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Business, Energy
& Industrial Strategy



Household Energy Efficiency

National Statistics

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Executive Summary

This annual report presents in-depth statistics on the Energy Company Obligation (ECO), the Green Deal (GD) and insulation levels in Great Britain (GB), up to the end of 2018. This report also contains an update on progress against the one million homes improved target, up to the end of February 2019. This is the fourth annual report on GD, ECO and insulation level statistics. See the [Headline statistics](#) release and tables for the latest quarterly and monthly statistics.

Energy Efficiency Measures, Households and Carbon Savings

- Between the start of May 2015 and the end of February 2019 there were around 852,000 households that had installed an improvement measure under ECO or the GD.
- Around 2.5 million measures were installed in around 2.0 million properties through ECO or under the GD Framework to the end of 2018.
- The provisional estimated lifetime carbon savings of measures installed by the end of December 2018, under ECO (excluding Affordable Warmth¹), Cashback, GDHIF and GD Plans was up to 37.9 MtCO₂ with provisional estimated lifetime energy savings up to 150,400 GWh. It should be noted that the only live scheme contributing to this since September 2018 is the GD. To date savings from the Affordable Warmth Obligation have not been included since that obligation is defined in terms of lifetime bill savings.

ECO Measures Installed and Households

- There were 2,454,300 measures installed under ECO up to the end of 2018. During 2018, 212,700 measures were installed, 5 per cent higher than the 201,900 installed in 2017.
- There were 888,100 Affordable Warmth measures installed under ECO up to the end of 2018, to date these savings are estimated to deliver around £11.3bn worth of notional lifetime bill savings.
- Around seven per cent of all households in Great Britain had a measure installed under ECO funding (i.e. 73 per 1,000 households). The North West and North East regions had the highest amount with 111 and 97 households with ECO measures per 1,000 households respectively. In Scotland there were 106 per 1,000 households and 75 per 1,000 households in Wales. Around 14 per cent of measures were installed in rural areas of Great Britain.

¹ The ECO Affordable Warmth Obligation is measured in terms of lifetime bill savings not lifetime carbon savings so has historically not been included in this summary. Given that ECO3 is only delivered through Affordable Warmth no new measures have been delivered under ECO since the end of September 2018 so these figures are virtually unchanged since last quarter. BEIS is looking to develop estimates of the carbon savings from Affordable Warmth to include in a future publication.

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- Around 85 per cent of ECO measures were installed in properties that used gas as their main fuel type (2,094,000 measures); however this has steadily decreased from 90 per cent in ECO 1 (2013 – March 2015), to 85 per cent in ECO2 (April 2015 – March 2017) and to 66 per cent in ECO Help-to-Heat (April 2017 - September 2018).

Green Deal Plans

- At the end of 2018 there were 13,830 'live' or 'completed' GD Plans in unique properties in GB (i.e. measures were installed, billing had commenced or had been paid off early), with 11,777 of these plans 'live', in unique properties.

Home Insulation Levels

It is estimated that at the end of December 2018:

- There were 28.4 million homes in GB. Of these, 19.9 million had cavity walls with the remaining 8.5 million having solid walls and 24.5 million properties had a loft.
- There were 269,000 more properties with cavity wall insulation than at the end of 2017; 204,000 more had loft insulation of at least 125mm, and 18,000 more had solid wall insulation².
- 13.8 million homes had cavity wall insulation (70 per cent of homes with cavity walls). Of the 5.3 million homes without cavity wall insulation, 4.0 million are easy to treat standard cavities, and 1.3 million are hard to treat (including standard cavity wall property with issues such as structural faults or presence of a conservatory, creating access issues and some unfillable cavity walls). There are around 0.8 million properties which may or may not have cavity wall insulation.
- 16.2 million homes had loft insulation of at least 125mm (66 per cent of homes with lofts). Of the 8.0 million homes with lofts without at least 125mm of insulation, only a small number are estimated to have no insulation. Around 5.8 million of these homes require easy to treat loft insulation, and 2.3 million are hard to treat (including room in roofs, flat roofs and some unfillable lofts).
- 752,000 homes had solid wall insulation, which is nine per cent of homes with solid walls.

² It should be noted that both new build and retrofit contribute to these figures. See Section 4 for details.

Section 1: Energy Efficiency Measures, Households and Carbon Savings

This commentary section provides detailed information on the overall number of energy efficiency measures delivered under central Government schemes, as well as reporting progress against the one million homes improved target. It also reports estimates of the carbon savings achieved through these installed measures. Where the report refers to table numbers in brackets, these are included in the accompanying Excel tables [here](#).

Household Energy schemes

The Energy Company Obligation (ECO) and Green Deal (GD) are Government energy efficiency schemes which began operating in 2013. They replaced the previous schemes: Carbon Emissions Reduction Target, Community Energy Saving Programme and Warm Front. Their aim is to encourage the uptake of energy efficiency measures so that the efficiency of the building stock is improved. This has impacts such as reduced consumer bills and increased comfort in the home.

Between January 2013 and February 2019, energy efficiency measures were installed in:

- 1,962,600 properties under the Energy Company Obligation (ECO);
- 35,300 properties using the Green Deal Home Improvement Fund (GDHIF);
- 14,700 properties following the redemption of Cashback vouchers;
- 13,800 properties using a GD Finance Plan; and
- 15,600 properties using GD Communities funding.

There is a small amount of double counting between these mechanisms (around 24,000 households), i.e. measures not installed in unique properties. (Table 1.2)

Progress in other household energy efficiency schemes including Renewable Heat Incentive, Feed in Tariff and Smart Metering are reported in Annex C.

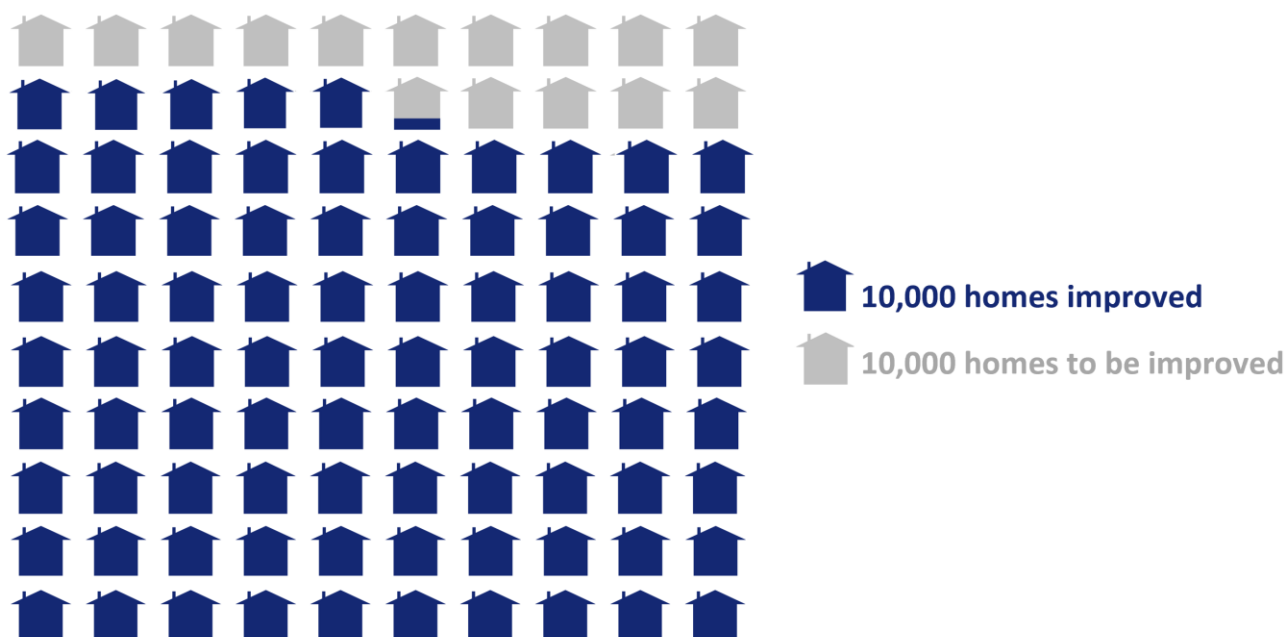
One million homes improved target

The Clean Growth Strategy³ announced a target to upgrade around one million homes through the Energy Company Obligation (ECO) and other Government domestic energy efficiency schemes, including insulation and other energy efficiency measures. The period covered is over five years from the start of May 2015 through until the end of April 2020.

Between the start of May 2015 to the end of February 2019 (three years and ten months) there were around 852,000 households that had installed an improvement measure under ECO or the GD (GD Plans, GDHIF or GD Communities). This implies that 85 per cent of the required homes have been improved in 77 per cent of the months available. (Table 1.3)

Please see the methodology note [here](#) for more details of the measurement of this target.

Infographic 1: Proportion of the 1 million homes target achieved, up to end February 2019



³ Clean Growth Strategy: Page 13

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/651916/BEIS_The_Clean_Growth_online_12.10.17.pdf "Support around £3.6 billion of investment to upgrade around a million homes through the Energy Company Obligation (ECO), and extend support for home energy efficiency improvements until 2028 at the current level of ECO funding."

Estimated carbon and energy savings for measures installed

This section estimates savings derived from measures installed through ECO and GD.

Estimated carbon and energy savings relating to measures installed (Table 1.4)

Table 1.4 presents the estimated impact of measures installed under ECO⁴ (through the Carbon Saving Obligation and Carbon Saving Communities Obligation⁵), and through the GD framework up to the end of December 2018. It should be noted that the only live scheme contributing to this since September 2018 is the GD. To date savings from the Affordable Warmth Obligation have not been included since that obligation is defined in terms of lifetime bill savings.

The provisional estimated lifetime carbon savings of measures installed by the end of December 2018, under ECO (excluding Affordable Warmth⁶), Cashback, GDHIF and GD Plans was up to 37.9 MtCO₂ with provisional estimated lifetime energy savings of up to 150,400 GWh (Table 1.4). For context, UK carbon dioxide emissions for the residential sector (including electricity) in 2017 were 95.2 MtCO₂⁷ and the average measure has a lifetime of 41 years.

For GD Plans, GDHIF and Cashback measures⁸, the net estimated carbon savings has been calculated from the difference between that in the original EPC (pre-installation of measures) and the updated EPC (post installation of measures). For ECO measures, the estimated lifetime carbon savings has been adjusted to account for estimated levels of comfort taking, which better represent our understanding of the assumed net impact of the installed measures. Estimated carbon and energy savings relating to measures installed through ECO, Cashback, GDHIF and GD Plans are reduced by 15 per cent to account for comfort taking following the installation of measures. This is consistent with analysis for the 2012 ECO/GD [Final Stage Impact Assessment](#) analysis but does not reduce the progress reported against the obligations. Therefore, the carbon estimates for ECO may differ from those published through Ofgem. Also all carbon and energy savings from installed measures are adjusted by the relevant specific in-use factors for each measure type⁹ for ECO¹⁰ and for GD delivery mechanisms. More information on the methodology used is included [here](#).

⁴ The expected net reduction in carbon from ECO measures depends on the reductions in the traded sector emissions out-weighting any increase in non-traded sector emissions.

⁵ Affordable Warmth is excluded because carbon reductions are not the stated aim of this policy and difficulties in accurately estimating their carbon impact).

⁶ The ECO Affordable Warmth Obligation is measured in terms of lifetime bill savings not lifetime carbon savings so has historically not been included in this summary. Given that ECO3 is only delivered through Affordable Warmth no new measures have been delivered under ECO since the end of September 2018. BEIS is looking to develop estimates of the carbon savings from Affordable Warmth to include in a future publication.

⁷ <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2017>

⁸ Carbon savings from Green Deal Communities have not been included due to the large amount of double-counting between this and other schemes (specifically ECO).

⁹ Domestic measures in-use factors, page 9

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48407/5505-how-the-green-deal-will-reflect-the-insitu-perfor.pdf

¹⁰ Ofgem ECO measures <https://www.ofgem.gov.uk/ofgem-publications/83100/energycompaniesobligation-measures.pdf>

Section 2: The Energy Company Obligation

This section provides detailed information on different elements of the Energy Company Obligation (ECO) including geographical breakdowns, ECO brokerage and ECO costs. Where the report refers to table numbers in brackets, these are included in the accompanying Excel tables [here](#).

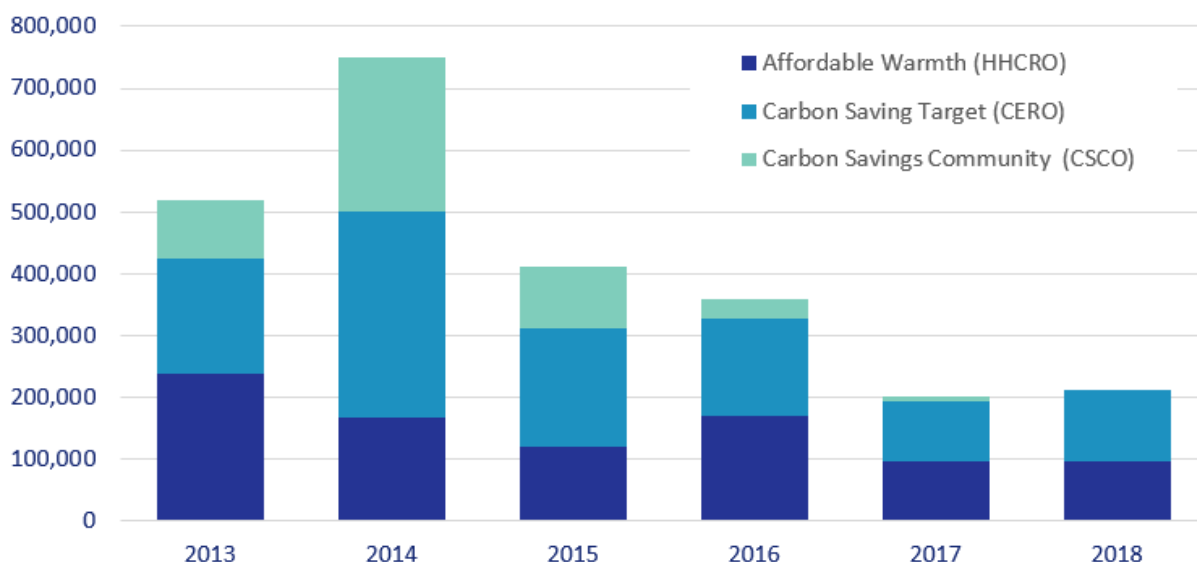
Measures installed under ECO

The [Energy Company Obligation](#) (ECO) was introduced in January 2013 to reduce energy consumption and support people at greater risk of living in fuel poverty. The larger energy companies are set obligations to install insulation and heating measures in order to achieve reductions in energy usage and heating costs. All measures installed under ECO are provisional until the end of the obligation period with checks undertaken by Ofgem.

Headlines for ECO delivery

There were 2,454,300 measures installed under ECO up to the end of 2018, with 212,700 installed in 2018, 5 per cent higher than the 201,900 installed in 2017. The number of measures delivered fell each year between 2014 and 2017 as the size of the obligation has been reduced over the different phases of the scheme. (Table 3.1)

Chart 1: ECO measures installed, by obligation, by year, up to end 2018



ECO Help-To-Heat ran from April 2017 to September 2018 and delivered 328,000 measures. Some of these though may be re-elected as ECO3 measures where suppliers have exceeded their Help-To-Heat targets. (Table 2.4) The ECO3 phase went live on 3rd December 2018 but measures have been installed since October 2018. Up to the end of February 2019, 40,100 measures have been installed through this phase. (Table 2.5)

Estimated lifetime bill savings for Affordable Warmth measures installed (Table 2.1)

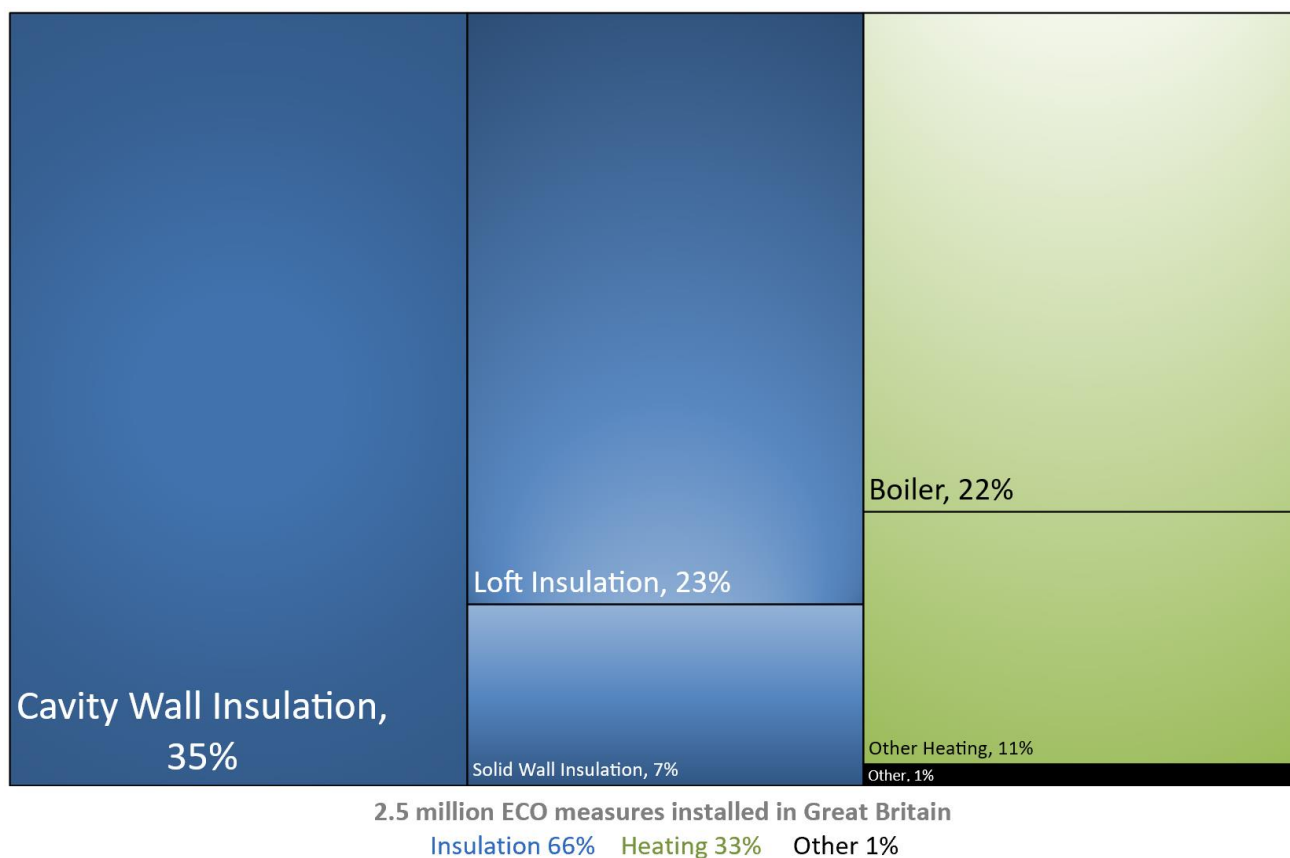
There were 888,100 Affordable Warmth measures installed under ECO up to the end of 2018, with 97,900 installed in 2018, 1 per cent higher than the 97,000 installed in 2017. Since October 2018, the whole of ECO3 is delivered under the Affordable Warmth Obligation.

To date these savings are estimated to deliver around £11.3bn worth of notional lifetime bill savings¹¹, of which £1.5bn of savings delivered in 2018.

Type of measures installed under ECO (Table 3.1)

Over the ECO scheme as a whole, 66 per cent of measures have been insulation measures, including cavity wall insulation (35 per cent), loft insulation (23 per cent) and solid wall insulation (7 per cent). The remainder are mostly heating measures with 22 per cent boiler measures and a further 11 per cent for 'other heating' measures.

Infographic 2: ECO measures by measure type, up to end February 2019.



¹¹ Each Affordable Warmth measures is given an assumed lifetime bill saving based on the type of measure and the house in which it is installed. For ECO3 and Help-To-Heat this is based on 'Deemed scores' and previously an assumed saving using the Standard Assessment Procedure (SAP) methodology.

Over the year to December 2018, 38 per cent of measures have been cavity wall insulation, 20 per cent loft insulation with 16 per cent boiler measures and a further 16 per cent for 'other heating' measures. (Table 3.1)

Geographic location of measures installed under ECO (Tables 3.3-3.7)

Tables 3.3-3.6 present the number of measures installed under ECO, broken down by obligation, in each region (Table 3.3), Local Authority (Table 3.4) and Parliamentary Constituency (Table 3.6) up to end December 2018. Around one fifth (18 per cent) of ECO measures were in the North West (447,200), the highest in any region. Thirteen per cent of ECO measures were installed in Scotland (308,300) and five per cent were in Wales (133,300).

Table 3.5 reports the measures installed through Flexible Eligibility¹² for Local Authorities who have been active in this aspect of the scheme. Up to the end of December 2018, 223 Local Authorities have participated in this aspect of the scheme, an increase from 61 up to the end of December 2017. Up to December 2018, 66 local authorities had seen 50 or more measures installed through Flexible Eligibility, eight of these had over 500 measures installed. The South West and South East regions had the highest share in England with 20 per cent and 10 per cent of flex measures in Great Britain respectively. Wales had 24 per cent and Scotland 10 per cent. (Table 3.5)

Table 3.7 presents the number of measures installed under ECO by measure type and region. Fifty-seven per cent of solid wall insulation was installed in England, 34 per cent in Scotland and nine per cent in Wales. Thirty-eight per cent of all window glazing installed under ECO was in London. Around one fifth (18 per cent) of all cavity wall insulation installed up to end December 2018 was installed in the North West, as well as the highest proportion of boiler installs (22 per cent). The North of England (North East, North West and Yorkshire and The Humber) account for 44 per cent of all boilers installed under ECO.

Geographic location of households receiving ECO measures (Tables 4.1, 4.4 & 4.5 and Map 1)

When comparing areas, it is more representative to use the number of households in receipt of ECO measures per 1,000 households. In GB, on average, there were around 73 households in receipt of ECO measures per 1,000 households or, in other words, around seven per cent of all households in GB had a measure installed under ECO funding.

The North West and North East regions had the highest amount with 111 and 97 households with ECO measures per 1,000 households respectively. In Scotland there were around 106 per 1,000 households and 75 per 1,000 households in Wales. Na h-Eileanan Siar¹³ in Scotland had the highest proportion of households with ECO measures in any Local

¹² Since April 2017, Local Authorities can determine eligible homes under the new 'flexible eligibility' mechanism. Suppliers can use this voluntarily for up to 25 per cent of their ECO3 obligation and up to 10 per cent of their Affordable Warmth obligation under ECO Help-to-heat.

¹³ Na h-Eileanan Siar was formerly known as the Western Isles, then Eilean Siar and then Comhairle nan Eilean Siar.

Authority (LA) in GB with 218 per 1,000, having seen its number of households receiving measures increase by over 50 per cent in the last year.

Rurality of measures installed under ECO (Tables 3.8-3.9)

Tables 3.8 and 3.9 provide a breakdown of measures installed under ECO into rural and urban areas by country, by obligation and by region. Across the whole of Great Britain around 14 per cent of measures were installed in “rural¹⁴” areas. This varies across the country with 34 per cent of measures installed in Wales and 14 per cent installed in Scotland being located in rural areas. Table 3.8 shows the number of measures installed under the rural sub-obligation.

Further breakdowns of measures installed under ECO (Tables 3.2, 4.2 & 4.3)

These tables present further analysis of measures installed under ECO up to end December 2018.

Table 3.2 shows that overall 85 per cent of ECO measures were installed in gas-fuelled properties but this share fell to 65 per cent over the last year.

Table 4.2 shows that around three quarters (73 per cent) of properties with ECO measures were houses, 17 per cent were flats and the remainder were bungalows, maisonettes and park homes. However, this varies by obligation, with a greater proportion of properties with measures installed under Carbon Saving Target and Carbon Saving Communities being flats (23 to 20 per cent), compared with properties with measures installed under Affordable Warmth (seven per cent).

Table 4.3 shows that around 70 per cent of homes receiving ECO measures are in the owner-occupied sector, 15 per cent in the social rented sector and 15 per cent in the private rented sector. Over the last year, 29 per cent of additional homes receiving ECO measures were in the social rented sector reflecting the change to the policy in April 2017 when social housing became eligible for Affordable Warmth measures.

¹⁴ Includes the groups, rural town and fringe, rural town and fringe in a sparse setting, rural village, rural village in a sparse setting, rural hamlet and isolated dwellings, rural hamlet and isolated dwellings in a sparse setting, or in Scotland Accessible Rural, remote rural, and very remote rural. This summary is not based on the rural sub-obligation.

Map 1: Households in receipt of ECO measures by Local Authority per 1,000 households up to end December 2018

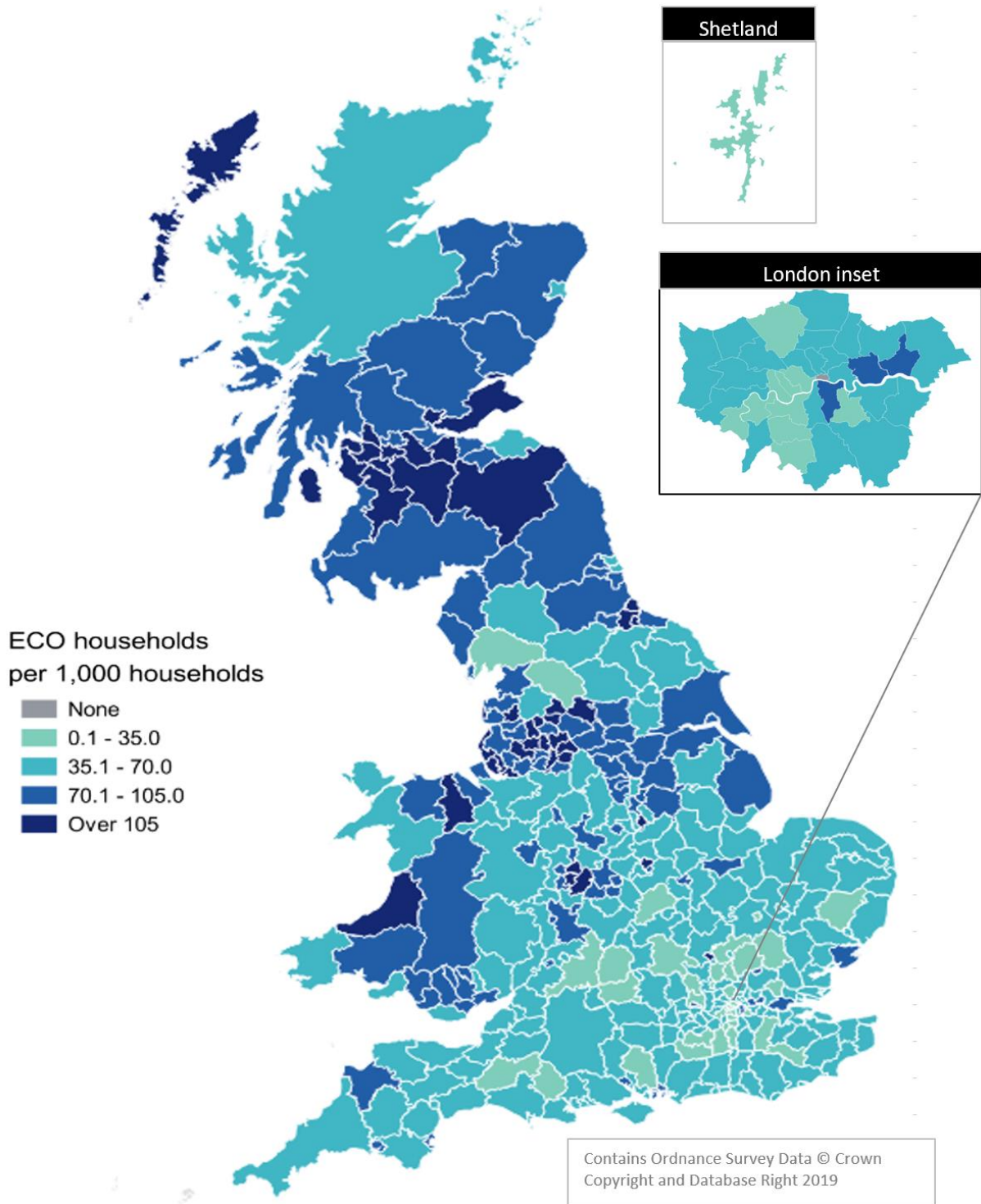


Table 4.4 and Map 1 shows the number of households in receipt of ECO measures by Local Authority per 1,000 households. This illustrates the concentration of households in receipt of ECO measures in the North West, North East and West Midlands in England, as well as parts of Wales and Scotland.

ECO Brokerage

The [ECO Brokerage](#) system (Tables 5.1 - 5.5) operates as a fortnightly anonymous auction where providers can sell 'lots' of future measures of the ECO Obligation, to energy companies in return for ECO subsidy.

Table 5.3 presents the clearing prices of all lots sold through ECO1-2 brokerage. To the end of March 2017 there were 105 auctions with a total value of contracts let worth £479 million, 99 per cent of all ECO brokerage up to March 2019. Trading for ECO Carbon Saving Communities ceased with auction 105.

Auctions that have taken place after the extension of the ECO2 scheme in April 2017 (auction 106 to 143) are listed in table 5.4. During this phase, activity in the auction markets has remained subdued with less than £4m traded and over 75 per cent of auctions concluding with no trading.

At the start of ECO3 the lots remained unchanged so were reported in table 5.4 up to 5th February 2019. New lots were introduced for the 19th February auction, the results of which are shown in table 5.5. The first ECO3 auction on 2nd October traded nearly £2m but since then, 9 out of 11 auctions have concluded with no trading.

For more detail on the results of each auction, please see [ECO Brokerage](#).

ECO Costs

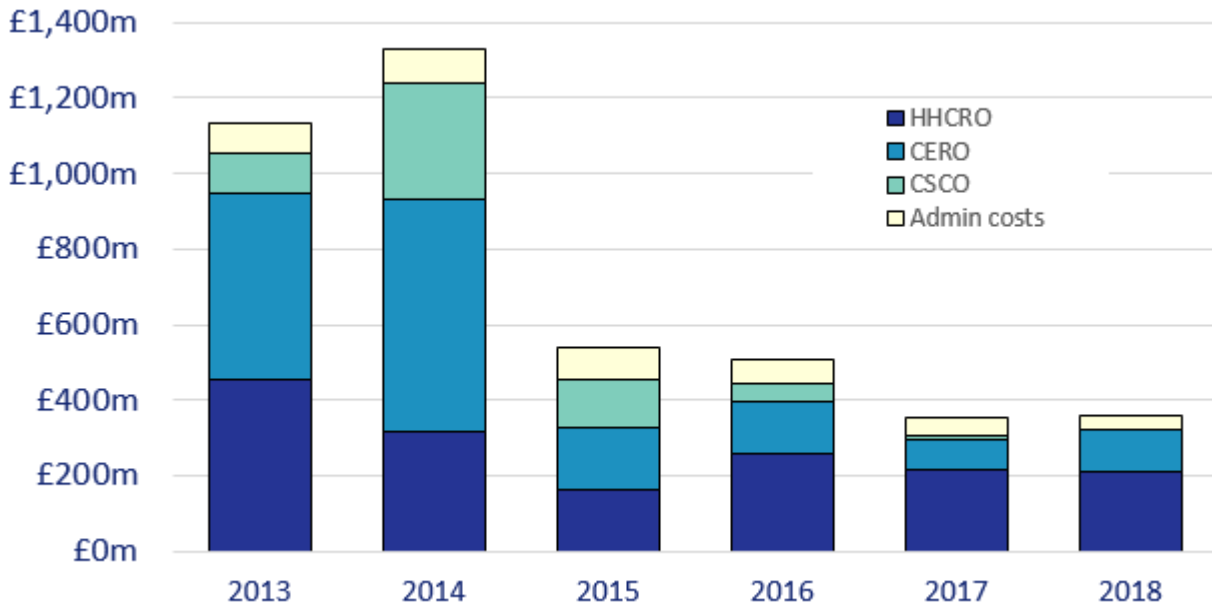
As with any scheme there are costs associated with delivering the ECO scheme. BEIS receives summary information, reported by energy suppliers, covering the costs associated with delivering ECO for all obligated energy suppliers at the end of each quarter. For more information on ECO costs please see [Annex A](#) and full definitions are included in the [Methodology note](#).

The latest aggregate delivery costs, up to the end of 2018 (covering the whole of ECO1, ECO2, ECO Help-To-Heat and the first 3 months of ECO 3), are included in Table 6.1, and include some revisions as reported by energy suppliers. Historic costs and future costs may go up or down depending on a range of factors.

Chart 2 below shows that the total delivery costs from January 2013 to December 2018 were around £3.81bn, with an additional £407m in administrative costs. This meant that the total cost of ECO for the period was £4.22 billion. Over the last year, suppliers spent £360m including £40m in administrative costs. (Table 6.1)

The costs reflect how the size of obligation was reduced from ECO1 to ECO2, and further reduced for ECO Help-To-Heat.

Chart 2: Estimated ECO delivery costs by obligation and year up to December 2018



Tables 6.2-6.3 show the average cost by obligation and the highest average cost and lowest average cost reported by suppliers for each obligation as at the end of March 2017 for the ECO phase (Table 6.2) and from April 2017 to September 2018 for the ECO Help-to-Heat phase (Table 6.3). The suppliers have not been identified to protect commercial confidentiality. This shows that some energy suppliers are discharging their obligation more cost effectively than others. Table 6.4 just shows the average cost per obligation until the distribution can be presented in a non-disclosive way.

A simple comparison of Tables 6.2-6.4 shows that while cost associated with Affordable Warmth measures have remained broadly stable between the ECO phases, the average cost (all suppliers) for the Carbon Saving Obligation has fallen by around two thirds.

Section 3: The Green Deal

This section provides the latest information on Green Deal Finance Plans. Since the Green Deal Framework was launched in 2013 there have been a number of schemes within the framework. Green Deal finance plans is the only scheme that is still live and is reported below. For final figures for other schemes including the Green Deal Home Improvement Fund and Green Deal Communities please see the [2017 Detailed report](#). BEIS stopped reporting the number of Green Deal Advice Reports in [June 2018](#) as they are no longer considered an effective lead indicator of Green Deal Plans and their associated measures¹⁵.

Green Deal Finance Plans

The Green Deal (GD) is a government initiative that is designed to help home owners install energy efficiency measures into their properties, and the costs of these measures are paid back through their energy bill over a period of time; this is in the form of a Green Deal Finance Plan (GD Plan). This is unlike a conventional loan because the loan stays with the property where the measures have been installed rather than moving with the individual who took out the loan.

Uptake of the GD was below expectations and in July 2015 the Government [announced](#) there would be no further public investment in the scheme. The Framework to support the programme has remained in place to service existing GD Plans and for any private finance providers wishing to enter the market. The Green Deal Finance Company – the vehicle created to finance GD loans and in which the Government ended public investment during 2015 – was purchased in January 2017 by new owners, who are now offering new GD plans.

At the end of 2018 there were 13,830 'live' or 'completed' GD Plans in unique properties in GB (i.e. measures were installed, billing had commenced or had been paid off early), with 11,777 of these plans 'live', in unique properties. 36 properties had two 'live' GD Plans, so there are 11,813 'live' GD Plans, in total, at the end of 2018. For the latest statistics please see the latest [Headline release](#).

To the end of 2018 the most common measure to install was a boiler, accounting for 31 per cent of all recorded measures. In 2018, boilers accounted for 13 out of the 29 measures installed.

¹⁵ Some stakeholders have significantly reduced the typical lead time between a GDAR being lodged and a Green Deal Plan going live, meaning that there is often little lag between these. GDARs are also used to facilitate access to some local energy efficiency schemes and based on recent numbers these reflect the majority of activity. It is therefore not possible to determine the share of GDARs that result in a Green Deal Plan and hence analyse the take up rate of households receiving Green Deal Finance relative to those who started the process

During 2018, 548 plans were completed and 25 went live. We estimate that the total initial loan amounts (i.e. excluding APR interest payments) associated with these 'live' plans was around £42.2m and 'completed' plans was around £7.2m. Therefore, the average initial loan amount per GD Plan was around £3,600.

The Supply Chain

The supply chain to support the Green Deal (GD) developed in various ways since October 2012. This includes individual Advisors (who carry out and produce GDARs) and Assessor organisations (who employ authorised GD Advisors), GD Providers (who quote for and arrange GD Plans with customers), and Installer organisations (who install energy efficiency improvements under the GD finance mechanism).

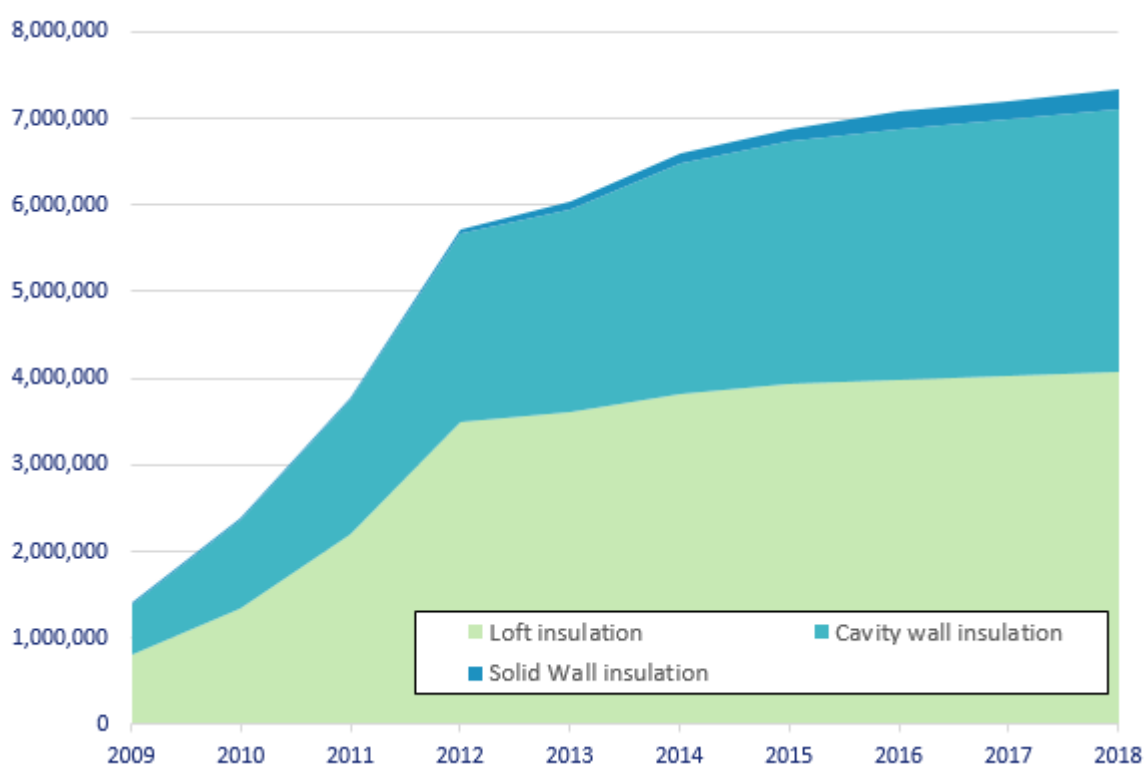
The Supply chain (Table 7.4)

The number of accredited GD Assessor organisations decreased from 44 at the end of 2017 to 24 at the end of 2018. The number of active individual Advisors also decreased from 1,891 to 1,501. The number of GD Providers decreased from 169 to 143. There were 1,030 Green Deal accredited installer organisations at the end of 2018; this was an eight per cent decrease since the end of 2017. These organisations will provide a wide range of different measures and in different geographical locations

Section 4: Estimates of Home Insulation Levels in Great Britain

Chart 3 shows that over the last ten years since 2009, 7.3m major professional insulation (cavity wall, solid wall and loft) measures have been installed through ECO and previous Energy Obligations¹⁶. While the number of measures delivered per year has fallen as the size of the obligation has been reduced the focus of the obligations has changed to include more expensive measures such as solid wall insulation and target the scheme more towards vulnerable households.

Chart 3: Cumulative professional insulation measures installed through Energy Obligations 2009-2018



This section presents estimates of the number of homes in Great Britain (GB) with loft, cavity wall and solid wall insulation. It gives headline estimates for the number of insulated

¹⁶ Measures are not included from the Community Energy Savings Programme as these are not available by year. Measures from the Carbon Emissions Reduction Target can be found in table 3.27 of Energy Consumption in the UK <https://www.gov.uk/government/statistics/energy-consumption-in-the-uk> . A wide range of energy and carbon saving measures are included in these schemes.

properties and sets out the remaining potential for insulation in properties in GB. Estimates of insulation levels were re-based to April 2013 to reflect more up to date information available in the English and Scottish Housing Surveys and close to the start of Energy Company Obligation and Green Deal schemes. Full details on how these estimates are constructed, based on the new methodology, can be found in the [Methodology note](#).

Housing stock

The housing stock in Great Britain is made up of different types of properties, for example cavity wall and solid wall properties. It is important to understand the profile of the housing stock since different insulation measures are suitable for different property types.

At the end December 2018 there were an estimated:



Levels of insulation

Estimating levels of different types of insulation in the housing stock makes it possible to see progress to date and how much work there is left to do.

At the end of December 2018:

- 13.8 million properties had cavity wall insulation (70 per cent of properties with a cavity wall)
- 16.2 million had loft insulation (66 per cent of properties with a loft)
- 752,000 had solid wall insulation (nine per cent of properties with solid walls)

Progress over the last twelve months:

Taking into account retro-fit insulation delivered through Government schemes¹⁷ and new properties¹⁸ built with insulation during the last year, in December 2018 there were:

- 269,000 more homes with cavity wall insulation (a 2 per cent increase between the end of December 2017 and December 2018) of which 82,000 were through retrofit and 188,000 through new build.
- 204,000 more homes with at least 125mm of loft insulation (a 1 per cent increase between the end of December 2017 and December 2018) of which 42,000 were through retrofit and 162,000 through new build.
- 18,000 more homes with solid wall insulation compared with December 2017 (a two per cent increase between the end of December 2017 and December 2018). All these are assumed to be through retrofit.

Sources of increase in insulation levels

Increases in the number of properties with insulation result from new properties being built and from retro-fit insulation, predominately through Government schemes.

Of retrofit measures since 2013, over 99 per cent of cavity wall and loft insulation measures have been delivered through ECO. Nearly 80 per cent of solid wall insulation over this period has been through ECO but with 39,000 SWI measures through the Green Deal framework.

¹⁷ Insulation measures delivered in Scotland exclusively under the Green Homes Cashback scheme are excluded from the figures.

¹⁸ Information is not available on the wall construction of new homes. Typically building regulations would be met by insulated cavity walls but other construction types could be used with an equivalent insulating performance. In this publication it is assumed that all new builds since April 2013 have cavity wall insulation. It is estimated around 188,000 new builds were completed in 2018. MHCLG, Live tables on house building, by country (Tables 212 to 215) <https://www.gov.uk/government/statistical-data-sets/live-tables-on-house-building>

Chart 4: Number of homes in GB with cavity wall insulation and loft insulation by source, December 2018

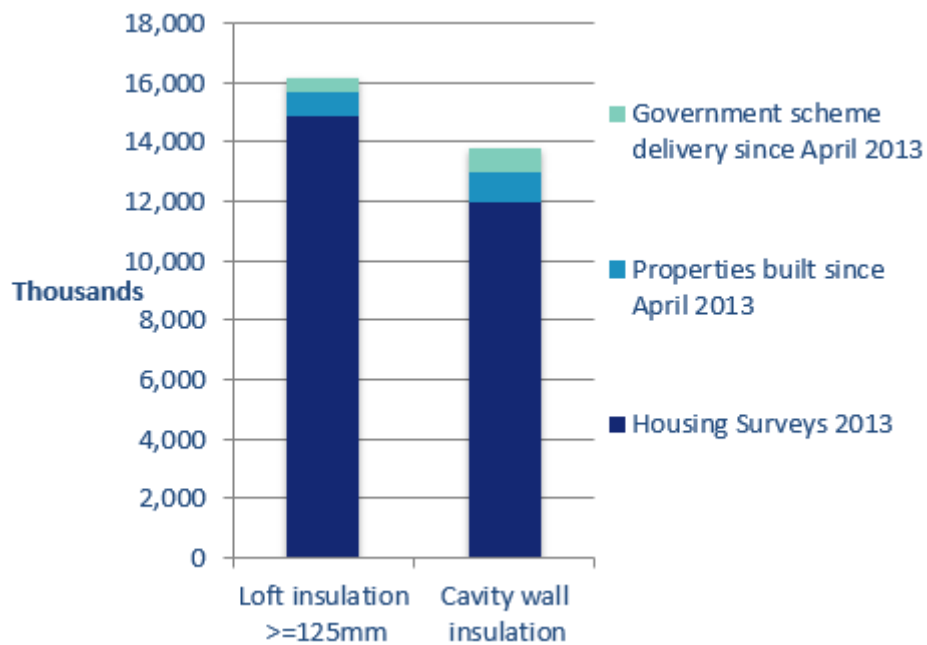
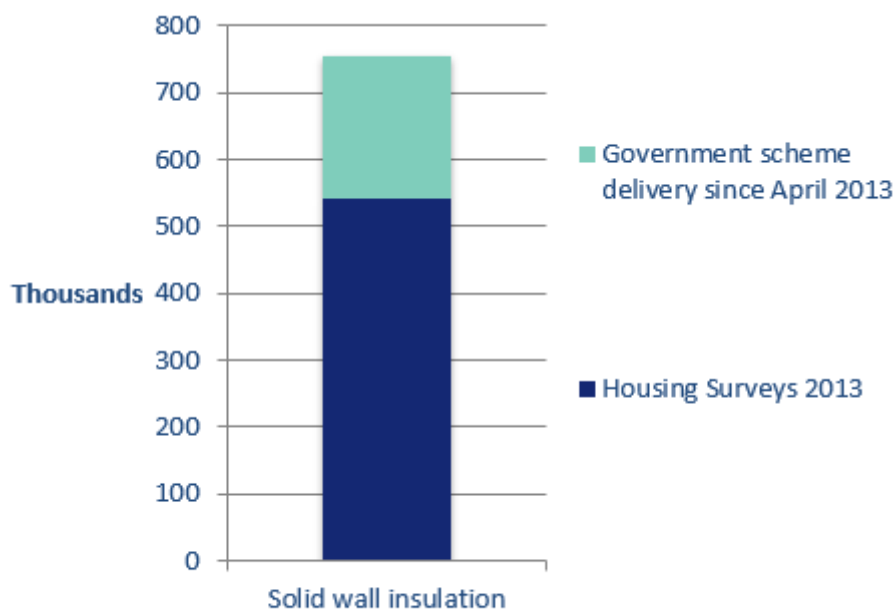


Chart 5: Number of homes in GB with solid wall insulation by source, December 2018

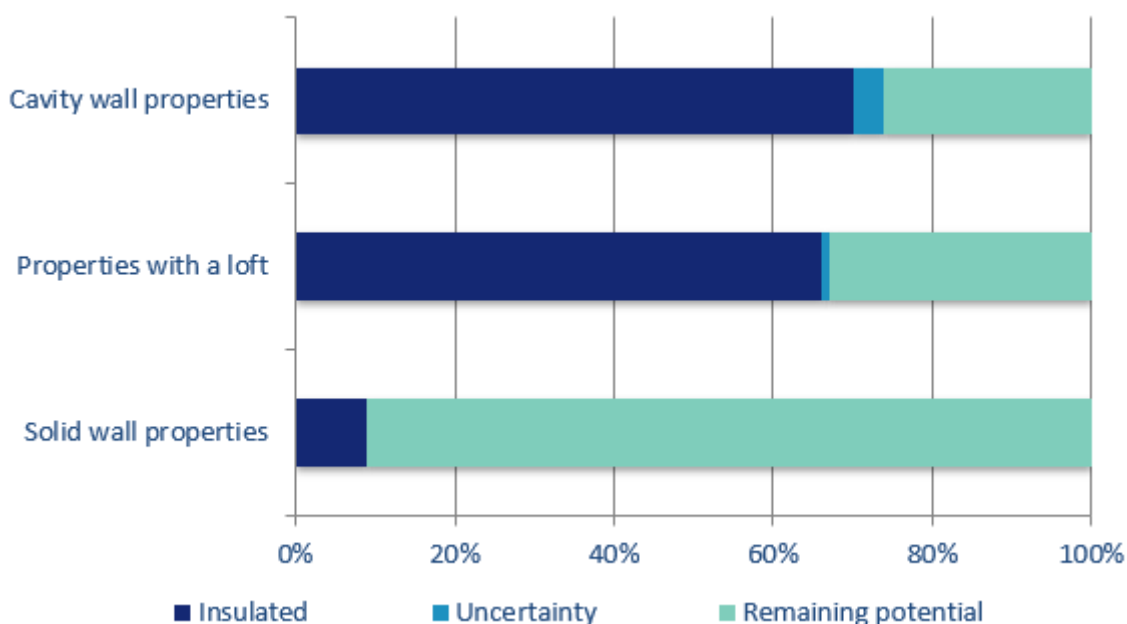


Remaining potential

A key use of these estimates for BEIS is to identify homes that have the potential to receive cavity wall, loft and solid wall insulation in the future to aid the design of future policies.

Chart 6 gives a summary of the remaining potential for insulating properties in GB. It shows around two-thirds of properties with cavity walls (70 per cent) and properties with a loft (66 per cent) are insulated. In comparison only nine per cent of properties with solid walls are insulated.

Chart 6: Remaining potential to insulate the housing stock in GB, end December 2018



Historical figures and more detailed breakdowns of remaining potential figures are available in Table 8.4, 8.5 and 8.6 of the accompanying [Excel tables](#).

Cavity wall insulation

It is estimated that at the end of December 2018 there were 13.8 million homes with cavity wall insulation (70 per cent of homes with cavity walls). Of the 5.3 million homes without cavity wall insulation, 4.0 million are easy to treat standard cavities, and 1.3 million are hard to treat¹⁹ (including standard cavity wall property with issues such as structural faults or presence of a conservatory, creating access issues and some unfillable cavity walls). There are around 0.8 million properties which may or may not have cavity wall insulation (Chart 6, Table 8.4).

Loft insulation

In this publication lofts are defined as insulated if they have 125mm or more of insulation. Lofts with less than 125mm of insulation are defined as uninsulated as they would benefit most from top up insulation.

¹⁹ Hard to treat cavities are ones that are more difficult or more expensive to fill than standard cavities. This includes properties with a narrow cavity, and properties of either concrete or metal frame construction. The definition of hard to treat used in this publication is based on the definition used in the 2013 Housing Surveys. The ECO definition of hard treat differs from this definition slightly as it also includes partial fill cavities and cavity wall properties over three storeys (compared to over four) and excludes some cavities which assessors would not be able to identify as hard to treat, such as properties with high exposure to wind and rain.

At the end of December 2018, it is estimated that there were 8.0 million uninsulated lofts (33 per cent of homes with lofts). Of these, around 5.8 million of these homes require easy to treat loft insulation and 2.3 million are considered to be hard to treat or unfillable which means the loft would be hard/costly to insulate or could not be insulated. This can occur in properties with a flat roof, room in roof properties, or in properties where the roof has a very shallow pitch which makes the loft space inaccessible. (Chart 6, Table 8.5).

Solid wall insulation

It is estimated that at the end of December 2018 there were 7.7 million uninsulated solid walls (91 per cent of homes with solid walls), with around 752,000 with solid wall insulation in GB. Prior to 2013, Government schemes have focused on insulating homes with cavity walls due to the costs involved with insulating solid wall properties; however in recent years with policies such as ECO, the focus has switched to harder or more expensive to treat properties, including solid wall properties. Of the remaining potential it may not be possible to insulate all uninsulated solid wall properties, it is likely that some of these will be too costly to treat or be within conservation areas and will therefore never be insulated. Solid wall insulation has been defined throughout this report as internal or external wall insulation installed through Government programmes.

Annex A – Background

Energy Company Obligation

The [Energy Company Obligation](#) (ECO) is now in its fourth phase. ECO broadly takes over from two previous Energy Obligation schemes (Carbon Emissions Reduction Target - CERT - and Community Energy Saving Programme - CESP) and focuses on providing energy efficiency measures to low income and vulnerable consumers and those living in 'hard-to-treat' properties.

- ECO1 started on 1 January 2013 (although energy companies were able to count measures delivered since 1 October 2012, against their targets) and ran to 31 March 2015 for the ECO 1 period.
- ECO2 commenced from April 2015 and ran until 31 March 2017.
- ECO Help-to-Heat commenced from April 2017 and ran until September 2018.
- ECO3 went live on 3 December 2018 but suppliers can count action from October 2018 with the scheme due to run until March 2022.

There have been three main ECO obligations – The Carbon Saving Target (CERO) which closed in September 2018; Carbon Saving Communities (CSCO) which closed end March 2017 and Affordable Warmth (also known as The Home Heating Cost Reduction Obligation HHCRO) which is continuing through ECO3.

Energy Suppliers are set targets for each phase of the scheme based on their number of customers and amount of energy supplied to domestic properties in Great Britain. This threshold remained the same for ECO1, 2 & Help-to-Heat but is tightening through ECO3. Suppliers are obligated if on 31 December of the previous year they exceed the customer number threshold and the electricity or gas threshold.

Table: ECO Supplier Obligation Thresholds: 2013-2022

	Up to 3 Dec 2018	3 Dec 2018 – 31 Mar 2019	1 Apr 2019 – 31 Mar 2020	1 Apr 2020 – 31 Mar 2021	1 Apr 2021 – 31 Mar 2022
Number of domestic customers	250,000	250,000	200,000	150,000	150,000
Electricity supply to domestic customers	400 GWh	500 GWh	400 GWh	300 GWh	300 GWh
Gas supply to domestic customers	2,000 GWh	1,400 GWh	1,100 GWh	700 GWh	700 GWh

Carbon Saving Target – *Closed end September 2018* – This covers the installation of measures like solid wall and hard-to-treat cavity wall insulation, which ordinarily can't be financed solely through Green Deal Plans. From April 2017 this included a rural sub-obligation where at least 15 per cent of a supplier's CERO for Help-to-Heat must be achieved in rural areas.

Carbon Saving Communities Obligation – *Closed end March 2017*. This provides insulation measures to households in specified areas of low income. It also makes sure that 15 per cent of each supplier's obligation is used to upgrade more hard-to-reach low-income households in rural areas.

Affordable Warmth Obligation – This provides heating and insulation measures to consumers who receive particular means-tested benefits. Since April 2017 it enables those in social housing living in E, F and G rated properties to receive insulation measures, and some heating measures. This obligation supports low-income consumers who are vulnerable to the impact of living in cold homes, including the elderly, disabled and families. Under this scheme, Local Authorities can determine eligible homes under the new 'flexible eligibility' mechanism, introduced in 2017. Up to 25% of the Obligation can be delivered through Flexible Eligibility under ECO3, up from 10% under ECO Help-To-Heat. Households can be assessed by local authorities to be 'living in fuel poverty'; or assessed to be 'living on a low income and vulnerable to cold'. From October 2018 this included a rural sub-obligation where at least 15 per cent of a supplier's ECO3 must be achieved in rural areas. Furthermore, under ECO3, suppliers are able to meet up to 10% of their obligation to deliver innovation measures to eligible households. A further 10% can be used to monitor the actual energy performance of measures in homes.

ECO Brokerage

The [ECO Brokerage](#) system operates as a fortnightly anonymous auction where GD Providers can sell 'lots' of future measures of ECO Carbon Saving Obligation, ECO Carbon Saving Communities (until March 2017) and ECO Affordable Warmth, to energy companies in return for ECO subsidy. New lot types have been introduced over time to reflect changes to the policy most recently in February 2019 following the start of ECO3.

This market-based mechanism is to support an open and competitive market for the delivery of the ECO. Brokerage allows a range of GD Providers to fairly compete on price to attract ECO support and enables energy suppliers to deliver their obligations at the lowest possible cost, thereby reducing the impact on customer energy bills.

Sellers (GD Providers) can make a competitive offer on brokerage by leveraging additional sources of finance, such as part funding measures through GD Finance, partnerships with local authorities, or driving down costs by economies of scale.

ECO delivery costs

ECO delivery costs are reported by obligated energy suppliers following each reporting quarter.

ECO delivery costs are defined as the cost of installing an ECO measure in a property. This includes the costs of technical monitoring, cost of assessment, costs involved with searching for ECO properties, installation costs and marketing costs by delivery partners involved with promoting the ECO obligations. Figures up to the end of December 2018 show aggregate expenditure of £3.81bn.

In addition, **administrative costs** are collected from suppliers and include: reporting and compliance, own marketing and direct administrative costs (such as development of IT / reporting systems to support delivery of the scheme). Figures up to the end of December 2018 show aggregate expenditure of £407m. Suppliers make returns on delivery and administrative costs by the end of the second month following each reporting quarter.

Full definitions on ECO costs are included [here](#).

Green Deal

The [Green Deal](#) (GD) was launched in January 2013 in England and Wales (and in February 2013 in Scotland). It enables consumers to take out loans to pay for energy efficiency improvements in their properties, with repayments made through their energy bill. Repayments are made on a “Pay As You Save” (PAYS) basis: after the improvement has been made, the consumer begins to save energy, their energy bills are less than they would have been without the improvement, and these savings are used to repay the loan. A principle called the “Golden Rule” is intended to ensure that the loan repayments should not exceed the savings.

Customers having GD Assessments undertaken have the choice of how they proceed. They might take the view that their home is sufficiently energy efficient, or that they want to finance work through a GD Plan or that they want to use alternative funding arrangements (e.g. use of savings).

Uptake of the GD was below expectations and in July 2015 the Government [announced](#) there would be no further public investment in the scheme. The Framework to support the programme has remained in place to service existing GD Plans and for any private finance providers wishing to enter the market. The Green Deal Finance Company – the vehicle created to finance GD loans and in which the Government ended public investment during 2015 – was purchased in January 2017 by new owners, who are now offering new GD plans.

The Government is reviewing the GD and published a [Call for Evidence](#) in late 2017 and a [Summary of Responses](#) in July 2018. Any significant proposals for change will be the subject of consultation.

A brief description of how the GD process works is shown below:

Step 1 – Assessment – A GD Assessor will come to the home, talk to the owner/occupier about their energy use and see if they can benefit from making energy efficiency improvements to their property.

Step 2 – Recommendations – The GD Assessor will recommend improvements that are appropriate for the property and indicate whether they are expected to pay for themselves through reduced energy bills.

Step 3 – Quotes – GD Providers will discuss with the owner/occupier whether a GD Plan is right for them and quote for the recommended improvements, including the savings estimates, savings period, first year instalments and payment period for each improvement. A number of quotes can be obtained.

Step 4 – Signing a Plan – The customer chooses to proceed with a given provider and package of measures. The owner/occupier needs to obtain the necessary consent to make

improvements to the property before they can agree terms with the GD Provider of a GD Plan²⁰, at which stage they enter a cooling-off period²¹.

Step 5 – Installation – Once a GD Plan has been agreed, the Provider will arrange for the improvements to be made by a GD Installer. Once the installation has been completed a letter is sent to the Bill Payer and, at this stage, the GD Plan goes ‘live’.

Step 6 – Payment ends - ‘live’ GD Plans can be paid off before their expected last payment date. These are known as ‘completed’ GD Plans.

Following a GD Assessment there have been a range of delivery mechanisms which could be used to improve the energy efficiency of the property. Using record level data matching we have estimated the number of households that have benefitted from energy efficiency installations through more than one delivery mechanism. Full details of this are available in the accompanying [Methodology note](#).

Legacy Green Deal Schemes

Measures installed from these legacy schemes are still included in table 1.1-1.4 but the detailed scheme figures are not reported in this release but are available in the [2017 Detailed report](#).

Green Deal Home Improvement Fund

On 23 July 2015 it was [announced](#) that there will be no future funding releases of the Green Deal Home Improvement Fund (GDHIF).

The GDHIF was an incentive scheme open to all householders in England and Wales wanting to improve the energy efficiency of their homes. The scheme allowed householders to choose one or both of two offers and they were eligible to claim up to £7,600. Householders could also claim a refund of up to £100 for a GDAR. GDHIF release 1 closed to new applicants at 6:30pm on 24 July 2014. GDHIF release 2 commenced on 10 December 2014 (and closed to new Solid Wall Insulation applicants on 11 December 2014) and GDHIF release 3 commenced on 16 March 2015 (and closed to new Solid Wall Insulation applicants on 26 March 2015) and closed for the “two-measure” offer on 30th September 2015. The scheme closed down in June 2016. A number of different separate Cashback schemes operated in Scotland (see [website](#) for the latest statistics).

²⁰ The Plan is a contract between the owner/occupier and the Provider – it sets out the work that will be done and the repayments.

²¹ For example, in the case of a GD Plan that is regulated by the Consumer Credit Act 1974, the consumer will have 14 days to withdraw from the part of the GD Plan which provides credit.

Green Deal Communities

The Green Deal Communities scheme was in operation from April 2014 until September 2016²². Twenty-three areas in England (covering 98 individual Local Authorities) received £85 million to help deliver the Government's Green Deal home energy efficiency programme.

Participating areas have installed a range of energy efficiency measures, including solid wall insulation, and other insulation and heating measures. Many areas are providing funding to householders in rural areas, to the private rented sector and in fuel poverty.

The Supply Chain

To understand more about the organisations and infrastructure underpinning the GD, this report also includes a section summarising the number of GD Advisors (and Assessor organisations), the number of GD Providers and the number of GD Installer organisations.

Insulation statistics

The following types of insulation which are included in the estimates of home insulation levels.

Cavity wall insulation

Many homes built in GB have external walls made up of an inner and outer wall with a small cavity in between. These have been typical since the 1930s, but some older properties will also have them. Cavity walls were used initially because they were cheaper (as the inner leaf could use non-decorative brick) and had a greater resistance to moisture moving from outside to inside. The presence of a cavity also improves the thermal performance of the wall, especially if the cavity is insulated. Since the mid-1980s, homes have been increasingly built with pre-insulated cavity walls, though the type of blockwork used for the inner leaf has also contributed to the improved thermal performance required by Building Regulations.

Loft insulation

Some loft insulation has been installed in new homes since 1965. Building regulations for new homes require a roof to have a thermal transmittance (U-value) of at least as low as 0.13 W/m².K (0.15 W/m².K in Scotland), which would typically be achieved with 300mm of loft insulation. There is a strong 'diminishing returns' effect with savings from increasing the depth of loft insulation, so the first inch gives about half the savings from full insulation. Therefore, 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.

Solid wall insulation

It is possible to improve the thermal performance of solid walls by adding insulation either internally or externally. There is a wide variety of technical solutions that can be used to

²² Some installations were until end of November 2016.

insulate either the internal or external face of the wall. Building regulations require a target U-value of $0.30 \text{ W/m}^2\text{K}$ to be reached if this modification to the wall is made. It is likely that installations of solid wall insulation before 2002 (i.e. before the first phase of the Energy Efficiency Commitment) may not achieve this level of thermal performance, so these are recorded separately in the statistics.

Annex B – Sources and Methodology

More information on the methodology is included [here](#).

Green Deal and ECO data sources

Administrative data generated as part of ECO and GD processes is used for this statistical release.

The following are the main sources of information used in this report:

- Ofgem – who administer the Energy Company Obligation (ECO) and collect information from energy companies on measures installed under ECO.
- Data on ECO brokerage is publically available following each auction.
- Green Deal Central Charge Database – which manages the recording and administration of GD Plans including when plans are completed.
- Northgate – who manage the national lodgement of GD measures in England and Wales
- Energy Savings Trust (EST) – who manage the national lodgement of GD measures in Scotland
- The Green Deal Oversight and Regulation Body (ORB) – who administer the certification of GD organisations (including assessors, installers and providers)

Revisions

All data in this release should be treated as provisional and subject to revision.

On occasions, previously published data will need to be revised due to changes to source data, methodology or correcting of errors. Explanation will be provided for any significant revisions.

Annex C - Household Energy Efficiency schemes

This section of the report presents activity levels on the Energy Company Obligation (ECO) and Green Deal (GD) between January 2013 and December 2018 alongside figures on Feed-In Tariffs installations, Renewable Heat Premium Payment voucher redemptions, and on Smart Electricity and Gas Meter installations that have been previously published in their own statistical releases. These figures are shown in table 9.1 of the Detailed [tables](#).

ECO and the Green Deal

It is estimated that around 1,947,700 households benefitted from ECO between January 2013 and December 2018. Around 14,700 households installed measures and received money from the Cashback scheme, around 13,800 households had funded measures through GD Finance Plans, 35,300 households had funded measures through GDHIF and 15,600 households had measures funded under the Green Deal Communities. There is a small amount of double counting between these mechanisms (around 24,000 households). For the latest statistics please see the latest [Headline release](#).

Feed-In Tariffs

The Feed-in Tariff (FITs) scheme was launched in April 2010 and is a financial support scheme for eligible low-carbon electricity technologies, aimed at small-scale installations with a capacity of less than 5 megawatts (MW). FITs support new anaerobic digestion (AD), solar photovoltaic (PV), small hydro and wind, by requiring electricity suppliers to make payments (generation tariffs) to these generators based on the number of kilowatt hours (kWh) they generate. An additional guaranteed export tariff is paid for electricity generated that is not used on site and exported to the grid. The scheme also supports micro combined heat and power installations with an electrical capacity of 2 kW or less.

The majority of the installations installed under FITs are in the domestic sector (96 per cent) but as these tend to be smaller in size, the capacity of domestic schemes makes up 46 per cent of the total capacity installed under FITs. The majority of the domestic schemes are solar PV (99 per cent). These solar PV schemes cover 98 per cent of the total installed domestic capacity, whilst domestic wind installations account for 1.5 per cent of capacity.

Between January 2013 and the end of December 2018, 456,400 domestic installations were confirmed onto the Central FIT Register. Since the FIT scheme began in April 2010 to the end of December 2018, 801,200 domestic installations were confirmed onto the Central FIT Register.

Renewable Heat Premium Payment

Renewable Heat Premium Payment (RHPP) scheme was introduced as an interim measure in the absence of the domestic Renewable Heat Incentive (RHI). It was designed to support the uptake of domestic renewable heat and maintain the supply chain, to learn about renewable heat technologies and the way consumers use them to better shape the domestic RHI policy and contribute to the renewable energy target. The scheme encompasses three components: the householder's scheme, social landlord competition and community's scheme. These components were designed to give greater coverage across the different parts of the housing market.

Householders' scheme

The RHPP scheme distributed vouchers as a one off grant to eligible applicants installing renewable heating systems to offset some of the cost of installation. The technologies supported were: ground and water source heat pumps, air-to-water heat pumps, solid biomass boilers and solar thermal systems. There were three phases, run over three financial years; Phase 1 ran from the 1 August 2011 to the 31 March 2012, Phase 2 opened on the 1 May 2012 and closed on the 31 March 2013 and Phase 2 Extension opened on the 1 April 2013 and officially closed on the 31 March 2014. The RHPP scheme was succeeded by the domestic RHI scheme which launched on 9 April 2014. Information on homes benefiting from the domestic RHI is included below.

Between January 2013 and September 2014 (end of scheme), 8,991 vouchers were redeemed under phase 2 or phase 2 extension.

A total of 15,364 vouchers had been redeemed under all phases of the Renewable Heat Premium Payment voucher schemes – 5,230 under Phase 1, 5,315 under Phase 2, and a further 4,819 under Phase 2 Extension.

Solar Thermal and Air Source Heat Pumps are the most popular technologies in all phases, accounting for over two thirds of redeemed or claimed vouchers in total.

The social landlord competitions were designed to accelerate the deployment of renewable heating technologies in the social housing sector. Registered Providers of social housing were invited to bid for grants to support projects installing eligible renewable heating systems.

Since August 2011, seven social landlord competitions have been run, of which five have concluded with 3,763 renewable heating systems being installed in tenants' homes via £10 million in grants to social landlords across Great Britain (GB).

Communities scheme

DECC launched the Renewable Heat Premium Payments Communities Scheme on 24 July 2012. The scheme was a funding mechanism to assist communities in England, Wales and Scotland to support domestic renewable heat installations in privately owned homes.

Twenty eight community groups, representing 31 projects, received £910,809 in grant funding towards the cost of installing the renewable technology. From this, 365 renewable heating technologies were installed.

Domestic RHI

The domestic Renewable Heat Incentive (RHI) is a financial incentive scheme introduced to encourage a switch to renewable heating systems in the domestic sector. Launched on the 9 April 2014 in GB, participants of the scheme receive tariff payments for the heat generated from an eligible renewable heating system which is heating a single property. The scheme covers single domestic properties and is open to owner-occupiers, private landlords, social landlords and self-builders. There are four renewable heating technologies covered by the scheme - Air-source heat pumps; Ground and water-source heat pumps; Biomass-only boilers and biomass pellet stoves with integrated boilers; and Solar thermal panels.

Up until the end of December 2018, 65,900 systems have been accredited to the scheme. These data refer to systems installed after the launch of the domestic RHI scheme on 9 April 2014 which gained accreditation to the scheme.

Smart Meters

Smart meters²³ are the next generation of electricity and gas meters and offer a range of intelligent functions. Consumers will have near real time information on their energy consumption to help them control and manage their energy use, save money and reduce emissions. Smart meters will also provide consumers with more accurate information and bring an end to estimated billing. The Government is committed to ensuring that every home and smaller business in the country is offered a smart meter by the end of 2020. Further information can be found on the GOV.UK website.

By end December 2018 there were 12.65 million smart meters operating in smart mode across homes in Great Britain, by both large and small energy suppliers.

²³ The definition of a 'Smart Meter' is an electricity or gas meter that is compliant with the [Smart Meter Equipment Technical Specification \(SMETS\)](#) and has functionality such as being able to transmit meter readings to suppliers and receive data remotely. Energy suppliers report the number of smart meters-installed and operating in smart mode to BEIS. This includes both meters that are SMETS compliant and those they expect to upgrade to become SMETS compliant. Some smart meters currently installed will need to receive updates before they are fully SMETS compliant.



National Statistics

This is a National Statistics publication.

The United Kingdom Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the UK Statistics Authority: Code of Practice for Statistics. The Statistics Authority published its report on 12 June 2014:

<http://www.statisticsauthority.gov.uk/assessment/assessment-reports/index.html>.

Designation can be broadly interpreted to mean that the statistics:

- meet identified user needs
- are well explained and readily accessible
- are produced according to sound methods, and
- are managed impartially and objectively in the public interest

Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.

Accompanying tables

All accompanying tables for this statistics release are located [here](#).

Methodology Note and Background Quality Report

The methodology note and background quality report summarising the methodology used to produce estimates for this statistical series and to summarise the quality assurance of these statistics, can both be found here:

<https://www.gov.uk/government/publications/household-energy-efficiency-statistics-methodology-note>

Next Releases

The next Headline release on the gov.uk website is planned for publication at 9.30am on **23 May 2019** and will contain the latest available information on headline ECO measures only.

The next detailed (annual) report, including the next update on home insulation levels, will be published in **Spring 2020**.



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