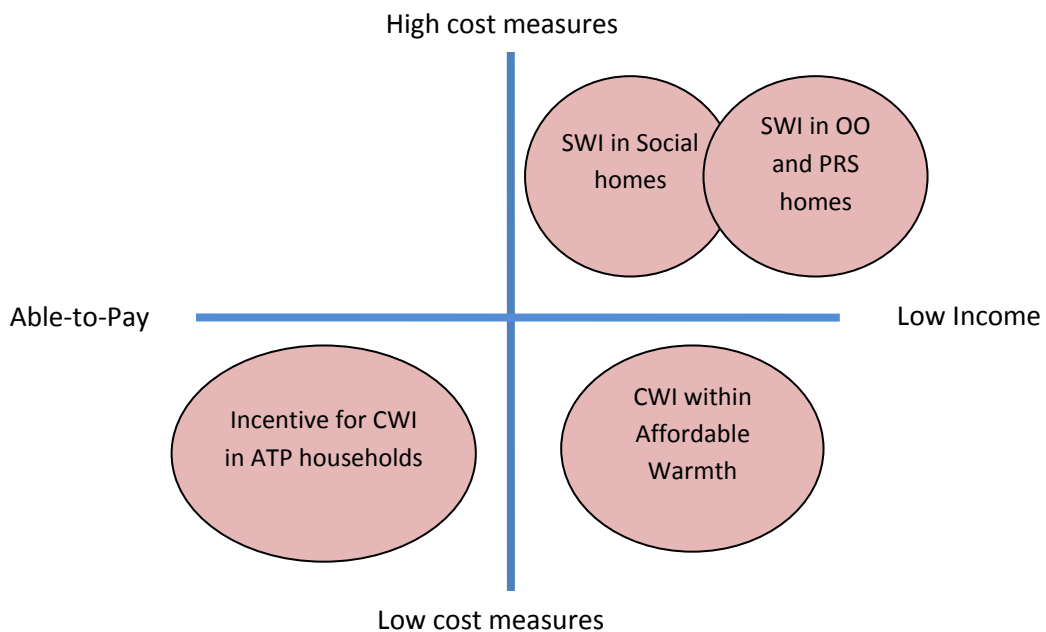


Figure 17: Relative emphases of ACE's scenario

5.4 Comparing scenarios

Our scenario was developed to illustrate that DECC's objectives for the ECO could be achieved more equitably at no additional cost to consumers. The headline results for each scenario are presented in Table 17.

Table 17: High-level comparison of DECC's proposals with ACE's scenario

Impact of ECO 2013-2016	DECC	ACE
Cost of the ECO (£bn)	£ 4.07 bn	£ 3.96 bn
Carbon savings (MtCO₂/a)	1.36	2.12
Amount of SWI installed	706,000	565,000
Proportion of ECO spent on Low Income and Vulnerable	43%	88%

It illustrates that the ACE scenario sees more than twice the proportion of ECO monies spent in the homes that need it most, saves 55% more carbon over the period, and manages to see 80% of the solid wall insulation numbers delivered under DECC's proposals, installed at a rate that remains ambitious: 140,000 a year. It does this at a lower cost to bill payers.

The differences hinge on the inclusion of able to pay cavity wall insulation within the ACE scenario. These installations are able to account for 60% of the scenario's carbon savings for just 2.5% of its costs, allowing the remaining 97% of ECO funds to target low income households and solid wall insulation¹⁸. The cost of the scenario is not strongly sensitive to the size of the incentive payment given to cavity wall insulation for able to pay households; if the cost were doubled to £100 then the scenario would still remain cheaper than the DECC scenario.

5.5 Conclusion

Current proposals for the Green Deal and ECO framework, as set out in the consultation and its accompanying Impact Assessment, do not match the framework's status as flagship Government policy, the aspiration for this Government to be the 'greenest ever', and the desire for the Green Deal to be 'the biggest home energy improvement programme of modern times'. In fact, current proposals pose serious risks to Government objectives and the energy efficiency industry.

We hope to have demonstrated that an outcome which falls short of these aspirations is entirely unnecessary and easily avoided. For individual households, low cost insulation measures such as cavity wall and loft insulation can help make ambitious and capital intensive whole house packages meet the Golden Rule set for the Green Deal. In much the same way, fully tapping the considerable potential for these measures will enable the wider ambitions – for the Green Deal and ECO framework, carbon and fuel poverty targets, jobs and green economy objectives – to be met across the British housing stock without compromising the philosophy underpinning the Government's proposals.

¹⁸ A further 9% of spend goes on 'able-to-pay' households that happen to live in social housing, accounting for the 12% of spend not on low-income and vulnerable households.

Bibliography

- ACE, 2011a. A Future Obligation on Energy Companies - Second paper in a series identifying options for the future of fuel poverty and energy efficiency policy. Association for the Conservation of Energy, London.
- ACE, 2011b. Scaling the solid wall. Consumer Focus, London.
- CCC, 2011. Proposals for the Green Deal / Energy Company Obligation.
- CIBSE, 2010. Consequential improvements “could have saved millions”. CIBSE Journal.
- DECC, 2010a. Extending the Carbon Emissions Reduction Target to December 2012.
- DECC, 2010b. Paving the way for a Green Deal: Extending the Carbon Emissions Reduction Target supplier obligation to December 2012 - Summary of consultation responses and Government Response. Department of Energy and Climate Change, London.
- DECC, 2011e. The Green Deal and Energy Company Obligation - Consultation Document. Department of Energy and Climate Change, London.
- DECC, 2011d. The Carbon Plan: Delivering our low carbon future. Department of Energy and Climate Change, London.
- DECC, 2011a. Green Deal and the Energy Company Obligation - Draft Impact Assessment.
- DECC, 2011b. Statistical release: experimental statistics - estimates of home insulation levels in Great Britain, October 2011. Department of Energy and Climate Change, London.
- DECC, 2011c. Methodology note accompanying statistical releases on estimates of home insulation levels in Great Britain.
- DECC, 2011f. Homes and economy to benefit from energy and climate policies - Huhne [WWW Document]. Department of Energy and Climate Change. URL http://www.decc.gov.uk/en/content/cms/news/pn11_096/pn11_096.aspx
- HM Treasury, 2011. Autumn Statement 2011. HM Treasury, London.
- Ofgem, 2011. Carbon Emissions Reduction Target update 14 - December 2011.
- Ofgem, 2012. Carbon Emission Reduction Target scheme spreadsheet V13.

Appendix I – Review of data sources and estimates: past, present and future

A. Past – surveys and historical data

i. DECC Great Britain Housing Energy Fact File

In September 2011, DECC published its first Housing Energy Fact File¹⁹, prepared by a consortium of researchers including the Building Research Establishment, who had been publishing this kind of briefing in earlier years. It contains information on the status of loft and cavity wall insulation stretching back to the 1970s, which provides a useful historical backdrop.

In Figure 18, properties capable of having cavity wall insulation constituted two thirds of the housing stock in 1974, of which just two per cent were insulated. Owing to new construction, by 2008 homes capable of having cavity wall insulation constituted 70% of the stock (or 18 million dwellings), of which 48% were insulated. As of 2008, 9.3 million homes remained to be insulated. Overall, this represents a significant transformation of the stock.

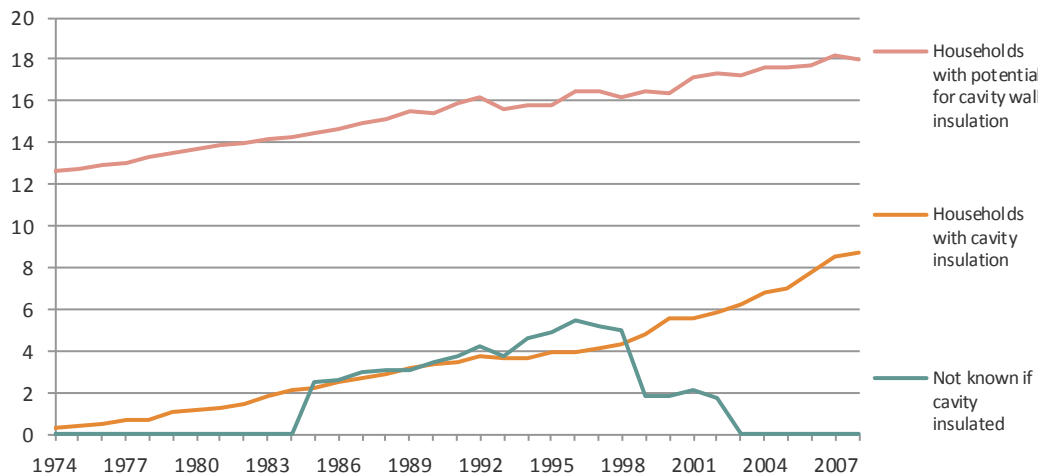


Figure 18: Cavity wall insulation in Britain, 1974-2008 [millions of households]

Figure 19 presents a comparable transformation of the stock with respect to loft insulation. Growth in the number of properties with 100mm or more of loft insulation has been considerable between 1976 and 2002.

¹⁹ DECC (2011) [Great Britain's housing energy fact file](#)

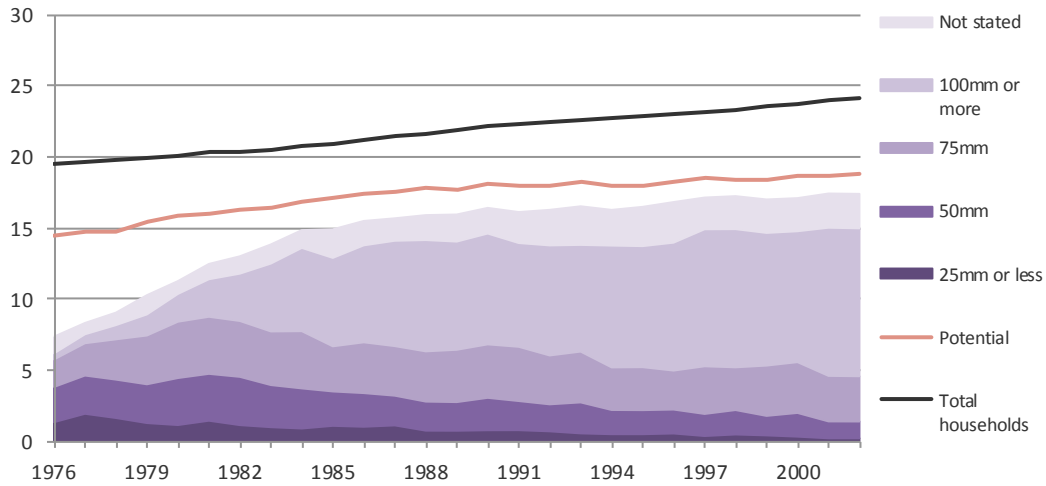


Figure 19: Loft insulation in Britain, 1976-2002 [millions of households]

This change has steadily continued from 2003 to 2008, as Figure 20 illustrates. In 2008, 89% of the British homes (22.5 million) were capable of having loft insulation. Fourteen million had less than 150mm, and 8.5 million had 150mm or more of loft insulation.

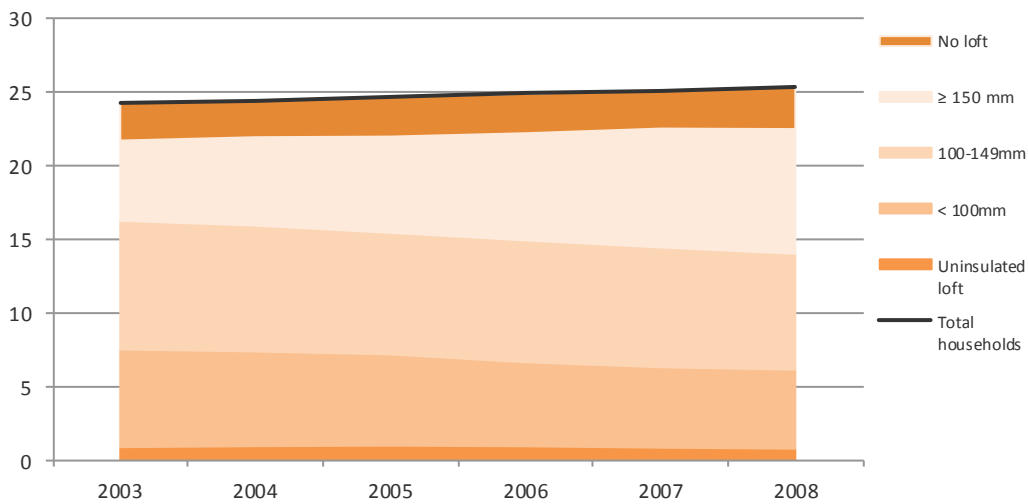


Figure 20: Loft insulation in Britain, 2003-2008 [millions of households]

ii. English Housing Survey 2009/10

The most comprehensive and latest edition of the national housing surveys is based on data collected in 2009 and 2010. The English Housing Survey (EHS) contains approximately 16,000 samples, is updated annually, and is the most authoritative source of information on the state of the housing stock in England. Virtually all assessments of energy efficiency potential in the housing stock use the EHS as its starting point. The current survey is designed to represent the state of the stock in April 2009. A snapshot of the state of cavity wall and loft insulation at that time is presented in Figure 21. Derived variables in the EHS – which bring together numerous data-points collected in the survey to concisely report its contents – provide the straightforward breakdown for cavity wall insulation shown in the first bar of Figure 21.

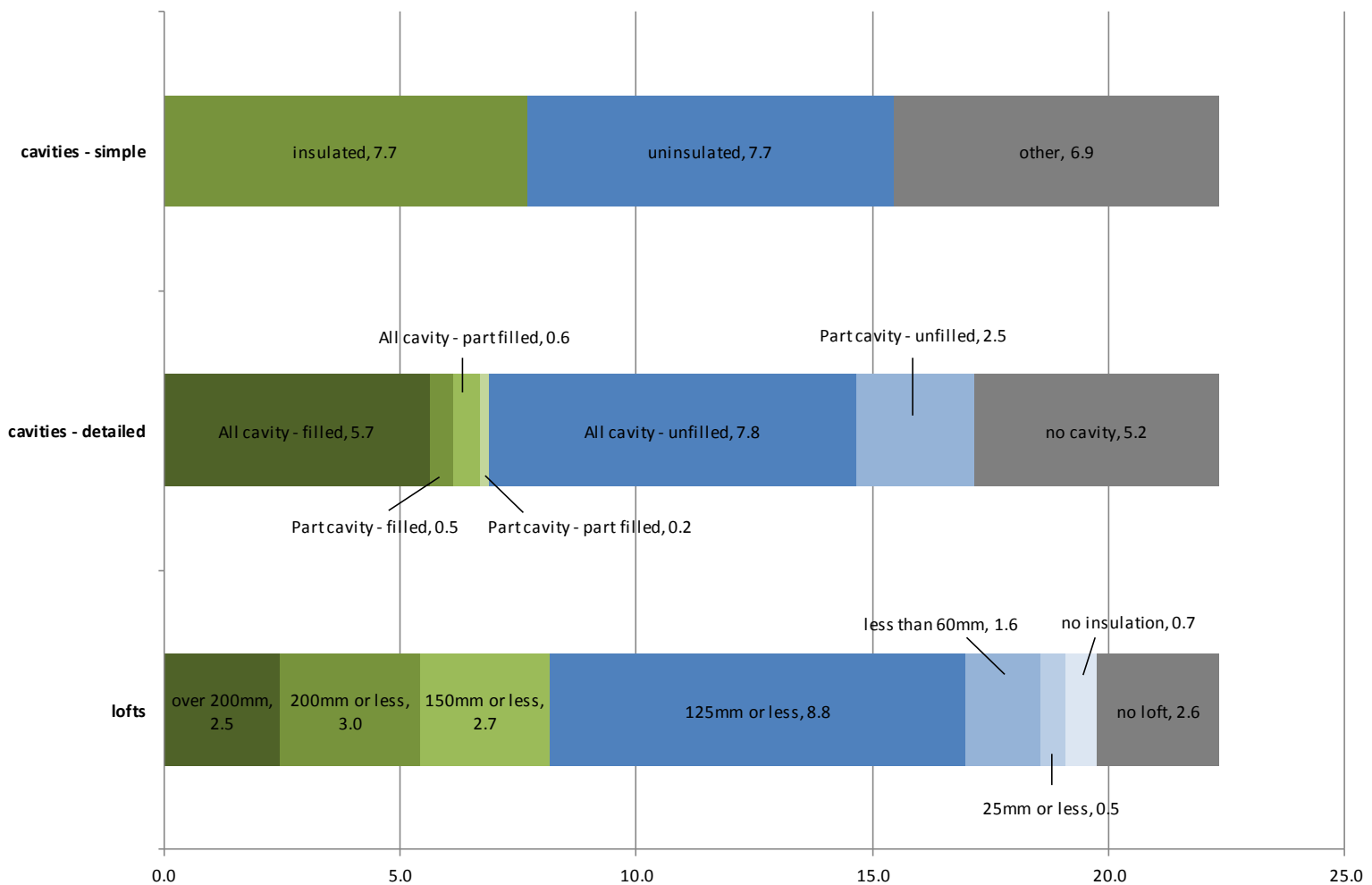


Figure 21: Status of cavities and lofts in England according to the EHS 2009 [millions of dwellings]

Looking in more detail at the underlying data – summarised in the second bar of the above chart – we can see that the situation is more complex. Many properties have walls of different construction, creating properties that are only cavity walled in part (denoted below as ‘part-cavity’). In addition, some properties only have some of their cavities filled (denoted as ‘part-filled’). As explained in Chapter 1, we choose to concentrate on properties with walls of predominantly one type (more than two thirds), and within this subset, on cavities which are wholly unfilled.

As also explained in the extensive flow-diagram in Chapter 1, we use the EHS data to further characterise unfilled cavity wall properties, arriving at our categories of conventional, narrow and non-traditional cavities, each over-laid with the additional dimension of technical issues: access, exposure and number of storeys.

With regards to lofts (the third bar in Figure 21), their status is easier to categorise, as the EHS' physical survey records actual loft insulation thickness.

iii. Devolved Nation housing surveys

Scotland and Wales each produce their own housing surveys. In terms of the physical assessment of dwellings, both use a method of sample-structuring related to the English Housing Survey, although the surveys' contents are not directly comparable.

In Scotland, the latest Scottish House Condition Survey (SHCS) report covers the 2009 calendar year. The most recent Living in Wales Survey is for 2008²⁰. Figure 22 presents the status of cavities and lofts in Scotland in 2009. Compared to English Housing Survey, the remaining insulation potential appears to be considerably higher for cavities. There appear to be considerably fewer loft spaces per dwelling in Scotland, likely as a result of the higher prevalence of tenement blocks in the housing stock. Still, 170,000 of the 905,000 dwellings recorded as having 'no loft or no information' are marked as the latter in the survey data – so some caution needs to be applied to the overall number. Factoring these out makes the remaining loft insulation potential for where there is a loft comparable to England.

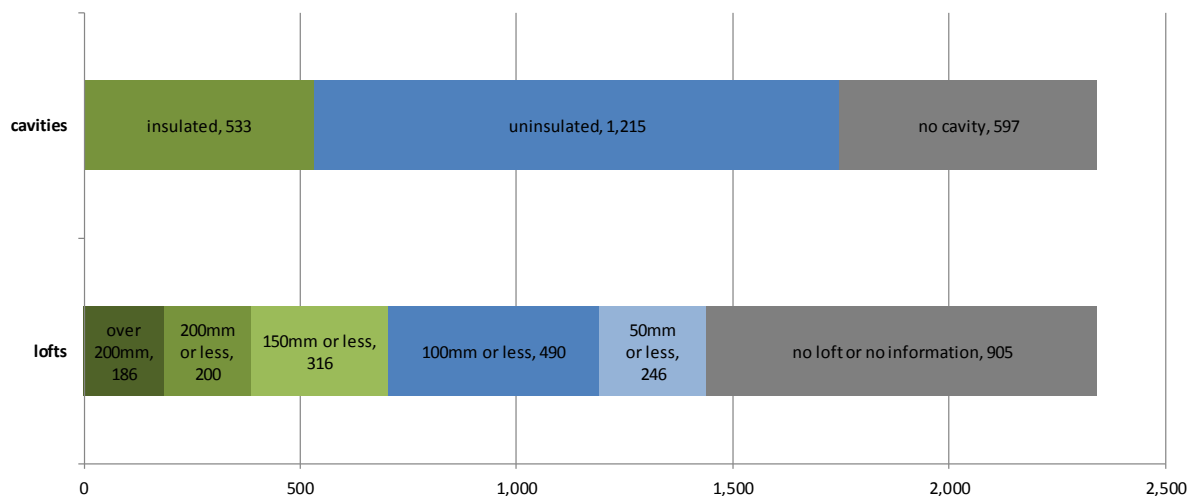


Figure 22: Status of cavities and lofts in Scotland according to the SHCS 2009 [thousands of dwellings]

Due to time and budget constraints, these surveys have not been analysed alongside and in the same way as the EHS 2009/10. Rather, a simple scaling factor has been applied to the EHS results to inflate the number of dwellings in England to the number in Britain. This approach is imperfect, but does provide reasonably accurate estimates of cavity wall (perhaps slightly under-estimated) and loft insulation (perhaps slightly over-estimated) potential in Britain.

²⁰ For 2009/10, a new 'National Survey for Wales' was piloted. It does not collect information about insulation status at present. It launches in full in 2012, with the opportunity for more questions to be included by different public bodies.

iv. Davis Langdon and Inbuilt study on 'hard to fill' cavity walls²¹

DECC commissioned Davis Langdon and Inbuilt to report on the prevalence and costs of 'hard to fill' and 'non-traditional' cavities. The report, published in October 2010, was based on the English House Condition Survey 2007²², and scaled up its estimates to reflect the prevalence of these cavities in Great Britain. It estimates that there were between 3.9 to 5.8 million 'hard to fill' cavities in Britain, consisting of:

- Narrow cavities; a cavity with width less than 50mm
- Random stone properties; stone build with variable cavity width
- Timber frame and steel frame properties
- Concrete frames properties, sub-divided into in situ concrete and 'rainscreen'

The report further estimates that there were an additional 1.6 to 2.4 million partially filled cavities²³. These are predominantly deemed to be the result of changes to the 1990 and 1995 building regulations, when minimum U value requirements for new dwellings were introduced. These categorisations have informed our analysis of the EHS 2009/10 data. In addition, the report cites DECC correspondence from July 2010 which estimated they were to be 5.3 million conventional cavities left in Britain by 2011.

At time of writing, and as mentioned in the Impact Assessment accompanying the consultation on the Green Deal and Energy Company Obligation, work to update Davis Langdon and Inbuilt's 2010 estimates was underway. This is likely to be published alongside the Government's response to consultees in March 2012.

v. Party wall cavities

The potential for carbon savings from party wall cavity insulation has been officially acknowledged in DECC's Impact Assessment of the Energy Act 2011. Data on this potential is considered here because virtually the same supply chain and skills needed for external cavity wall insulation can be deployed to tap party wall insulation potential.

In 2007, Leeds Metropolitan University published a detailed investigation of the 'party wall thermal bypass'²⁴, based on pre- and post thermal imaging and airflow monitoring. It confirmed that heat is primarily lost through the top of a party cavity wall, as well as typically into the loft space above the insulation, and that insulation of the party wall cavity reduces this.

The researchers deemed terraced and semi-detached homes built after 1965 to have some form of party wall cavity – some 3.1 million properties in England, based on their use of the English House Condition Survey 2006. They estimated that reducing these party walls' effective U value from 0.5 W/m²K to between 0.1 and 0.2 W/m²K across the English stock could save 850,000 tCO₂ annually.

²¹ Inbuilt & Davis Langdon (2010) [Study on hard to fill cavity walls in domestic dwellings in Great Britain](#)

²² Succeeded by the English Housing Survey

²³ These are cases within the EHS that are described as having filled cavities, but with at least one cavity that remains to be filled.

²⁴ Leeds Metropolitan University (2007) [Co-heating tests and investigation of party wall thermal bypass](#)

B. Present – current status of insulation

i. DECC experimental statistics²⁵

DECC's own estimates for loft and cavity wall insulation are released annually as part of the Energy Consumption in the UK statistics. In 2011, DECC started publishing quarterly updates to these estimates as 'experimental statistics' bulletins. They bring together data from the English Housing, Scottish House Condition, and Living in Wales Surveys from 2008. To these are 'added': CERT and CESP insulation measures reported to and published by Ofgem, measures delivered under other schemes (such as Warm Front) and data on new buildings from the Department for Communities and Local Government (CLG). In this way, DECC is able to draw a more up-to-date picture than the housing surveys or Energy Consumption in the UK can provide. The latest update was published in September and reports that at the start of July 2011 the penetration of cavity wall and loft insulation in Britain's 26.6 million dwellings was as shown in Figure 23.

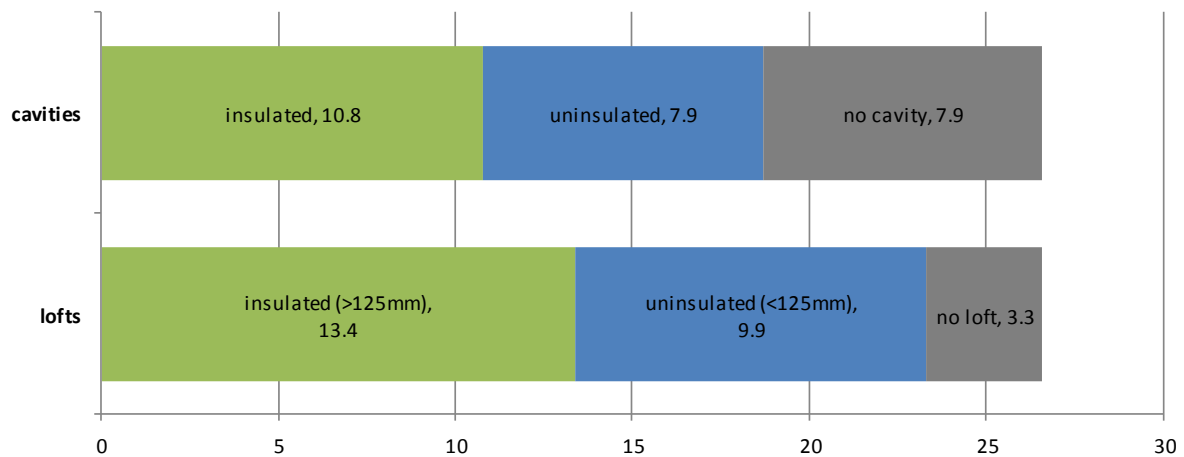


Figure 23: Status of cavities and lofts in Britain, July 2011 [millions of dwellings]

DECC adds in a methodological note²⁶ that the EHS 2008/9 used to produce these estimates under-recorded insulated cavity walls by five per cent. This is reported to have been fixed in the EHS 2009/10 and as a result we do not adjust our estimates in this way. The note further assumes that ten per cent of loft insulation carried out under CERT are top-ups from above 125mm. This assumption is under review, but is taken into consideration in the production of our estimates. Furthermore, we take a fundamentally similar approach to estimating present (and future) levels of cavity wall and loft insulation by 'adding' CERT (and other) activity to the latest English Housing Survey.

ii. Ofgem CERT and CESP updates, Warm Front annual reports

Ofgem reports on progress under CERT on a quarterly basis, and does so for CESP half-yearly. Carillion Energy Services (formerly Eaga) publish a Warm Front report annually which includes the numbers of lofts and cavities installed. On the basis of these reports, Figure 24 and Figure 25

²⁵ DECC (2011) [Estimates of home insulation levels in Great Britain: July 2011](#)

²⁶ DECC [Methodology note accompanying statistical releases on estimates of home insulation levels in Great Britain](#)

show the quarterly rates of cavity wall and loft insulation under the three programmes since the start of CERT in April 2008. As is plain to see, there has been considerable quarter-on-quarter variation in CERT. Levels of activity in the cavity wall and professional loft insulation markets are evidently correlated, and no doubt linked – owing to the fact that the supply chains for these different measures are closely related.

As the numbers reported under Warm Front are annual, these have simply been spread over four quarters in each reporting (financial) year. CESP-installed lofts and cavities are not perceptible in the charts because few have been reported to date; in any case, the total number of installations of these measures under CESP is expected to be low to the end of 2012 – due to the smaller size of the scheme and its greater emphasis on solid wall insulation.

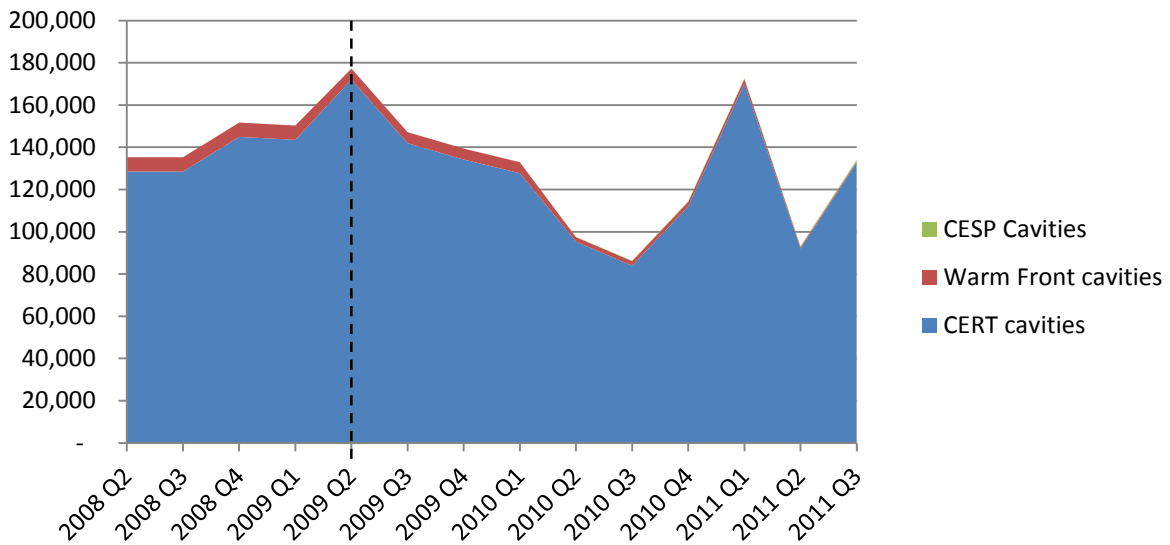


Figure 24: Quarterly CWI installations under CERT, CESP and Warm Front since start of CERT

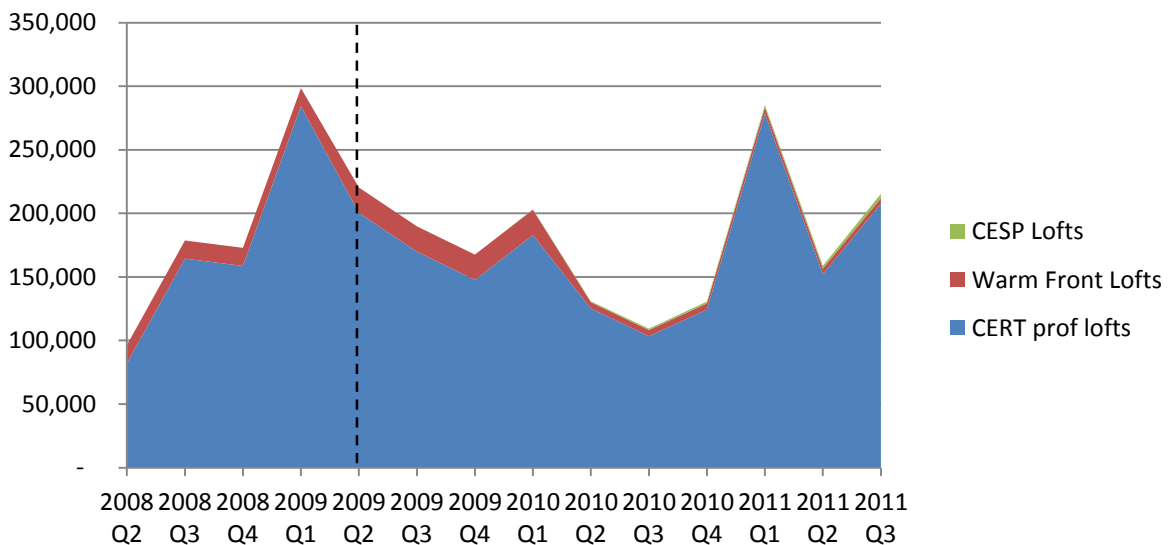


Figure 25: Quarterly professional loft installations under CERT, CESP and Warm Front since start of CERT

Cavity wall insulation, from the start of CERT in April 2008 to date (end of September), has averaged about 130,000 installations per quarter. Professional loft insulation over the same period has averaged 180,000 installations. In bringing the estimates of remaining insulation potential up to the present day, the installations to the right of the dotted line in each figure above are added to the EHS-based estimate of insulated cavities and lofts in Great Britain in April 2009.

iii. Home Energy Efficiency Database

The Home Energy Efficiency Database²⁷ adds layers of granularity to CERT data by enabling users to investigate measures installed by property, age, type or tenure; and to investigate delivery of measures by region, local authority or Parliamentary constituency. Unfortunately at time of writing, the online portal for generating HEED reports was experiencing technical problems.

C. Future – indicative predictions

i. Up to 2012: CERT Extension Impact Assessment

The CERT Extension Impact Assessment²⁸, published in mid-2010, contains the illustrative mix for activity under the CERT Extension. Of particular importance is the introduction of the Insulation Obligation (IO), and the illustration of how many professional insulation jobs would be required to meet the IO's carbon score. To ensure a reasonable illustrative mix, the Impact Assessment examined the opportunities for the installation of 'major measures' in the British housing stock.

Figure 26 illustrates how the Impact Assessment's prediction for cavity wall insulation opportunity in 2011 contrasts markedly with DECC's latest estimate, published in September and providing insulation estimates for July 2011.

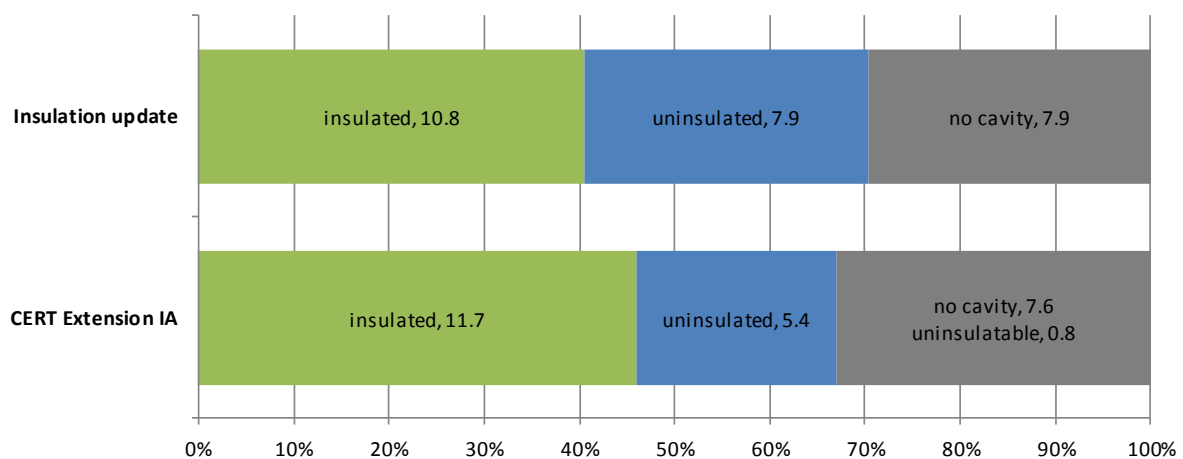


Figure 26: DECC estimates of cavity wall insulation in Britain for 2011 [% and in millions of dwellings]

The number of cavities deemed insulated at this time is lower by 900,000, despite assuming 1.1 million more dwellings in the stock. The number deemed uninsulated is higher by either 2.5 or

²⁷ Energy Saving Trust [Home Energy Efficiency Database](#)

²⁸ DECC (2010) [Extending the Carbon Emissions Reduction Target to December 2012](#)

1.7 million, depending on whether the 0.8 million deemed uninsulatable in the Impact Assessment are counted towards the uninsulated total.

For lofts (Figure 27), the Impact Assessment and DECC's latest update are not as readily comparable. The number of dwellings deemed to have no loft is now 800,000 higher. Furthermore, a different threshold was used in each estimate for the status of loft insulation where a loft does exist. What is very likely is that the later estimate puts the number of lofts with less than or equal to 125mm of insulation at a higher level than the Impact Assessment.

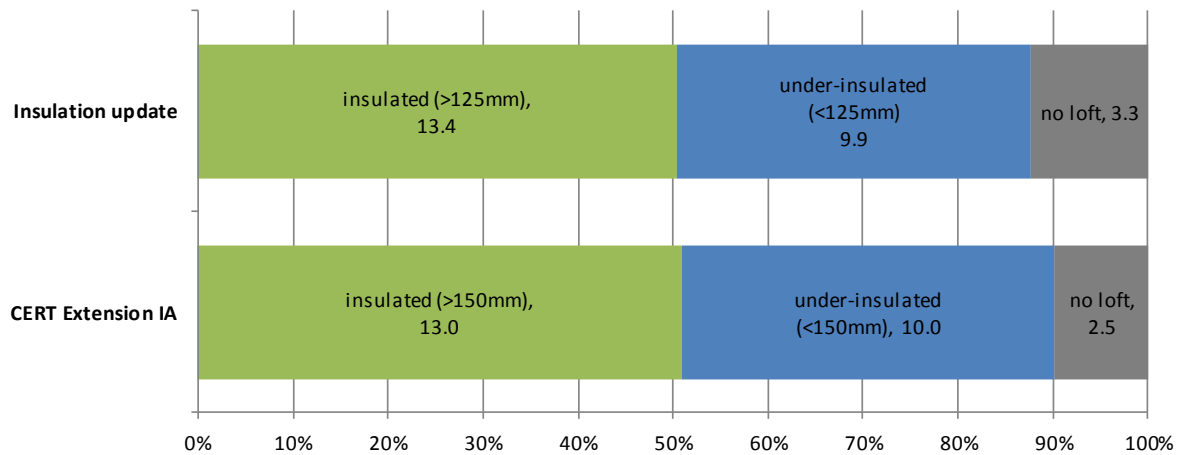


Figure 27: DECC estimates of loft insulation in Britain for 2011 [% and in millions of dwellings]

For cavities and for lofts, these differences can largely be accounted for by the fact that the Impact Assessment used the last (2007) edition of the older English House Condition Survey as the basis for its estimates. It may in addition have predicted more insulation activity to have taken place between its publication and the date of its estimate. DECC's later estimates use the English Housing Survey 2008 and do not project forward, which makes them more robust.

Looking towards the end of 2012 and the end of the CERT Extension, the Impact Assessment presented the following illustrative mix of insulation measures, intended to constitute a plausible means of attaining the minimum contribution from insulation to the extended CERT carbon target (68% of 104 life-time MtCO₂, i.e. 73.4 MtCO₂).

Table 18: Illustrative mix of measures to meet the CERT Extension's Insulation Obligation

	Cavity wall insulation	Loft insulation (top up)	Loft insulation (full install)	Solid wall insulation	Flat roof insulation	Under-floor insulation
Number of Installations²⁹	1,400,000	800,000	1,326,667	115,000	75,000	25,000

For the 21 month period of the CERT Extension (from April 2011 to December 2012), the mix notionally implied an average quarterly installation rate for cavities of 200,000, and 300,000 professionally insulated lofts. When the Impact Assessment was published, these implied rates were above the peak levels seen since the start of CERT.

²⁹ DECC (2010) [Extending the Carbon Emissions Reduction Target to December 2012](#), Table E1

In practice however, suppliers were able to claim contributions to the IO from the time at which the legislation was introduced – the start of August 2010. DECC stated that providing an extra eight months to meet the 73.4 MtCO₂ target would “*smooth delivery profiles and help overcome any local supply chain restrictions that may exist*”³⁰.

As a result, delivering this number of installations over 29, rather than 21, months (August 2010 to December 2012) would have required 147,000 cavities and 224,000 lofts per quarter. Glancing back at Figure 24 and Figure 25, these rates are indeed more in keeping with the delivery profile seen under CERT at the time the Impact Assessment was published. On the face of it, it would appear that the aim of the IO, framed in this way, was to ensure consistency and continuity in delivery of cavity wall and professional loft insulation, whilst delivering more over a longer period of time. However, a challenge to increase the amount of carbon savings was implicit in the number of solid wall insulation jobs presented in the illustrative mix. The 115,000 solid wall jobs translate into nearly 12,000 per quarter – more than three times the rate seen under CERT up to that point. Solid wall’s illustrative contribution to the IO’s carbon target was approximately ten per cent. Other things being equal, fewer solid wall jobs would necessitate more cavity wall and loft insulation (relatively less challenging in terms of increased rates), and vice-versa.

ii. Post 2012: Energy Act Impact Assessment

The Impact Assessment accompanying the Energy Act provided the first indication of expectations of Green Deal and ECO delivery. These were charted in Figure 9 and Figure 10 of the main report. Table 19 presents the measures considered by the Energy Act’s IA, and contrasts this with expectations set out in the Impact Assessment accompanying the Green Deal / ECO consultation, and the ambition for 2020 as set out in DECC’s 2011 Carbon Plan.

Table 19: Contrasting Energy Act with Green Deal / ECO consultation and Carbon Plan

	Energy Act IA (to 2020) ³¹			GD/ECO IA (to 2022)		Carbon Plan
	Low	High	Maximum feasible potential	Option 2	Technical potential	2020 ambition
Lofts	2.3	3.4	4.5	0.2	6.0	‘most’
Cavity wall	0.5	2.3	4.0	1.4	6.3	6.3
Solid wall	1.8	2.2	3.1	1.5	6.9	1.5
Glazing	0.7	1.0	1.4	-	-	-
Party wall	0.5	0.7	0.9	-	-	-
Insulated doors	1.3	1.9	2.5	-	-	-

For cavity wall insulation, there is a significant inconsistency between the Carbon Plan’s ambition to insulate the remainder by 2020 on the one hand, and the expectations as set out by the Energy Act and Green Deal consultation on the other. For lofts, there is a significant discrepancy across all three documents published in 2011. The Carbon Plan ambition is to insulate the remaining lofts by 2020 (although it does not state how many are left to do). The Energy Act Impact Assessment’s projection sees a significant share of remaining lofts insulated, while the Green Deal consultation suggests very little will be achieved.

³⁰ DECC (2010) [Paving the way for a Green Deal: Extending the Carbon Emissions Reduction Target supplier obligation to December 2012](#)

³¹ DECC (2011) [Energy Act 2011: Green Deal Impact Assessment](#)

Appendix II – Modelling CERT eligibility criteria

Chapters 2 and 5 include considerations of which types of households stand to receive insulation. There are four broad categories considered in this report, each of them based on different eligible groups under CERT and the forthcoming ECO. They are explained in simplified terms below:

- Households are deemed to be in the **Priority Group (PG)** if they are:
 - In receipt of at least one of a defined list of eleven benefits³², or:
 - In receipt of either child tax credit or working tax credit *and* with relevant income below a given threshold (£16,040 at the time of the latest English Housing Survey), or:
 - Have one household member who is at least 70 years old.
- The **Super Priority Group (SPG)** is a subset of the PG introduced as part of the CERT Extension. The qualifying criteria are more stringent, more complex and designed to target households more vulnerable than the PG alone can. The thrust of the SPG's focus is on the lowest income households with: young children; disabled persons; and pensioners (receiving pension credit)³³.
- The **SPG excluding those renting from social landlords** is a group which is currently being proposed by DECC as being eligible for Affordable Warmth under the ECO.
- And finally there are the **'able to pay' households**, which are not defined by income as their name suggests, but are simply not part of the above groups.

As outlined in the main report and in Appendix I, we have used the English Housing Survey to analyse the remaining insulation potential in the stock, using its dataset covering properties' physical characteristics. The EHS also gathers detailed information on households, mostly from households whose homes were also physically surveyed. We model which properties are occupied by which types of household using this household dataset. This is possible because the household interviews contain many relevant questions. The most important ones are about:

- Tenure – whether households rent from a private or social landlord, or whether they own their homes
- Household composition – we can tell, for example, which households have members aged 70 and older or five years and younger;
- Income – which enables us to identify who has relevant income below the £16,040 threshold;
- Other income – households are asked about which benefits they might be in receipt of. These form the cornerstone of most of the qualifying criteria for PG or SPG support.

Regarding data about other income, the EHS does not cover everything that is needed to fully identify households in the PG or SPG. Most of the benefits and credits needed for this are captured by the survey, including council tax benefit, housing benefit, income support, working tax credit, disability living allowance, attendance allowance, war disablement pension and

³² See [The Electricity and Gas \(Carbon Emissions Reduction\) Order 2008](#), page 13.

³³ See [The Electricity and Gas \(Carbon Emissions Reduction\) \(Amendment\) Order 2010](#), pages 2-3.

disability premium. There are two sets of assumptions we have had to make in order to overcome the main shortcomings of the EHS for identifying PG/SPG households.

The first relates to households who state they are claiming child tax credits. The total number who do so according to the EHS is too low. We have simply assumed that those households who report they are claiming working tax credits *and* have dependent children are claiming child tax credits as well, as they are very likely to be doing so. To this we have added households not claiming working tax credits, but with dependent children and an income below the £16,040 threshold.

The second problem with the EHS (as with other surveys) is that it significantly underestimates the number of households in receipt of pension credit – who form the largest group of households in the SPG. This is deemed to be the case because respondents may not be classifying it separately. This issue was acknowledged by DECC in its Impact Assessment of the changes to the eligibility criteria for Warm Front in March last year³⁴. To overcome this, much as DECC have done, we have assumed households to be in receipt of pension credit if they are theoretically entitled to it (which the EHS more or less enables us to do). No benefit is ever taken up by all those entitled to it, but this approximation does bring the numbers broadly into line with data from the Department of Work and Pensions, as well as broadly into line with DECC's own estimates in its Impact Assessment of the CERT Extension.

To model the numbers of households in each of the groups, we have implemented relatively straightforward logic formulas in Excel which replicate the eligibility criteria as described in the relevant statutory instrument for CERT. These formulas examine the income, household composition, tenure and benefits variables for each household sample case in the EHS for which there is a corresponding physical survey of the property. The result is a snapshot of which households are in which group at the time of the EHS. It is important to note that this snapshot should be considered no better than *approximate*.

From this point, we have created a second snapshot of remaining potential for cavity wall and loft insulation across the different eligibility groups at the end of 2012. This was worked out by:

- Using our estimate of the number of cavities and lofts delivered between April 2009 (the EHS' mid-point) and the end of 2012;
- Reducing the remaining potential in the PG by a share of the total cavities and lofts delivered. This percentage share is the same as that used by DECC in its Impact Assessment of the CERT Extension in its illustrative mix.
- Reducing the remaining potential in the SPG (subset of PG) and SPG excluding social housing tenants (subset of SPG) by a pro rata share of the cavities and lofts delivered.
- Non-PG or 'able to pay' households' insulation potential is reduced by the remaining cavities and lofts we assume to be delivered by the end of this year.

We have *not* attempted to model how individual households' circumstances might change between April 2009 and December 2012. As such the 2012 snapshot should be treated as indicative.

³⁴ DECC (2011) [Amendments to the eligibility criteria for the Warm Front scheme](#)

Appendix III – Delivery of insulation measures from EHS to 2013

In Section 1.2 of the report, we set out our estimate of the number of cavity walls and lofts insulated between the mid-point of the EHS data (April 2009) and the end of CERT in December 2012. This estimate was based on the existing records of insulation rates as well as projections for the coming months for the three largest delivery programmes: CERT, CESP and Warm Front.

A. Delivery through the CERT programme

At the time of publication, Ofgem had published the numbers of measures delivered through the CERT scheme to Q14, or the end of September 2011. Table 20 presents the number of professionally insulated lofts and cavities that were 'banked' by energy suppliers in each quarter.

Table 20: Cavities and lofts professionally insulated through CERT quarters 5-14

Month		Number of Installations ³⁵	
		Cavities	Lofts
Jun-09	q5	172,052	200,415
Sep-09	q6	141,937	169,880
Dec-09	q7	134,169	147,685
Mar-10	q8	127,565	182,897
Jun-10	q9	95,291	125,225
Sep-10	q10	83,921	103,361
Dec-10	q11	111,995	124,288
Mar-11	q12	170,088	278,458
Jun-11	q13	92,043	152,142
Sep-11	q14	132,570	207,456
Total Q5-Q14		1,261,631	1,691,807

Following discussions with the Cavity Insulation Guarantee Agency who see little to no divergence between registered installations and the published figures, we have assumed that suppliers mostly 'bank' their installations with Ofgem in the same quarter as they are delivered. As such, we assume that all of those lofts and cavity walls that are lodged with Ofgem between Q5 and Q14 are now filled, and represent a reduction in the remaining unfilled potential.

In order to estimate the number of cavities insulated from Q14 to the end of the CERT extension period in December 2012, we have looked in detail at the Insulation Obligation (IO). The IO was introduced for the CERT extension period (April 2011 – December 2012), and set suppliers a requirement to achieve 68% of their extended target through professionally installed insulation, equating to lifetime carbon dioxide savings of 73.4 MtCO₂. Crucially, suppliers were allowed to meet this through any professionally installed insulation measure from August 2010.

³⁵ Ofgem (2009-11) [CERT Updates](#)

Table 21: 'Illustrative Mix' of measures installed through the IO as set out by DECC

Measure	Installations
Cavity Wall Insulation	1,400,000
Loft Insulation (top up)	800,000
Loft Insulation (full install)	1,326,667
Solid Wall Insulation	115,000
Flat Roof Insulation	75,000
Under Floor Insulation	25,000

DECC set out an 'illustrative mix' for the CERT Extension in their Impact Assessment³⁶, as shown in Table 21. However, based on the figures being published by Ofgem between Q10-14, and following discussions with industry, it is clear that the reality will diverge from these illustrative figures in several ways:

- Given the challenge of meeting their CESP targets, suppliers are unlikely to see 115,000 SWI installations delivered under the CERT IO.
- Industry suggested that the proportion of the obligation targeting flat roof and under floor insulation was lower than the illustrative mix suggested.

Ofgem did not publish the number of insulation installations contributing to the IO, but did publish the total carbon score met by suppliers. We developed a CERT model to estimate the IO delivery to date, likely shortfall by the end of Q14, and the installation rates necessary to see that target met by the end of 2012, reconciling the installation numbers to date with the IO scores published by Ofgem. The following assumptions were made:

- Since suppliers had to submit plans to Ofgem for schemes that were specifically to contribute to the IO, not all installations from August 2010 contributed. We assume none of the Q10 measures and just 13% of the Q11 installations contributed to the IO.
- Rather than the 115,000 in the Illustrative Mix, just 23,200 solid walls get insulated under the IO. This reflects the concentration of SWI within CESP and the capacity constraints that this is causing. The 23,200 reflects the continuation of the historic delivery of SWI rates through to the end of CERT – 3,000 per quarter.
- Over the course of the IO, we assume the majority (approximately 80%) of professionally installed loft insulation jobs are to fill virgin lofts, with the remainder being loft top-ups. This is in line with what suppliers and installers have reported to us.
- Flat roof and under floor insulation contribute half of the carbon savings assumed in the illustrative mix, since the message from suppliers and installers is that these are not being delivered in large volumes.

Table 22 sets out the number of lofts, cavity and solid walls insulated between Q10 and Q14, our estimate as to the cumulative contributions to the IO carbon target, and the projected installation rates to Q19 if the IO is to be met.

³⁶ DECC (2010) [Extending the Carbon Emissions Reduction Target to December 2012](#)

Table 22: Installations delivered through CERT from Q10, our estimate of their contribution to the IO, and the projected number of installations required between Q15-19 if the IO is to be met

	Installations per quarter under CERT			Cumulative contribution to the IO		
	CWI	LI	SWI	CWI	LI	SWI
Sep-10 q10	83,921	103,361	1,821	0	0	0
Dec-10 q11	111,995	124,288	903	14,125	15,675	114
Mar-11 q12	170,088	278,458	3,857	184,213	280,600	3,078
Jun-11 q13	92,043	152,142	1,813	276,256	432,742	4,891
Sep-11 q14	132,570	207,456	3,285	408,826	640,198	8,176
Dec-11 q15	230,745	295,740	3,000	706,682	958,298	11,176
Mar-12 q16	230,745	295,740	3,000	920,650	1,248,448	14,176
Jun-12 q17	230,745	295,740	3,000	1,134,617	1,538,599	17,176
Sep-12 q18	230,745	295,740	3,000	1,348,584	1,828,749	20,176
Dec-12 q19	230,745	295,740	3,000	1,562,551	2,118,900	23,176

The rates in Table 22 are calculated in order for the IO carbon target to be met. Table 23 gives the carbon savings contributing to the IO for each of the measures in each quarter. Though based on assumptions, the total contributions to the IO for Q12-14 have been published by Ofgem in the CERT Updates, but no breakdown is given outlining the measures delivered to meet these totals.

Table 23: Cumulative carbon savings contributing to the IO based on the installation numbers we expect/project to be delivered through CERT

	Cumulative Carbon Savings through the IO				Total
	CWI	LI	SWI	Flat Roof/ Under floor Insulation	
Sep-10 q10	0	0	0	0	0
Dec-10 q11	353,478	235,955	6,997	0	596,431
Mar-11 q12	4,609,983	4,200,805	189,212	0	9,000,000
Jun-11 q13	6,913,388	6,764,563	300,667	421,381	14,400,000
Sep-11 q14	10,230,994	11,787,499	502,615	678,892	23,200,000
Dec-11 q15	17,684,951	13,895,318	687,042	972,689	33,240,000
Mar-12 q16	23,039,545	18,102,500	871,470	1,266,485	43,280,000
Jun-12 q17	28,394,140	22,309,681	1,055,897	1,560,282	53,320,000
Sep-12 q18	33,748,735	26,516,863	1,240,324	1,854,078	63,360,000
Dec-12 q19	39,103,329	30,724,044	1,424,751	2,147,875	73,400,000

From these figures, we expect a further 295,000 lofts and 230,000 cavities to be installed in each quarter until the end of CERT, in order for suppliers to meet their IO target. A further 1.48m lofts and 1.15m cavity walls are assumed to be filled in addition to those already reported by Ofgem.

B. Delivery through CESP and the Warm Front programme

In comparison to CERT, Warm Front and CESP see relatively few cavities and lofts insulated.

Warm Front installation rates for the first two years from April 2011 are presented in the scheme's annual reports. Figures for 2011/12 and the final three quarters of 2012 have been projected based on the budget of the scheme. 2011/12 saw the Warm Front budget cut from £345m to £110m, and a further cut to £100m in 2012/13. As such, we have projected a proportional reduction in insulation measures for 2011/12 and 2012/13 (the latter adjusted pro-rata to take us to the end of 2012).

At the time of writing, Ofgem had only released one CESP update containing detail on the number of measures delivered through the scheme³⁷. With only 7.2% of the scheme target delivered, this was insufficient information on which to base an informed projection. As such, we assume a level of insulation delivery through CESP that matches that set out in the Illustrative Mix (though we acknowledge that in the past these have not reflected subsequent reality).

As presented in Table 24, a total of 119,000 lofts and 44,000 cavities were assumed to have been insulated through CESP and Warm Front by the end of 2012.

Table 24: Number of loft and cavities insulated through Warm Front and CESP, Apr 2009–Dec 2012

Scheme	Year	CWI Installations	LI Installations
Warm Front	2009/10 ³⁸	20,800	39,764
	2010/11 ³⁹	8,589	20,385
	2011/12	2,740	6,503
	2012 (till end December)	1,866	4,429
CESP	2009-12 ⁴⁰	10,000	48,000
TOTAL		43,995	119,081

³⁷ Ofgem (2011) [Community Energy Update Saving Programme Update, Issue 3](#)

³⁸ Eaga (2010) [The Warm Front Scheme Annual Report 2009/10](#)

³⁹ Eaga (2011) [The Warm Front Scheme Annual Report 2010/11](#)

⁴⁰ DECC (2009) [Final Impact Assessment of proposals for implementation of the Community Energy Saving Programme \(CESP\)](#)

Appendix IV – Deconstructing the Green Deal / ECO Impact Assessment figures

Section 5.2 of the report presents a deconstruction of DECC's Green Deal and ECO Impact Assessment⁴¹, particularly analysing the measures delivered and likely recipients in terms of tenure and a derived split between 'able to pay' and 'Low Income/Vulnerable' households. Here we set out the logic used to determine these figures.

A. Solid wall insulation projections

The total number of solid walls expected to be insulated to 2022 were given in Figure 15 of DECC's impact assessment, repeated below in Figure 28.

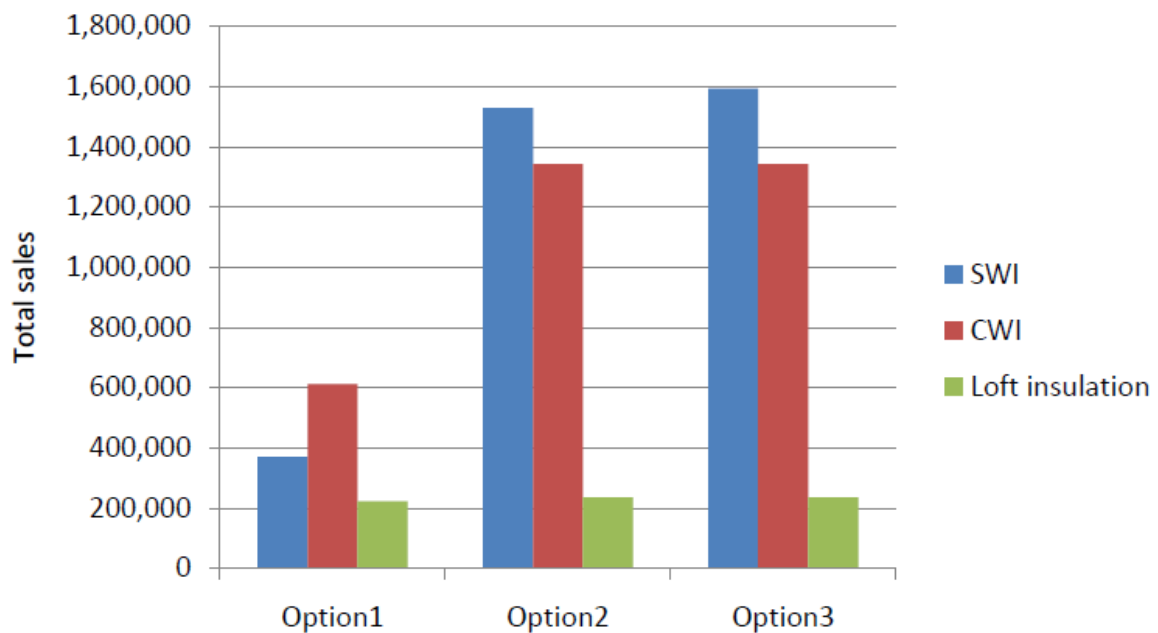


Figure 28: Replication of Figure 15 from DECC's Green Deal and ECO Impact Assessment. Option 2, the favoured option from DECC, sees 1.53m solid walls insulated by 2022.

Figure 17 of the Impact Assessment illustrated the expected delivery of these installations through to 2022 across the different tenures. Figure 29 below presents this data with the inclusion of a line representing the total solid wall insulation (SWI) delivered each year across all tenures.

⁴¹ DECC (2011) [Green Deal and the Energy Company Obligation - Draft Impact Assessment](#)

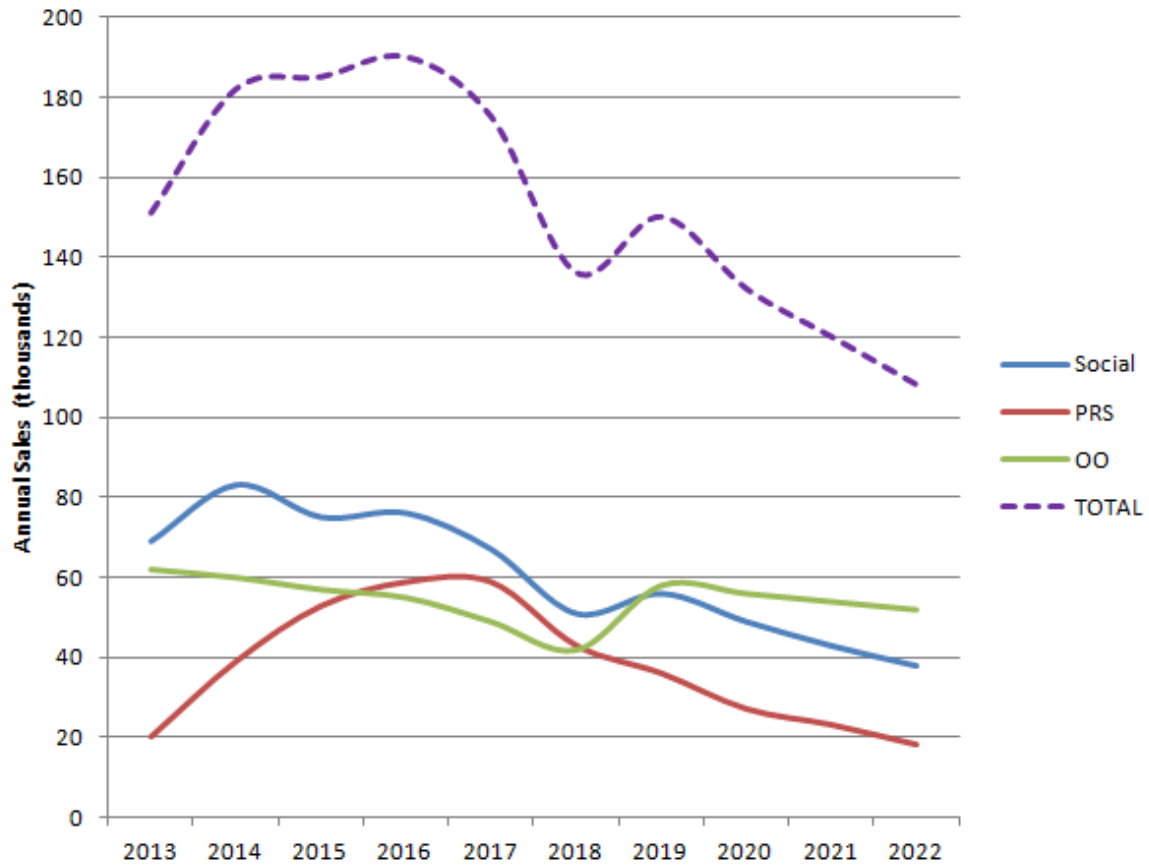


Figure 29: Replication of Figure 17 in DECC's Impact Assessment, with the addition of a total SWI delivery

From these charts it is possible to establish the expected delivery of SWI into the different tenures between 2013 and 2016, as shown in Table 25.

Table 25: SWI delivered in different tenures to 2016

Total SWI delivered 2013-2016:	706,000
<i>Of which:</i>	
Social	302,000
PRS	171,000
OO	233,000

In order to translate delivery across these three tenures into a high-level 'able to pay' / 'low income/vulnerable' split, the following logic was applied:

- 'Able to pay' includes all of the SWI expected to be delivered in owner-occupied households by DECC, and a proportion of those in privately rented and social housing.
- 'Low income/vulnerable' includes just a proportion of the privately rented and social sub-totals.
- These proportions were calculated using the English Housing Survey 2009.
 - For each combination of tenure and wall type, we calculated the number of 'low income/vulnerable' and 'able to pay' households for whom SWI would be a

suitable improvement measure: i.e. all those in solid wall or non-traditional walled homes.

- We use a definition of 'low income/vulnerable' consistent with that used throughout this report: those identified as qualifying from the priority group. The 'able to pay' households are those outside this group.
- The proportions used were:
 - 74% of social housing residents needing SWI are 'low income/vulnerable'⁴²
 - 58% of privately rented households needing SWI are 'able to pay'⁴³

Table 26 summarises the above considerations.

Table 26: Who is assumed to receive SWI to 2016 under DECC projections, using our groupings

	'able to pay'	'low income/vulnerable'
'Able to pay' includes all of the SWI expected to be delivered in owner-occupied households by DECC.	233,000	-
PRS SWI is distributed in proportion to the number of PRS solid walled properties whose residents fall across each group	99,000	72,000
Social SWI is distributed in proportion to the number of solid walled social homes whose residents fall across each group	80,000	222,000
Total split:	412,000	294,000

B. Cavity wall insulation projections

The amount of cavity wall insulation (CWI) delivered between 2013 and 2016 is derived from a combination of the Impact Assessment's Figures 15 (Figure 28 above) and 16, below.

- The former of these gives a total CWI delivered through Green Deal and ECO of 1.35m above business as usual (BAU).
- The latter indicates the projected rates for BAU and Green Deal-triggered CWI.
 - BAU rates of 35,000 per year are expected, 350,000 in total to 2022.
 - Green Deal will deliver an additional 630,000 from 2013-2022, though the number will fall to just 40,000 a year by 2022.
- By subtraction, the number of CWI installations projected to be delivered through the ECO Affordable Warmth target is 720,000⁴⁴.
- The rates in DECC's Figure 16 were used to calculate the delivery through Green Deal and BAU to 2016.
- Affordable Warmth (AW) cavities were assumed to be delivered linearly, at 72,000 per year.

⁴² Out of a total of 680,000 households in solid walled social homes, 500,000 are classified as 'low income/vulnerable'.

⁴³ Out of a total of 1.32m households in solid wall private-rented homes, 767,000 are classified as 'able to pay'.

⁴⁴ This is the 1.35m from Green Deal and ECO above BAU, minus the 630,000 from Green Deal alone.

Table 27: Breakdown of CWI projected to be delivered by DECC to 2022, and inferred to 2016

CWI under DECC IA	Total to 2022	Total to 2016
BAU baseline	350,000	140,000
Through GD	627,000	307,000
Affordable Warmth	723,000	289,000
Total cavities (minus AW)	1,700,000	736,000

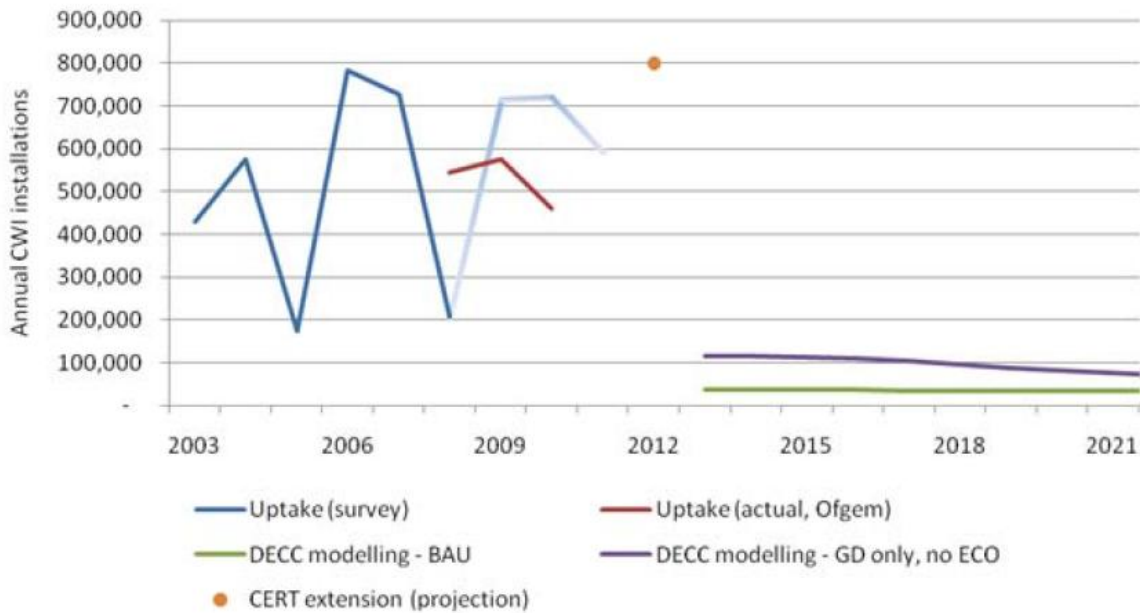


Figure 30: Replication of Figure 16 from DECC's Green Deal and ECO Impact Assessment

In order to translate delivery across the three delivery segments (BAU, Green Deal, and ECO Affordable Warmth) into a high-level 'able to pay' – 'low income/vulnerable' split, the following logic was applied:

- 'Low income/vulnerable' includes all of the cavities to be insulated through the Affordable Warmth programme.
- 'Able to pay' includes all of the CWI expected to be delivered via the Green Deal.
- Half of the cavities expected to be delivered under BAU are attributed to 'able to pay' households, the other half to social housing providers.
 - In turn, the cavities in this latter group are split between 'low income/vulnerable' and 'able to pay' on the basis of the number of each household group with unfilled cavities in the English Housing Survey 2009.
 - 79% of social housing households needing CWI are 'low income/vulnerable'⁴⁵.
 - We use a definition of 'low income/vulnerable' consistent with that used throughout this report: those identified as qualifying from the Priority Group. The 'able to pay' households are those outside this group.

⁴⁵ Out of a total of 1.175m households in unfilled cavity social housing, 925,000 are classified as 'low income/vulnerable'.

Table 28 summarises the above considerations.

Table 28: Who is assumed to receive CWI to 2016 under DECC projections, using our groupings

	'able to pay'	'low income/vulnerable'
'Low income/vulnerable' includes all of the cavities to be insulated through the Affordable Warmth programme	-	289,000
'Able to pay' includes all of the CWI expected to be delivered via the Green Deal	307,000	-
Half of the cavities expected to be delivered under BAU are attributed to 'able to Pay'	70,000	-
Half the BAU CWI are attributed to social housing providers. In turn, these are split on the basis of the number in each household group with un-filled cavities	15,000	55,000
Total split:	392,000	344,000

C. Cost and Carbon Saving Assumptions

In order to compare the cost and carbon savings of the DECC and ACE scenarios, the following assumptions were used:

Measure	Nature of household	Annual carbon reduction per measure (kgCO ₂ /a)	ECO subsidy required
Solid	'Able to pay' (ATP) household	2,100	£ 5,620
Cavity	ATP household	633	£ 50
Solid	Low income owner-occupier	774	£ 7,887
Solid (PRS)	Low income private-rented	774	£ 6,753
Solid (social)	Low income social housing	774	£ 5,620
Cavity	Priority Group	233	£ 300
Cavity (SPG)	Super Priority Group	62	£ 300
Cavity HTF	Low income, hard-to-fill	233	£ 1,000