



A National Statistics Publication



ANNUAL REPORT ON FUEL POVERTY STATISTICS 2012

Table of Contents

| | |
|---|-----------|
| 1. Introduction..... | 3 |
| 1.1 What is fuel poverty?..... | 3 |
| 1.2 Fuel poverty in the devolved administrations | 5 |
| 1.3 The English Housing Survey (EHS)..... | 6 |
| 1.4 Developments since the last publication..... | 7 |
| 1.5 The Hills Review of Fuel Poverty..... | 7 |
| 1.6 Further information | 8 |
| 2. Summary of fuel poverty in the UK and England, 2010 | 9 |
| 2.1 Fuel poverty in the UK..... | 9 |
| 2.2 Fuel poverty in England..... | 11 |
| 2.3 Fuel poverty distribution in England..... | 12 |
| 2.4 Interpreting the change in fuel poverty..... | 14 |
| 3. Contributions to the change in fuel poverty | 17 |
| 3.1 The three drivers of fuel poverty | 17 |
| 3.2 Income | 17 |
| 3.3 Prices | 19 |
| 3.4 Energy efficiency | 21 |
| 3.5 Change in fuel poverty 2009 to 2010..... | 23 |
| 4. Analysis of fuel poverty in 2010 | 27 |
| 4.1 Drivers of fuel poverty in 2010 | 27 |
| 4.2 Regional fuel poverty in 2010 | 29 |
| 4.3 Household income and associated variables..... | 31 |
| 4.4 Household characteristics..... | 34 |
| 4.5 Dwelling characteristics and efficiency..... | 36 |
| 4.6 Consumer choices | 38 |
| 5. Trends in fuel poverty in England, 2003 to 2010 | 40 |
| 5.1 Introduction | 40 |
| 5.2 Vulnerable households | 40 |
| 5.3 Household occupancy | 42 |
| 5.4 Employment status | 44 |
| 5.5 Income | 45 |

| | |
|---|-----------|
| 5.6 Fuel expenditure | 47 |
| 5.7 Payment method | 48 |
| 5.8 Energy efficiency | 49 |
| 5.9 English Regions | 52 |
| 6. Additional work and developments | 54 |
| 6.1 Matching meter point data - pilot study..... | 54 |
| 6.2 Measuring Fuel Poverty After Housing Costs | 57 |
| 6.3 Measuring Fuel Poverty Using the Measure Proposed by the Hills Review | 60 |
| 6.4 Variables in the Fuel Poverty Dataset..... | 63 |
| 7. Sub-regional fuel poverty in 2010 | 64 |
| 7.1 Data Available | 64 |
| 7.2 Mapping fuel poverty..... | 64 |
| 7.3 Comparisons with 2009 Data | 67 |
| 7.4 Methodology..... | 69 |
| 8. Other data relating to drivers of fuel poverty | 71 |
| 8.1 Expenditure on fuel..... | 71 |
| 8.2 Energy efficiency measures | 72 |
| 8.3 Household income distribution | 74 |
| 9. Projections..... | 76 |
| 9.1 Introduction | 76 |
| 9.2 Comparison of the projected level of fuel poverty with the actual level, 2010 | 76 |
| 9.3 Projected levels of fuel poverty in England, 2011 and 2012 | 77 |
| Annex A: Related data..... | 80 |
| Annex B: Sub-regional fuel poverty in 2010, Regional Maps | 82 |

1. Introduction

1.1 What is fuel poverty?

A household is said to be fuel poor if it needs to spend more than 10 per cent of its income on fuel to maintain an adequate level of warmth¹. Fuel poverty is therefore based on modelled spending on energy, rather than actual spending.

Although the emphasis in the definition is on heating the home, modelled fuel costs in the definition of fuel poverty also include spending on heating water, lights and appliance usage and cooking costs.

The Fuel Poverty Ratio is defined as:

$$\text{Fuel poverty ratio} = \frac{\text{Modelled fuel costs (i.e. Modelled consumption} \times \text{price)}}{\text{Income}}$$

If this ratio is greater than 0.1 then the household is *Fuel Poor*.

Table 1.1 below shows the number of fuel poor households in England in each year it has been measured. Analysis of the reasons behind the fall in fuel poverty levels in 2010 can be found in chapter 3.

Table 1.1 – Number of fuel poor households in England

| England ² | No. of fuel poor households (million) |
|----------------------|---------------------------------------|
| 1996 | 5.1 |
| 1998 | 3.4 |
| 2001 | 1.7 |
| 2002 | 1.4 |
| 2003 | 1.2 |
| 2004 | 1.2 |
| 2005 | 1.5 |
| 2006 | 2.4 |
| 2007 | 2.8 |
| 2008 | 3.3 |
| 2009 | 4.0 |
| 2010 | 3.5 |

¹ The adequate standard of warmth is usually defined as 21 degrees for the main living area, and 18 degrees for other occupied rooms.

² Fuel poverty figures for England in 1998 and 2002 are estimates based on movements in energy prices, incomes and energy efficiency.

Chapter 1 – Introduction

The key elements in determining whether a household is fuel poor or not are:

- Income
- Fuel prices
- Fuel consumption (which is dependent on the lifestyle of the household and the dwelling characteristics)

Increasing household income helps to reduce the fuel poverty ratio and therefore potentially remove households from fuel poverty, i.e. if the fuel poverty ratio falls to or below 0.1. Reducing income has the opposite effect, i.e. the fuel poverty ratio increases, potentially pushing households into fuel poverty.

Decreasing fuel prices and/or improvements made to the energy efficiency of the home can also reduce the fuel poverty ratio, while rising prices will have the opposite effect. It is rare for a dwelling to become “less efficient”, but an increase in consumption can occur if the householders change their routine (for example spend longer at home) or the household composition changes (e.g. the householders have children), etc.

In calculating the fuel poverty ratio, the fuel costs are modelled dependent on the following factors:

- The lifestyle of people that live in the home,
- The heating system and the fuels used, and
- the dwelling characteristics.

It is necessary to model bills, as this allows energy consumption to be controlled to ensure the household maintains the adequate standard of warmth. In reality, many households actually under-heat their home relative to the adequate standard (see section 6.1 for more on this).

The 2010 data builds on work done a year earlier to model the impact of social and discounted tariffs on fuel poverty. As the fuel poverty statistics are calculated using a two year combined EHS dataset, 2010 is the first to include the impact of social tariffs over the full two year dataset. The 2010 data also includes the impact on household bills of the £80 rebate scheme³. Further information on the impacts of these schemes is available in Section 3.5 of this report.

More detailed information and explanations of how consumption, prices and income are measured is included in the comprehensive Methodology Handbook, published at:

http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/fuelpov_stats.aspx

The fuel poverty data are used widely throughout Government to help develop and target policies towards those most likely to be fuel poor, or those most at risk of

³ The £80 rebate scheme ran in 2010 as a forerunner for the Warm Home Discount policy. The scheme provided a direct saving of £80 to over 200,000 of the most vulnerable, elderly households. For more information, see

http://www.direct.gov.uk/en/Pensionsandretirementplanning/Benefits/BenefitsInRetirement/DG_185940

falling into fuel poverty. Although it is impossible to identify actual individual households experiencing fuel poverty, the data can point to groups that are most likely to be at risk. Since the EHS data (used to model fuel poverty) include comprehensive information on the type of home each household occupies and the people that live there, the data can also provide insight into the living conditions, the energy efficiency and features of different types of household.

1.2 Fuel poverty in the devolved administrations

Fuel Poverty is a partially devolved issue, with each separate administration having their own targets. The main reason for this is that the devolved administrations have the power to affect certain aspects of fuel poverty policies (for example energy efficiency programs) but not others (e.g. incomes and energy market conditions, which impact on fuel prices).

England

In England, fuel poverty is modelled using the data from the English Housing Survey (EHS). More information on the EHS is available in Section 1.3.

Scotland

In Scotland, the Scottish House Condition Survey (SHCS) is used to model fuel poverty.

The main differences⁴ in the Scottish definition compared to the English definition are:

- the more stringent interpretation of a satisfactory heating regime for pensioners, long-term sick and disabled households. This essentially means that these groups are assumed to require a higher temperature to reach an adequate standard of warmth in their homes.
- the different approach to under-occupancy with regard to heating regimes.

Scotland publishes its own report on their national level of fuel poverty. The latest report was published in November 2011, and relates to fuel poverty in 2010. The report is available at:

<http://www.scotland.gov.uk/Publications/2011/11/23172215/0>

The Scottish Government also publishes fuel poverty figures at a local authority level, which are available at:

<http://www.scotland.gov.uk/Topics/Statistics/SHCS/LA0810>

These data were published in November 2011 and relate to fuel poverty in 2008, 2009 and 2010 combined.

⁴ A summary of differences in the fuel poverty methodology in each country has been published by the Scottish Government and can be found here:
<http://www.scotland.gov.uk/Topics/Statistics/SHCS/UKfuelpoverty>

Wales

The Living in Wales Survey, which uses a comparable methodology to England, is used to calculate fuel poverty figures for Wales.

The Welsh Assembly published the latest Living in Wales Survey in November 2010, and this relates to 2008 data. The report is available at:

<http://cymru.gov.uk/topics/statistics/headlines/housing2010/1011261/?jsessionid=W3HrM2GVVS1wMnWjkmskL2BWnpTb1vXPr4xQZxzdpmsYXnkGZy7Y!-1406392113?lang=en>

Northern Ireland

The Northern Ireland House Condition Survey is used, together with a method which is very similar to that used in England and Wales, to calculate the Northern Ireland fuel poverty levels.

The latest statistics, which were published in 2010 and relate to 2009, are available at:

http://www.nihe.gov.uk/index/sp_home/research-2/house_condition_survey.htm

Chapter 2 presents estimated levels of fuel poverty in the UK by combining the latest estimates and projections for each country. However, the majority of this report concentrates on a detailed analysis of the fuel poor in England, which is produced by DECC.

1.3 The English Housing Survey (EHS)

The EHS is a national survey of housing in England, commissioned by the Department of Communities and Local Government (DCLG). It covers all tenures (i.e. private and social housing) and involves a physical inspection of properties by professional surveyors. The information obtained through the survey provides an accurate picture of the type and condition of housing in England (including its energy efficiency), the people living there, and their views on housing and their neighbourhoods.

The two most important components of the EHS for fuel poverty are:

- The survey of the physical condition and features of the dwelling
- The interview survey with the householders living in the dwelling.

The interview survey is conducted with all households in the sample and, in 2010, this equated to around 17,000 households. Of these, a subsample of around 8,000 properties were selected for the physical survey, which involves a physical inspection by qualified surveyors. In 2011, sample sizes were reduced by between a fifth and a quarter, to around 13,300 interview surveys, and 6,200 physical surveys.

From this information, a detailed picture of the energy requirement can be modelled.

For more information on the EHS generally, see:

<http://www.communities.gov.uk/housing/housingresearch/housingsurveys/englishhousingsurvey/>

DCLG published the headline EHS results on 9th February 2012. The report is available for download on the DCLG website at:

<http://www.communities.gov.uk/housing/housingresearch/housingsurveys/englishhousingsurvey/ehspublications/>

Full data relating to 2010 is expected to be published in July.

1.4 Developments since the last publication

The analysis contained in this report builds on the previous annual fuel poverty statistics report, published in July 2011. It repeats and, in some cases, extends the most useful pieces of analysis from the last publication. For example, this report looks at the full impacts of social and discounted tariffs on fuel poverty levels across the year, including the impact of the £80 rebate scheme. It also considers an after housing costs measure of fuel poverty (see section 6.2).

Use of sub-regional levels of fuel poverty have also been monitored since publishing the 2006 levels. In March 2010, DECC undertook a consultation of sub-regional fuel poverty data to discover how this data was used, and to assess future needs of key users. Following positive user engagement and high demand, 2009 levels were published in November 2011, and 2010 levels are being published for the first time alongside this report. The data is explained in chapter 7, and is also available on the DECC website at:

http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/regional/regional.aspx

DECC are currently developing work to look at how households actually consume energy (specifically gas and electricity). This work involves matching actual energy consumption to the fuel poverty and EHS datasets and can allow an understanding of under-spend amongst other things. The pilot for this work is summarised in chapter 6.1.

The full fuel poverty dataset will be available to users from the UK Data Archive, alongside the EHS, later in 2011 (timed to coincide with publication of the EHS data). As part of the fuel poverty data, there will also be a range of other variables available for the first time, such as breakdowns of consumption and income.

1.5 The Hills Review of Fuel Poverty

At the Spending Review in October 2010, the government announced that it would commission an independent review to consider the current fuel poverty target and definition. In March 2012, Professor John Hills, independent lead of the review, published his final report, making several recommendations for how fuel poverty should be measured in future. This can be found here:

<http://www.decc.gov.uk/media/viewfile.ashx?filetype=4&filepath=11/funding-support/fuel-poverty/4662-getting-measure-fuel-pov-final-hills-rpt.pdf&minwidth=true>

This report followed on from interim findings in October 2011.

The review set out a proposal for a new measure of fuel poverty. Further details on how this measure works, and what 2010 fuel poverty levels would be like under this measure, can be found in section 6.3. The findings from the review are currently being considered by the Government, and a consultation exercise is planned for later in 2012.

1.6 Further information

For further information on the data presented in this report, please email fuelpoverty@decc.gsi.gov.uk.

2. Summary of fuel poverty in the UK and England, 2010

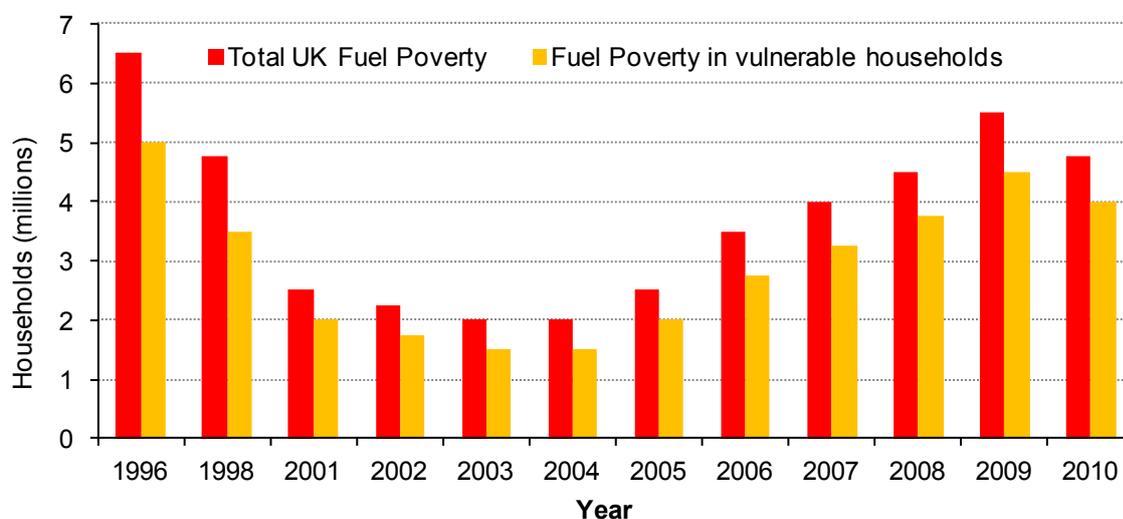
2.1 Fuel poverty in the UK

In 2010, the number of fuel poor households in the UK was estimated at around 4.75 million, representing approximately 19 per cent of all UK households. This is a fall of around 0.75 million (or around 11 per cent) when compared to 2009, the reasons for which are covered in Chapter 3.

The UK fuel poverty estimate is based on the latest figures for England and Scotland, along with extrapolated estimates for Wales and Northern Ireland (both of which are based on earlier figures). In 2010, around 4 million vulnerable⁵ households in the UK were fuel poor, a decrease from around 4.5 million the previous year. In England, about 72 per cent of households are classified as vulnerable.

Chart 2.1 shows the number of households that were living in fuel poverty in the UK between 1996 and 2010, while Table 2.1 gives the numbers behind the chart.

Chart 2.1 – Fuel poverty in the UK, 1996 to 2010⁶



⁵ A vulnerable household is one that contains the elderly, children or someone who is disabled or has a long term illness.

⁶ Fuel poverty was not calculated in 1997, 1999 or 2000.

Table 2.1 – Fuel Poverty in the UK, 1996 to 2010

| Fuel poverty (millions of households) | | 1996 | 1998 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---------------------------------------|------------|------|------|------|------|------|------|------|------|------|------|------|------|
| UK | All | 6.5 | 4.75 | 2.5 | 2.25 | 2 | 2 | 2.5 | 3.5 | 4 | 4.5 | 5.5 | 4.75 |
| | Vulnerable | 5 | 3.5 | 2 | 1.75 | 1.5 | 1.5 | 2 | 2.75 | 3.25 | 3.75 | 4.5 | 4 |

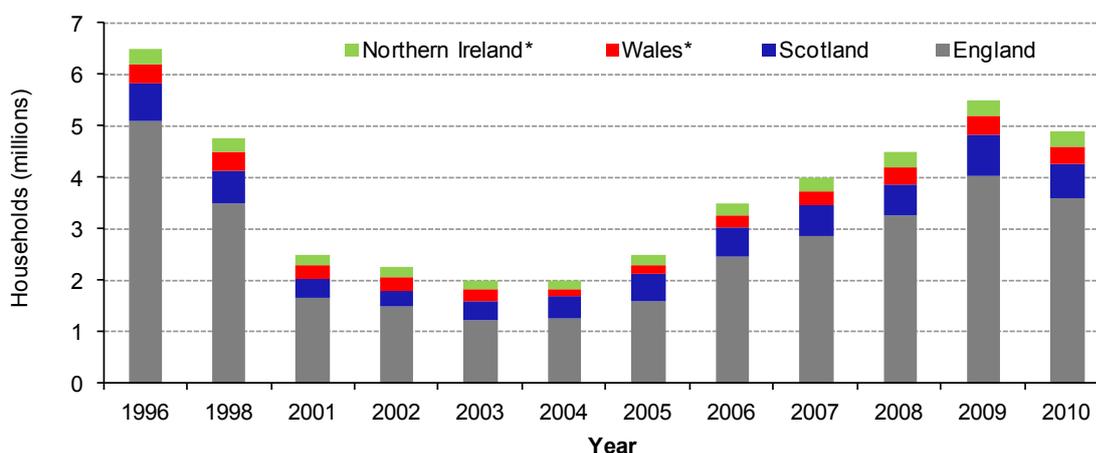
Note: Figures not calculated for 1997, 1999 and 2000.

The reduction in fuel poverty between 1996 and 2003 was largely due to a combination of falling prices and rising incomes, but the installation of energy efficiency measures in dwellings also helped to reduce energy consumption and therefore bills.

However, between 2004 and 2009, energy prices increased: domestic electricity prices rose by over 75 per cent, and gas prices increased by over 122 per cent over the period⁷. This led to the rise in fuel poverty seen over this period. The overall effect of price rises since 2004 has far outweighed the impact of increasing incomes and energy efficiency.

In 2010, rises in incomes and energy efficiency combined to outweigh the effects of price rises in 2009. Prices of all fuels apart from gas and electricity rose (DECC Quarterly Energy Prices March 2012, Table 2.1.1). These effects combined to produce the first fall in fuel poverty since 2003.

Chart 2.2 – Fuel poverty in each country of the UK, 1996 to 2010



*Northern Ireland figure estimated for 2010; Wales figure estimated for 2009 and 2010

Chart 2.2 shows how the level of fuel poverty in the UK is split amongst each country. Generally, the fuel poverty level in each UK country has followed a roughly similar trend over the period depicted in the chart, i.e. decreasing between 1996 and 2003, increasing again every year up to 2009, and then decreasing in 2010. In 2010,

⁷ Source: Fuel components of Retail Prices Index (current prices), Table 2.1.1, Quarterly Energy Prices: <http://www.decc.gov.uk/en/content/cms/statistics/publications/prices/prices.aspx>

published figures for Scotland fell by around 15 per cent, similar to the reduction seen in figures for England. All UK countries have been directly affected by changing domestic energy prices. However, the proportion of fuel poor households in each country is also affected by the methodology used to measure it, as well as the housing stock, the prevalent heating fuels and the levels of household income. For more information about the measurement of fuel poverty in each country, see the references in Chapter 1 of this report.

Of the four UK nations, Northern Ireland has the greatest proportion of fuel poor households, followed by Scotland, then Wales and finally England. Northern Ireland has a higher proportion of fuel poverty than the other nations due to a high percentage of off gas grid households (who therefore have to use more expensive fuels to heat their homes) and lower incomes. The most recent measurements of fuel poverty in each country are shown in Table 2.2.

Table 2.2 – Proportion of households in fuel poverty by nation

| Country | Proportion of households that are fuel poor | Year of estimate |
|------------------|---|------------------|
| England | 16.4% | 2010 |
| Scotland | 27.9% | 2010 |
| Wales | 26.2% | 2008 |
| Northern Ireland | 43.7% | 2009 |
| UK | 18.6% | 2010 |

2.2 Fuel poverty in England

Chart 2.3 shows the number of households that were living in fuel poverty in England between 1996 and 2010, while Table 2.3 gives the numbers behind this chart.

Chart 2.3 – Fuel poverty in England, 1996 to 2010

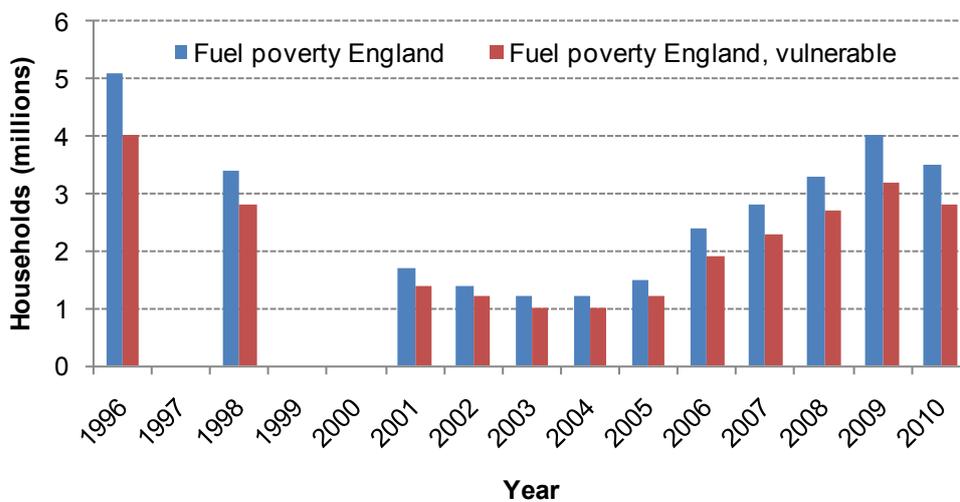


Table 2.3 – Fuel poverty in England, 1996 to 2010

| <i>Fuel poverty (millions of households)</i> | | 1996 | 1998 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|--|------------|------|------|------|------|------|------|------|------|------|------|------|------|
| England | All | 5 | 3.5 | 1.75 | 1.5 | 1.5 | 1 | 1.5 | 2.5 | 3 | 3.5 | 4 | 3.5 |
| | Vulnerable | 4.0 | 3 | 1.5 | 1 | 1 | 1 | 1 | 2 | 2 | 2.5 | 3 | 3 |

Note: Figures not calculated for 1997, 1999 and 2000.

In 2010, 3.5 million households in England were fuel poor, equivalent to 16.4 per cent of all households. This is a fall of around 0.5 million since 2009. Around 2.8 million of these fuel poor households were vulnerable, which represents around 18.1 per cent of all vulnerable households in England.

Chapter 3.5 gives more explanation behind the reasons for the fall in fuel poverty in 2010, in particular explaining how rises in incomes and improvements in energy efficiency have contributed to the change.

2.3 Fuel poverty distribution in England

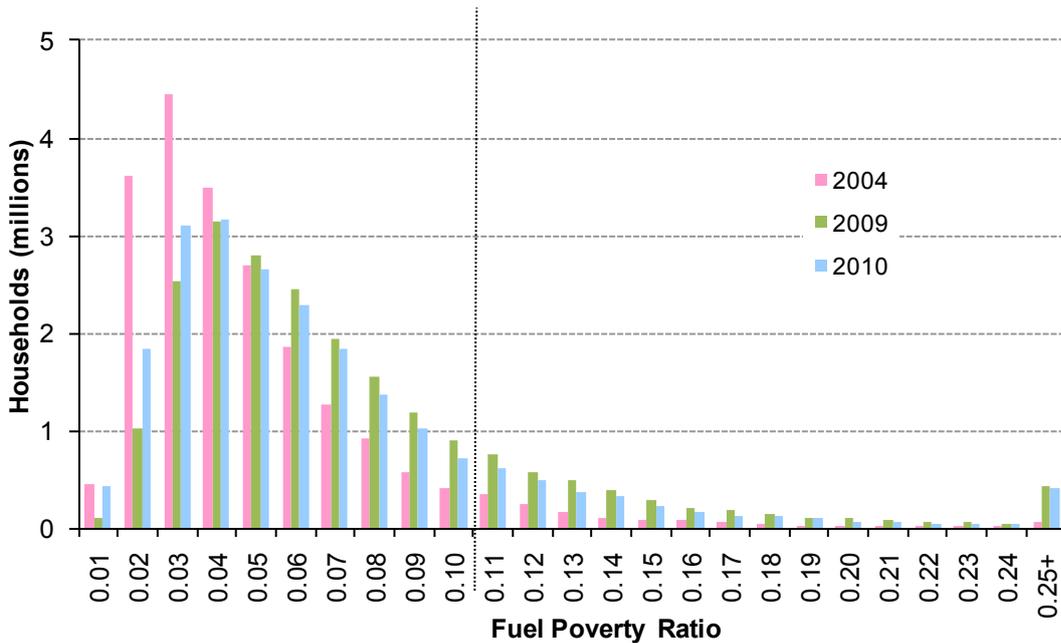
The measurement of fuel poverty uses the ratio shown below:

$$\text{Fuel poverty ratio} = \frac{\text{Modelled fuel costs (i.e. Modelled consumption} \times \text{price)}}{\text{Income}}$$

where fuel costs are modelled to ensure the household achieves an adequate standard of warmth.

A household with a fuel poverty ratio in excess of 0.1 is defined as fuel poor. Chart 2.4 below illustrates the distribution of fuel poverty ratios of English households in 2004 (at the recent “low” point of fuel poverty), 2009, and in 2010.

Chart 2.4 – Fuel poverty ratios (required spend on energy as a proportion of income), 2004, 2009 and 2010⁸

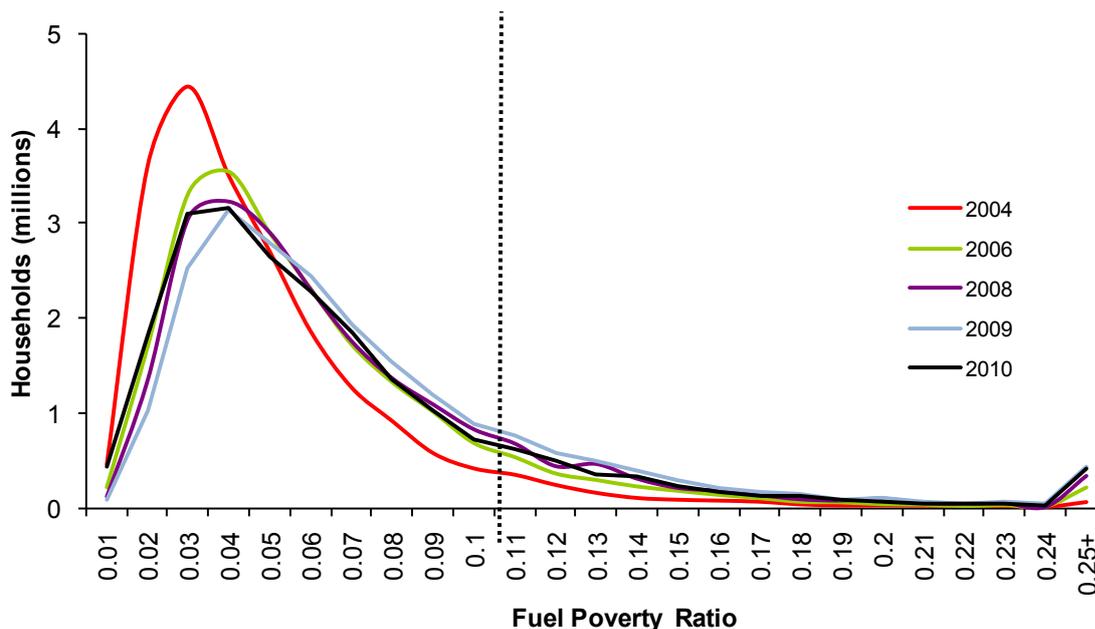


Between 2004 and 2010, rising domestic energy prices have led to a shift of households towards the fuel poverty threshold (illustrated by the vertical dotted line) and, in some cases, beyond. The modal value has shifted from 3 per cent of income in 2004 to 4 per cent in 2010, while the median has shifted from 3.5 per cent in 2004 to 5.2 per cent in 2010. There are also more households close to the 10 per cent line in 2010 than in 2004, with 74 per cent more households in the 10th percentile group compared with 2004, although household numbers have also increased during this time. This further reflects the impact of rising energy prices on nearly all households.

The gradual shift between 2004 and 2010 is emphasised in Chart 2.5, which shows the distribution of fuel poverty ratios in each year over this period. The chart shows that the distribution shifts to the right and flattens between 2004 and 2009, illustrating both that more households are in fuel poverty (to the right of the dotted line) and that an increasing number are at risk (on the left of the dotted line but moving towards it). The 2010 distribution shifts to the left slightly, being between 2008 and 2009, but maintains a similar shape distribution.

⁸ A change to the modelling of missing income variables in 2006 leads to a “spike” in the number of households at the extreme right (those required to spend 25 per cent or more of income on energy to obtain an adequate standard of warmth) of the distribution for all years post 2006. This is due to reduced imputation of low incomes as a result of the change, therefore leading to some very low incomes being recorded. More information can be found at: [http://www.decc.gov.uk/media/viewfile.ashx?filepath=what we do/supporting consumers/addressingfuelpoverty/strategy/annual_report/file48039.pdf&filetype=4](http://www.decc.gov.uk/media/viewfile.ashx?filepath=what_we_do/supporting_consumers/addressingfuelpoverty/strategy/annual_report/file48039.pdf&filetype=4)

Chart 2.5 - Fuel poverty ratios (required spend on energy as a proportion of income), 2004 to 2010

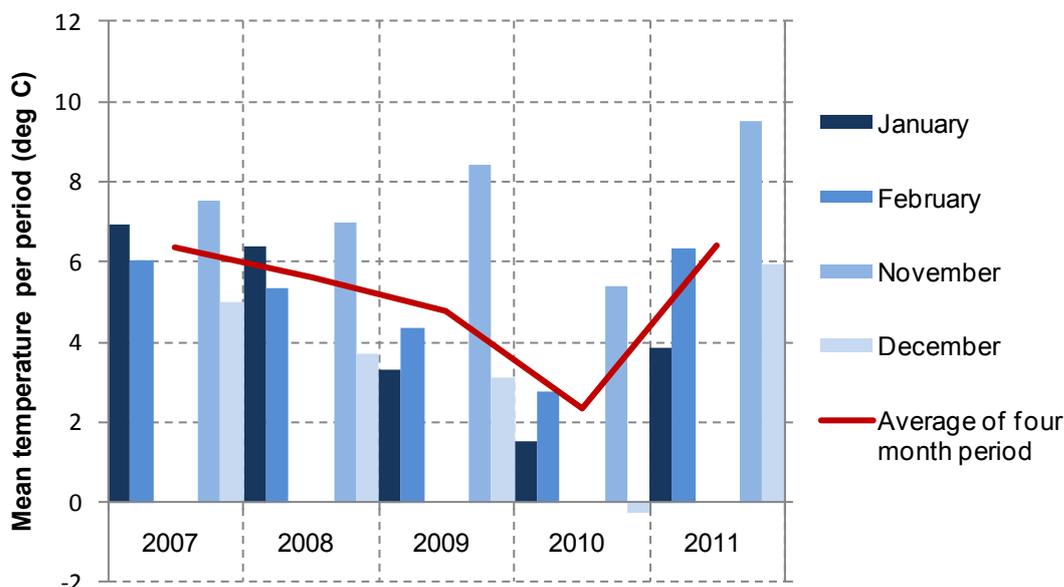


2.4 Interpreting the change in fuel poverty

Chapter 3 sets out the main reasons behind the change in fuel poverty between 2009 and 2010. Within this, it highlights the role of energy efficiency in reducing the level of fuel poverty in England in 2010. However, it is important to consider the context to the fuel poverty numbers, alongside energy consumption data for the same year.

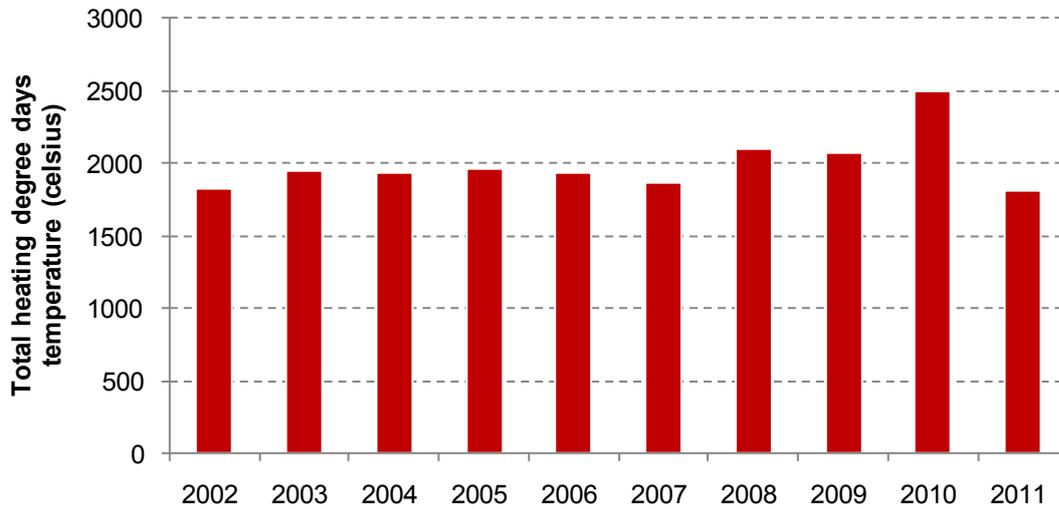
Chart 2.6 shows actual mean temperatures during the main winter period in recent years.

Chart 2.6 – Mean monthly and winter temperatures, degrees Celsius



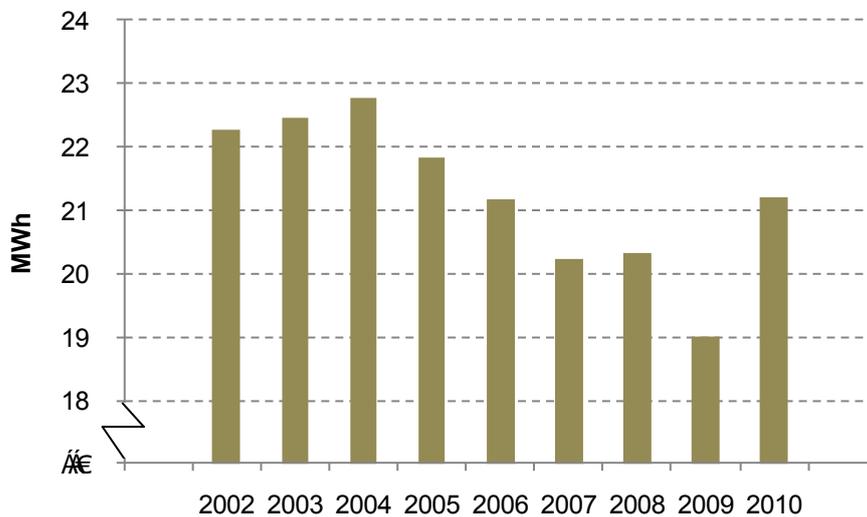
The winter months falling in 2010 (both the latter part of the 2009/10 winter and the early part of the 2010/11 winter) were particularly cold relative to ‘typical’ recent corresponding periods, with extended cold snaps. This led to a cold start and end to 2010, which in turn led to a higher number of degree days⁹ (chart 2.7) in 2010, and higher household energy consumption than in recent years (chart 2.8).

Chart 2.7 – Total annual degree days UK, 2002 to 2011



Source: *Energy Trends, table 7.1*

Chart 2.8 – Total annual energy consumption per household, 2002 to 2010

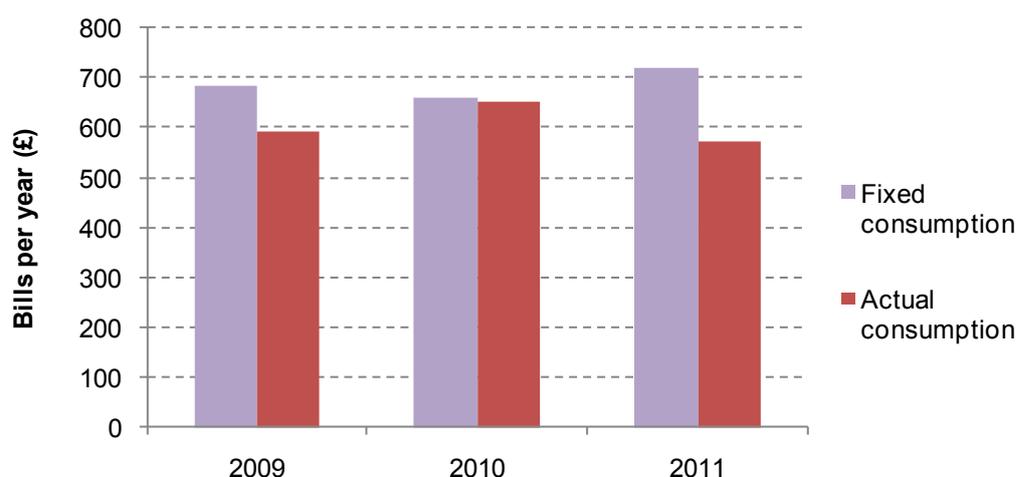


Source: *Energy Consumption in the UK, Table 3.4*

⁹ Heating degree days (HDD) are defined relative to a base temperature - the outside temperature above which a building needs no heating. The chart uses 15.5° Celsius. If the average outside air temperature on a day is above this base temperature, no heat is required; if it is below, then the heating requirement that day will be equal to the temperature deficit in degrees. For example, a day with an average temperature of 10°, would score a HDD as 5.5. The HDDs are summed across the year and displayed in the chart.

As chapter 1 explains, the notional bill used in estimating fuel poverty is modelled based on achieving an adequate standard of warmth of 21 degrees Celsius in the main living area, and 18 degrees in other occupied rooms. However, although the fuel poverty modelling of heating requirements varies according to regional differences in climate, it does not reflect periods of annual temperature variations from long-term averages (either cold snaps during the winter that might require additional spells of heating, such as those in chart 2.6, or mild spells that might reduce the amount of heating required) in any one year that would cause the duration or extent of the heating season to change significantly. Therefore, it is assumed that the same amount of energy will be required to heat an identical dwelling and household in the same location in consecutive years. To illustrate this more clearly, consider the chart below which compares average annual gas bills based on ‘fixed’ and ‘actual’ consumption from a recent article in the DECC publication ‘Energy Trends’¹⁰. Prices are derived from actual tariffs offered by energy suppliers, while the fixed gas consumption assumes constant annual consumption of 18,000 kWh per year, and the actual consumption series varies in line with recorded consumption. The chart illustrates the impact of a fall in prices in 2010 (in the fixed consumption) that is offset by a rise in demand (in the actual consumption).

Chart 2.9 – Average annual gas bills, based on fixed and actual consumption, 2009 to 2011



The modelling of energy bills for fuel poverty calculations uses fixed long run temperatures as a baseline for each region (to estimate a number of ‘heating’ or ‘degree days’), short term fluctuations such as the cold periods seen in the winter of 2010 do not affect fuel poverty data, even though they affect actual heating patterns. Therefore, while actual domestic gas consumption rose by 17 per cent between 2009 and 2010 (largely reflecting an increased demand due to the cold weather, partially offset by improvements in the energy efficiency of homes) modelled consumption used in the fuel poverty data actually fell by around 5 per cent (mainly reflecting improvements in the energy efficiency of homes).

¹⁰ For further details, see <http://www.decc.gov.uk/media/viewfile.ashx?filetype=4&filepath=11/stats/publications/energy-trends/articles/4787-domestic-energy-bills-2011-article.pdf&minwidth=true>

3. Contributions to the change in fuel poverty

3.1 The three drivers of fuel poverty

The fuel poverty status of a household depends on the interaction of three key factors:

- Income;
- Fuel prices;
- Fuel requirement (which is affected specifically by the fuels they use, their dwelling, and energy efficiency)

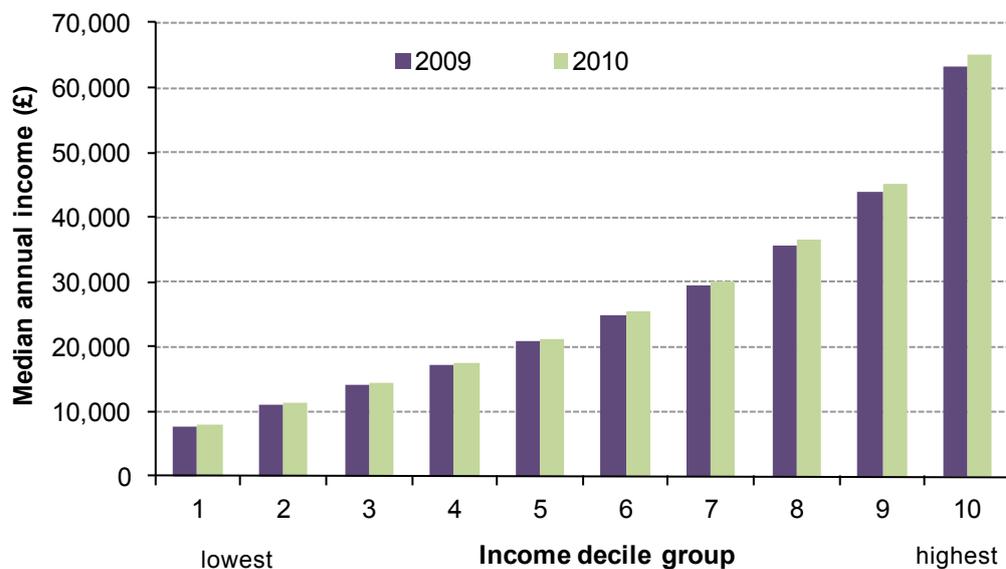
This chapter considers the change in each of these factors over recent years, with particular focus on the change between 2009 and 2010. We then examine how this has affected fuel poverty levels.

When fuel prices rise at a higher rate than income, fuel poverty is likely to rise, and vice versa. In recent years there have been sharp rises in prices relative to income, leading to increases in fuel poverty levels. Between 2009 and 2010, however, prices fell. We will now examine how influential each of prices, incomes and improvements in the energy efficiency of housing have been in driving the reduction in fuel poverty seen between 2009 and 2010.

3.2 Income

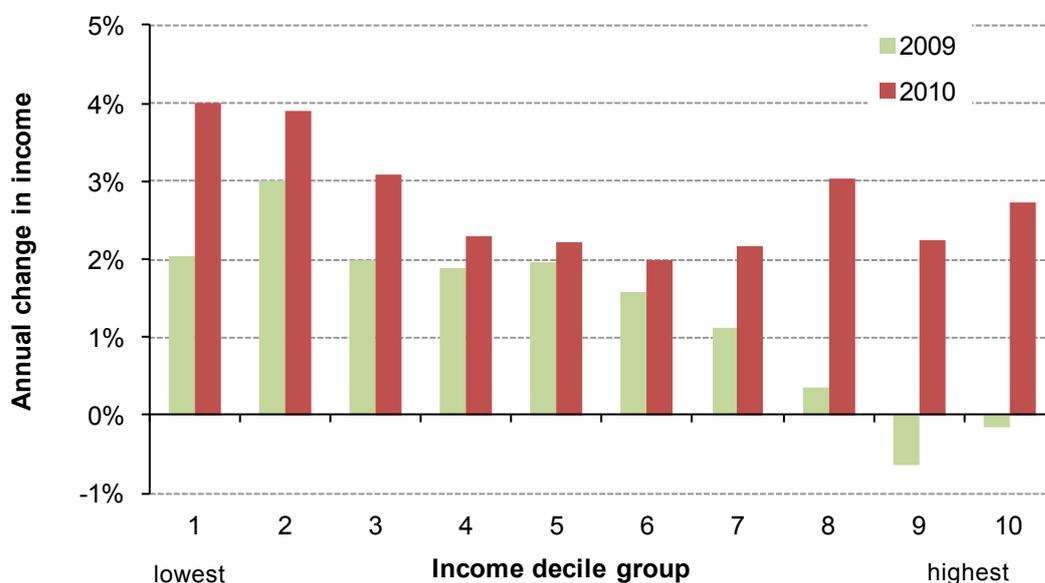
In 2010, incomes once again rose from the previous year, helping households avoid fuel poverty. This can be seen in chart 3.1, which shows that median incomes rose by between 2 and 4 per cent in all income decile groups between 2009 and 2010. This income data is taken from the EHS, which, although not designed as a dedicated survey of incomes, is relevant to analyse, as it is the source of data used when measuring fuel poverty. It is important to note that this income is not adjusted in any way for household size or composition, nor does it take into account housing costs.

Chart 3.1 – Median annual household income, by income decile group, 2009 and 2010



The increases seen in reported income between 2009 and 2010 are greater than those seen between 2008 and 2009. In that period, incomes actually decreased in the two top income groups, and more modest increases were seen in other groups. This can be seen in chart 3.2 below.

Chart 3.2 – Annual change in median income, by income decile group, 2009 and 2010

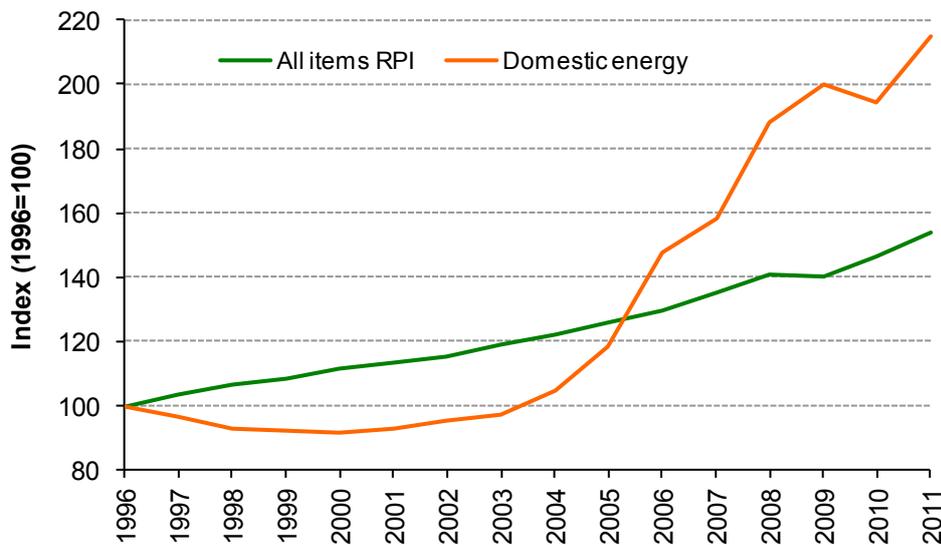


3.3 Prices

For several years, prices have been the most influential factor in movements in fuel poverty. Between 2004 and 2009, prices rose at a greater rate than incomes, thus leading to an increase in fuel poverty over this period.

Chart 3.3 shows retail prices of domestic energy since 1996, and compares these against the prices of the “typical” basket of goods and services that make up the Retail Prices Index.

Chart 3.3 – Domestic energy prices¹¹ and the Retail Prices Index, 1996-2011



As this chart shows, 2010 marked the first calendar year in over a decade that domestic energy prices decreased from the previous year. What’s more, this is despite a rise in general inflation over this period. However, prices increased sharply again from 2010 to 2011, and, with further increases announced since, this is likely to impact upon future fuel poverty levels, as documented in chapter 9 of this publication.

The effect of price changes on average fuel bills is shown in chart 3.4. This shows the annual changes in actual gas bills (based on a fixed level of consumption), by the three most common methods of payment. In the years when fuel prices drop, such as 2010, average fuel bills also decrease for all payment types. Likewise, the price rises seen in 2011 led to increased gas bills in that year. A similar pattern can be seen for electricity bills. Unsurprisingly, the amount by which the bill changes is closely related to changes in fuel poverty levels. For example, in 2010 pre-payment meter customers had the largest bill reductions from 2009, and so also saw the largest drop in fuel poverty rates in this time.

¹¹ As measured by the fuel and light component of the Retail Prices Index. Fuel and light comprises electricity, gas, coal and solid fuels and heating oil and other fuels

Chart 3.4 – Change in standard gas bill, relative to a year earlier, England and Wales¹²

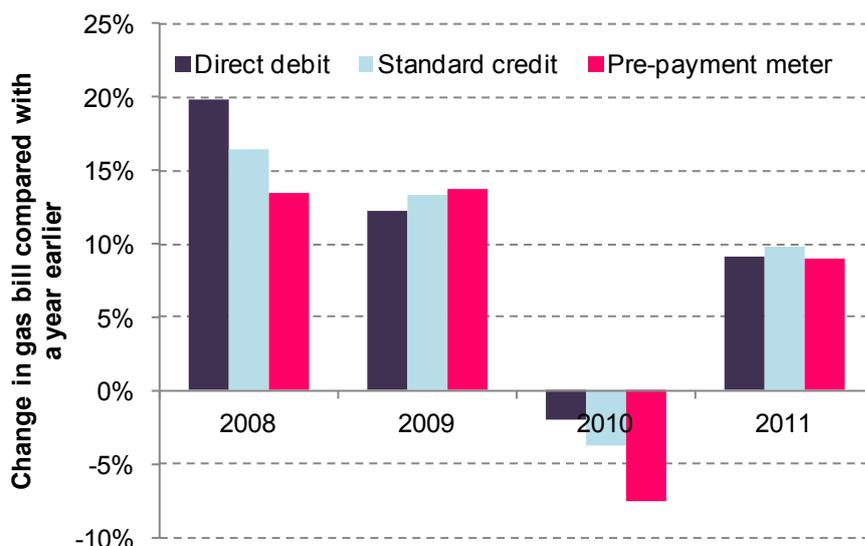


Chart 3.5 illustrates the impact that these rising prices and bills have on fuel poverty. It compares fuel poverty levels from 1996 to 2010 with real terms (i.e. inflation-adjusted) domestic fuel prices over the same period, and shows that as prices fell in 2010, so did the levels of fuel poverty. Prior to this, fuel poverty levels and prices had both increased, year on year, since 2003.

Chart 3.5 – Fuel poverty and real fuel prices¹³, 1996 to 2010

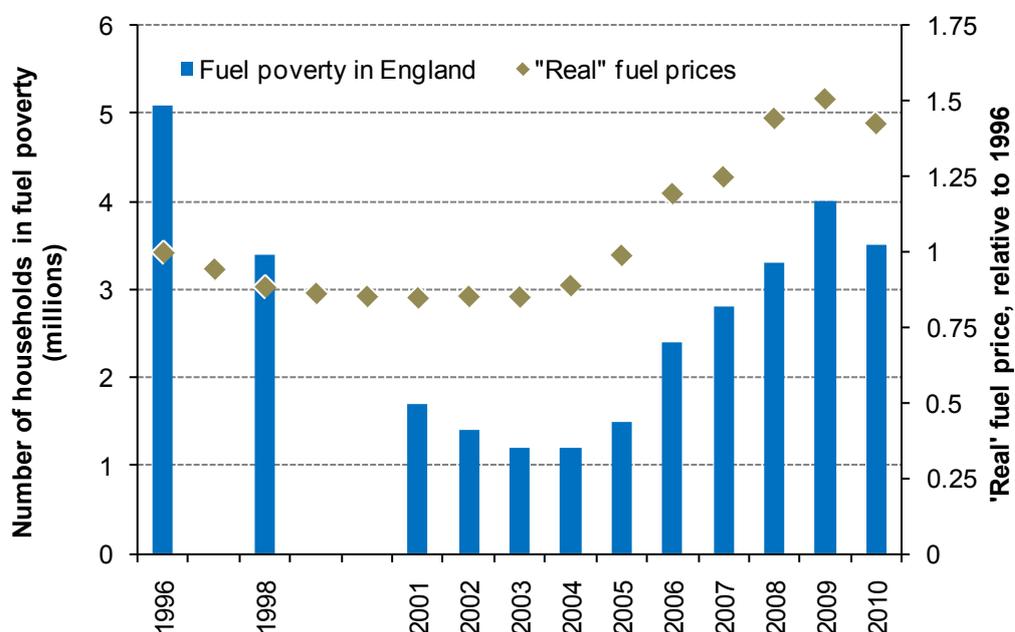


Chart 3.5 shows a strong correlation between fuel prices and fuel poverty levels. However, this correlation is slightly weakened by the fact that each fuel poverty

¹² Source: Quarterly Energy Prices, Table 2.3.2, DECC

¹³ Prices are expressed in real terms in this chart only

<http://www.decc.gov.uk/en/content/cms/statistics/publications/prices/prices.aspx>

dataset is actually a combination of two consecutive years worth of data (i.e. the 2010 dataset is a combination of 2009 and 2010 data). This means that the effects of price changes are staggered over two years, and so when considering the change in fuel poverty from one year to the next, it is useful to consider price changes in the each of the last two years (and likewise for income and energy efficiency changes).

This has implications when considering the causes of changes in fuel poverty from year to year. For example, price levels in 2009 will affect both the 2009 and 2010 fuel poverty data. Therefore although prices decreased in 2010, the effect of this on the 2010 combined fuel poverty dataset will be offset by the higher prices seen in 2009 (see table 3.1), with their combined effect actually being a 1.6 per cent rise in prices. This suggests that price changes are insufficient to explain the drop in fuel poverty seen in 2010. This is discussed further in section 3.5.

Table 3.1 – Fuel price indices for single and combined years, 2005 to 2010

| | Single year prices | | Combined year prices | |
|------|--------------------|---------------------------|----------------------|---------------------------|
| | Price index | Change from previous year | Price index | Change from previous year |
| 2005 | 100.0 | | | |
| 2006 | 124.6 | 24.6% | 112.3 | |
| 2007 | 133.4 | 7.1% | 129.0 | 14.9% |
| 2008 | 158.7 | 19.0% | 146.1 | 13.2% |
| 2009 | 168.6 | 6.2% | 163.7 | 12.1% |
| 2010 | 164.0 | -2.7% | 166.3 | 1.6% |

3.4 Energy efficiency

The average energy efficiency of households¹⁴, as measured by the Standard Assessment Procedure¹⁵ (SAP05), increased again in 2010, rising to 54.7 from 53.2 in 2009. Similarly, the proportion of dwellings in SAP band D or above rose from 52 per cent to 57 per cent. This proportion has risen markedly in the last few years, as shown in Chart 3.6 below. However, fuel poverty levels still increased between 2007 and 2009, suggesting that the effect of these energy efficiency improvements was outweighed by the effect of rising fuel prices.

¹⁴ Note this figure excludes vacant homes, and therefore differs from the change in SAP of all homes recorded in the EHS annual report

¹⁵ For more information on SAP ratings, see <http://projects.bre.co.uk/sap2005/>

Chart 3.6 – Proportion of dwellings in each SAP band, 2007 to 2010

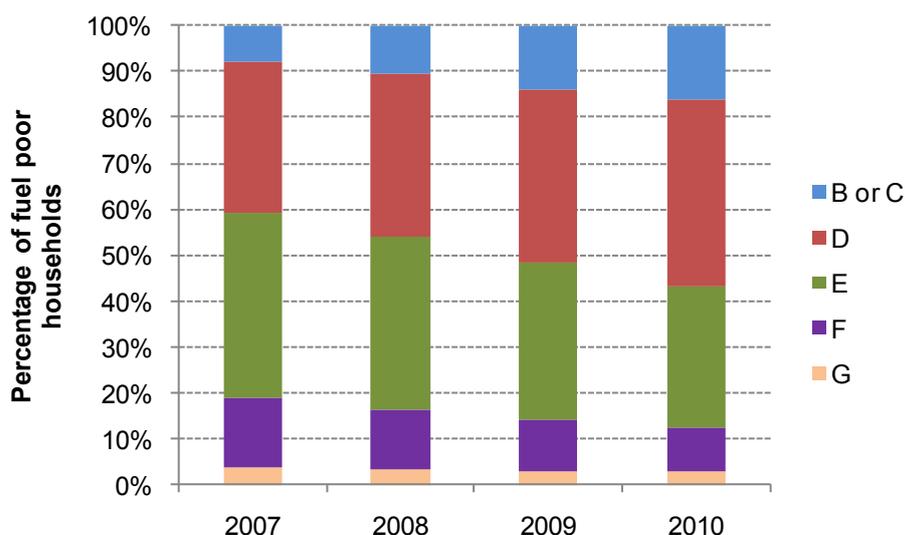


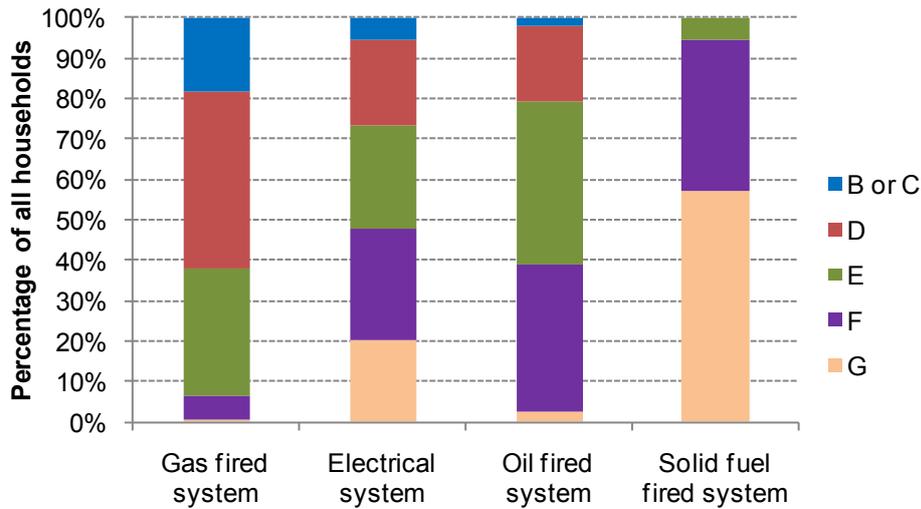
Table 3.2 below looks at the split of average SAP ratings by tenure, comparing owner occupied housing with private and social rented housing. It shows that social housing is generally the most energy efficient, with SAP ratings almost 10 points higher than the other two groups. Nevertheless, considerable improvements have been made across all tenure groups in the last 4 years.

Table 3.2 – Average SAP ratings by tenure, 2007 to 2010

| Tenure | 2007 | 2008 | 2009 | 2010 |
|----------------|------|------|------|------|
| Owner occupied | 48.2 | 49.8 | 51.4 | 52.9 |
| Social rented | 57.9 | 59.4 | 61.2 | 62.5 |
| Private rented | 48.4 | 50.6 | 52.3 | 53.8 |

It is also interesting to look at the differences in SAP by the main heating fuel used. Chart 3.7 shows this, illustrating the fact that for households with a gas fired system, almost two thirds (62 per cent) have SAP rating of D or better, whilst for households with a solid, oil or electrical system, fewer than a third of households have similar SAP ratings. This shows that SAP ratings are closely linked to the type of fuel used in the household. This is to be expected, since SAP is influenced by the cost of heating a fixed area, and so heating systems that are more expensive to power will have lower SAP ratings.

Chart 3.7 – Percentage of households in each SAP band, by main fuel, 2010



3.5 Change in fuel poverty 2009 to 2010

Between 2009 and 2010, fuel poverty in England fell by around 0.5 million households. In order to understand the reasons for this, analysis has been undertaken holding each of the key factors affecting fuel poverty constant. This was done by firstly applying 2010 prices to the 2009 fuel poverty data, in order to understand the impact of price changes on fuel poverty (also including separately the role of social tariffs). This showed what the level of fuel poverty would have been if incomes and energy efficiency had remained unchanged over the period.

The same was then done for incomes, applying 2010 incomes and holding prices fixed, giving an indication of the role of incomes. Finally, by applying 2010 prices and incomes, and looking at the difference between the uprated 2010 fuel poverty level (based on the 2009 housing survey data) and the actual 2010 fuel poverty data, an estimate of the role of energy efficiency improvements between the two years was made, as measured by changes in energy consumption (which reflects modelled energy consumption and efficiency). It is important to remember that this ‘energy consumption’ component will also include the impact of general changes in the housing stock, and the lifestyle (including the amount of time spent in the home) of householders.

Table 3.3 below sets out the picture, starting with a position of 4.0m fuel poor households in 2009.

Table 3.3 – Fuel poverty change, 2009 to 2010

| | Fuel poor | Change in % fuel poor (percentage points) | Change in fuel poverty (households) |
|--------------------|-------------|---|-------------------------------------|
| 2009 | 4.0m | 18.4 | - |
| Prices | | + 0.7 | + 0.15m |
| Social tariffs | | - 0.3 | - 0.06m |
| Income | | - 1.5 | - 0.33m |
| Energy consumption | | - 0.9 | - 0.19m |
| 2010 | 3.5m | 16.4 | -0.43m |

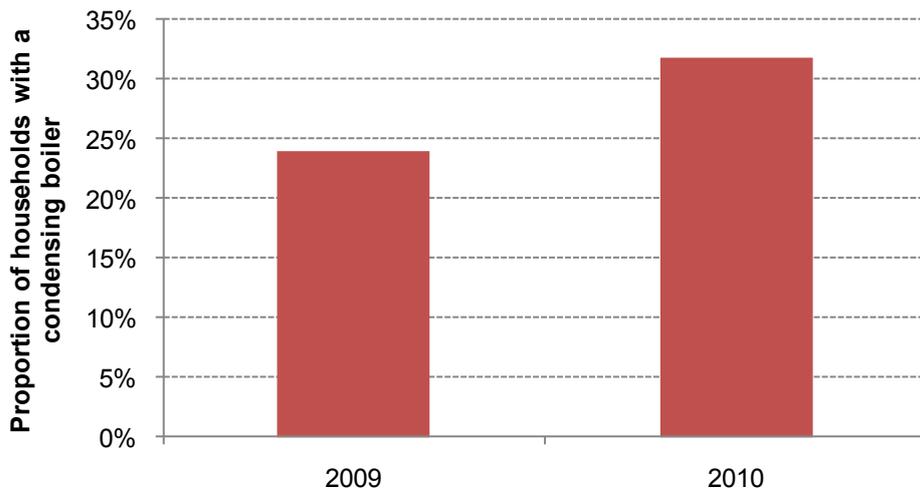
The largest contribution to the change in fuel poverty between 2009 and 2010 came from rising incomes. On their own, these income changes would have taken around a third of a million households out of fuel poverty. Rising prices did push around half of this number back into fuel poverty, but this is countered again by lower modelled energy consumption (this does not take into account consumption changes due to winter temperatures). Our analysis suggests that this reduced modelled consumption accounts for a reduction in fuel poverty of around 190,000 households.

The picture shown above differs considerably from last year. Most notably, the effect of prices is much smaller, with price increases only pushing an extra 150,000 households into fuel poverty between 2009 and 2010, compared with nearly a million between 2008 and 2009. This is likely to reflect the fact that prices fell between 2009 and 2010 (see section 3.3), meaning that prices were lower for half of the 2010 combined year dataset. When combined with the fact that prices rose for the other half of the dataset, due to price increases between 2008 and 2009, the net effect is a slight overall increase in prices (see table 3.1). For the 2009 combined year dataset, prices rose in both 'halves', and subsequently prices pushed a lot more households into fuel poverty in 2009.

In addition to prices having less of an effect, income has also had a greater effect on fuel poverty levels than it did in 2009. In fact, because incomes rose by more proportionally between 2009 and 2010 than between 2008 and 2009 (see section 3.2), they took almost twice as many households out of fuel poverty in 2010 as they did in 2009.

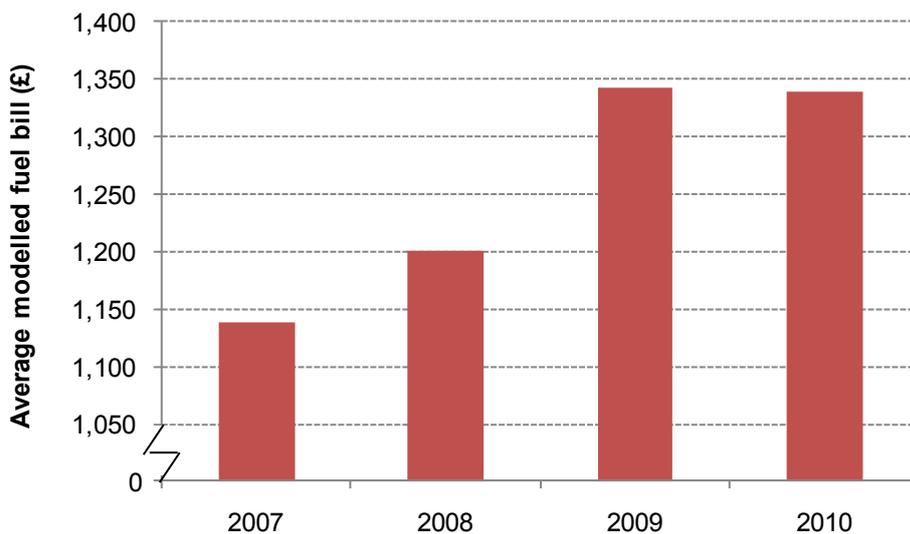
The effect of reduced energy consumption, reflecting improvements in the energy efficiency of dwellings, is also greater than last year. The majority of these improvements have taken place in households with gas central heating, suggesting that boiler improvements have had a large role to play. Indeed, the proportion of households with a condensing boiler rose sharply from 2009 to 2010, from 24 per cent of all households to 32 per cent (see chart 3.8). In addition, the proportion of households with cavity walls and lofts that have been insulated increased, by 4 and 3 percentage points respectively. These, amongst other measures, led to further improvements in SAP ratings for homes receiving such measures.

Chart 3.8 – Proportion of households with a condensing boiler, 2009 and 2010



The combined effect of price and modelled energy consumption changes can be seen by looking at the average modelled fuel bill in the last few years. This fell slightly between 2009 and 2010, from £1,342 to £1,338 (see chart 3.9), reflecting the findings in table 3.3, where the effects of increases in prices are slightly outweighed by improvements in energy efficiency. By contrast, the much larger price increases seen in the 2009 dataset outweigh the effects of energy efficiency improvements, leading to a considerable rise in the average modelled fuel bill, from £1,201 in 2008 to £1,342 in 2009. This was also the case between 2007 and 2008.

Chart 3.9 – Average modelled fuel bill, 2007 to 2010



As with any attempt to disentangle three non-independent factors, interpreting these results can be difficult. Rising energy prices and incomes will impact on most households. However, energy efficiency improvements will only affect a relatively small subset of households. Therefore, the impact on fuel poverty of efficiency measures will depend largely on the fuel poverty ratio of those households receiving

Chapter 3 – Contributions to the change in fuel poverty

measures. Those households that receive efficiency measures and are only marginally fuel poor are likely to be removed from fuel poverty. However, measuring those that are removed from fuel poverty due to improvements in energy efficiency makes no allowance for those households that are severely fuel poor and become less so (but remain fuel poor) with an efficiency measure, nor those that are not fuel poor before the measure.

4. Analysis of fuel poverty in 2010

4.1 Drivers of fuel poverty in 2010

In England in 2010, 3.5 million households were in fuel poverty. The Venn diagram below attempts to quantify the reasons why these households were in fuel poverty in terms of high fuel bills, low income¹⁶, poor energy efficiency of the dwelling or any combination of these.

The thresholds used to produce this chart are subjective but they provide a way of determining the importance of the key determinants of fuel poverty. The thresholds are defined as follows:

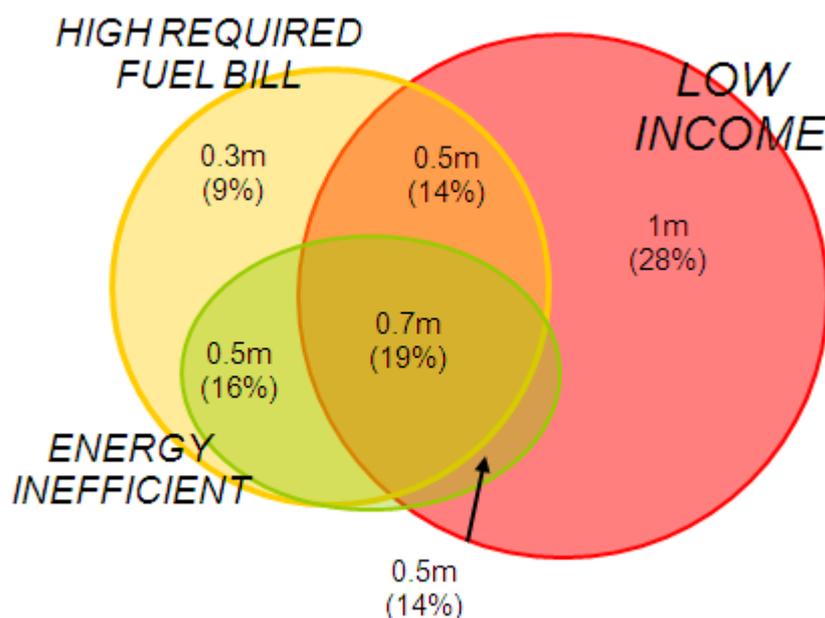
- **High required energy bill:** Households with a modelled annual fuel bill greater than the mean of all modelled fuel bills, which was approximately £1,338 in 2010. Approximately 41 per cent of all households in England in 2010 fell into this category.
- **Low income:** Households with an income level below ten times the average modelled fuel bill (as above)¹⁷. Approximately 21 per cent of all households in England in 2010 fell into this category.
- **Energy inefficient dwelling:** For this analysis, we have defined 'energy inefficient' as having two or more of non-gas central heating (or no central heating), solid walls/uninsulated cavity walls, or loft insulation less than 150mm. Approximately 39 per cent of all households in England in 2010 fell into this category.

Chart 4.1 below shows the number and proportion of fuel poor households only that fall into each category or combination of categories. For example, of all fuel poor households, 0.5m (14 per cent) have low income and have a high required bill, but are not energy inefficient under the bespoke classification.

¹⁶ Income is expressed net of any income tax and national insurance contributions, which most householders will pay at source. This income is also unequivalised.

¹⁷ The low income threshold was chosen to ensure that all fuel poor households were categorised in the Venn diagram in Chart 4.1. The income threshold broadly translates to the lowest two income decile groups.

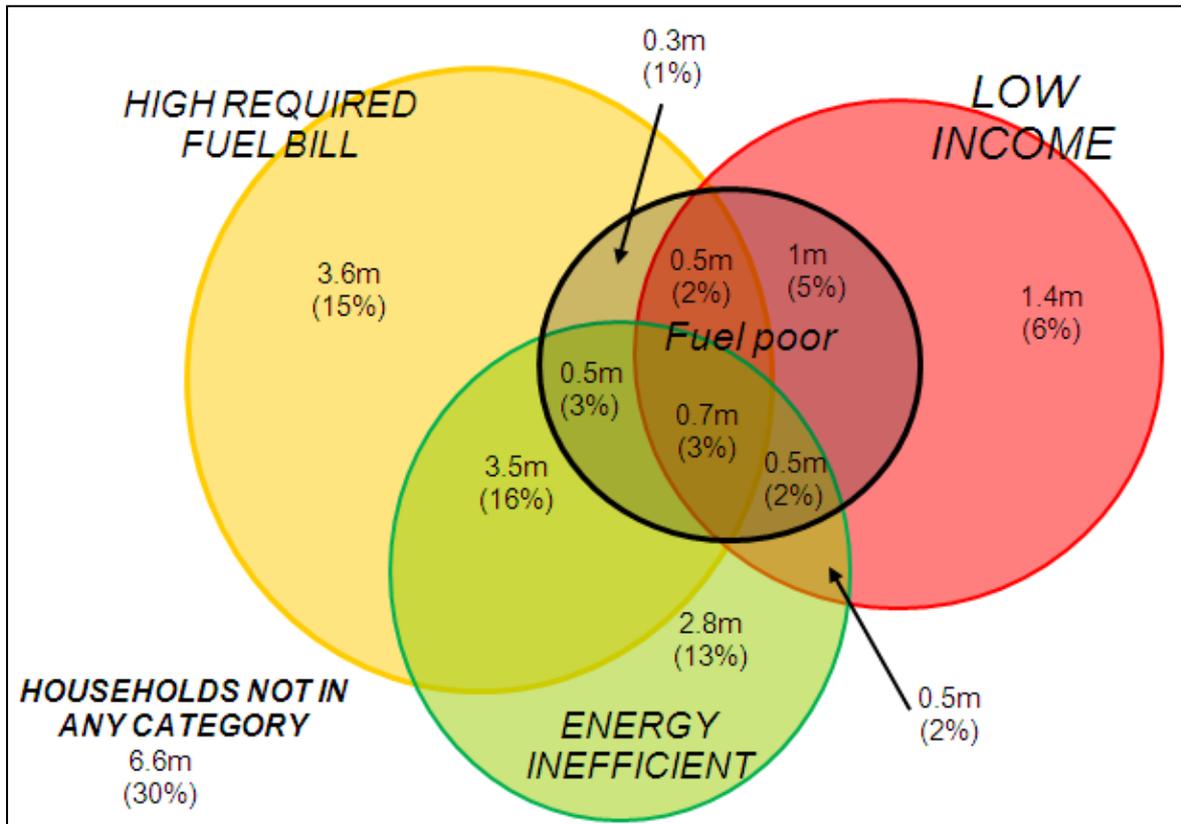
Chart 4.1 – Number and proportion of fuel poor households by category¹⁸



Around 60 per cent of all fuel poor households have a high required spend on energy, three quarters have a low income and half have an energy inefficient dwelling. Approximately 19 per cent of fuel poor households fall into all three categories simultaneously, that is they have inefficient dwellings, high energy bills and a low income. Modelled fuel bills and energy efficiency are naturally not independent of one another and this explains the large overlap between these two categories. However, even if a household faces one or more of these problems, it is not necessarily fuel poor. Chart 4.2 below shows the position with respect to the three categories of all households in England i.e. not just those that are fuel poor.

¹⁸ Venn Diagrams are not exactly to scale.

Chart 4.2 – Number and proportion of all households by category

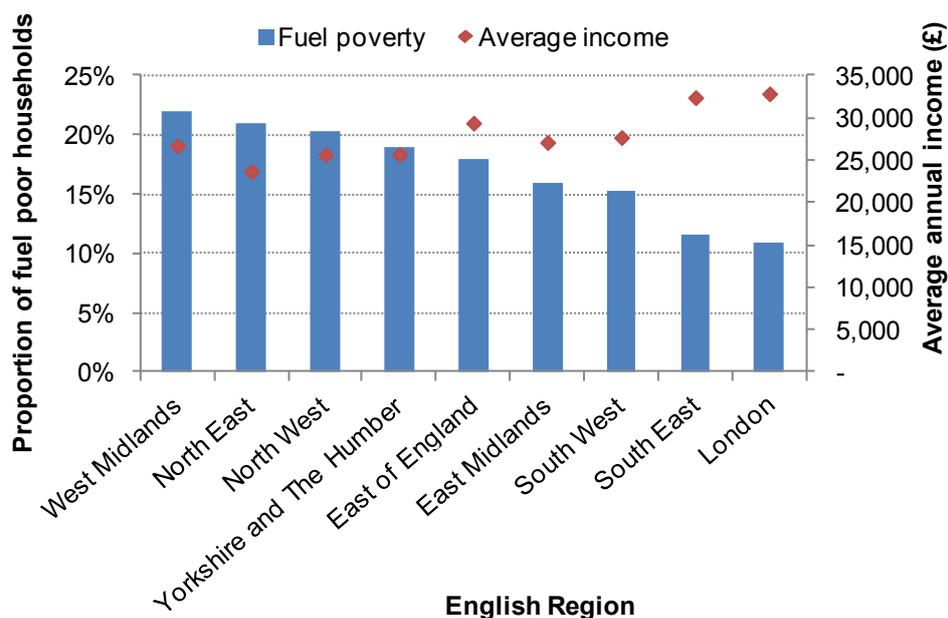


The Venn diagram in Chart 4.2 illustrates that households with low incomes are more likely to fall into fuel poverty than those with a high required fuel bill. Around 60 per cent of households with an income below £13,380 are fuel poor, a quarter of households with a high required energy bill are fuel poor and a fifth of all households living in energy inefficient dwellings (as defined above) are fuel poor.

4.2 Regional fuel poverty in 2010

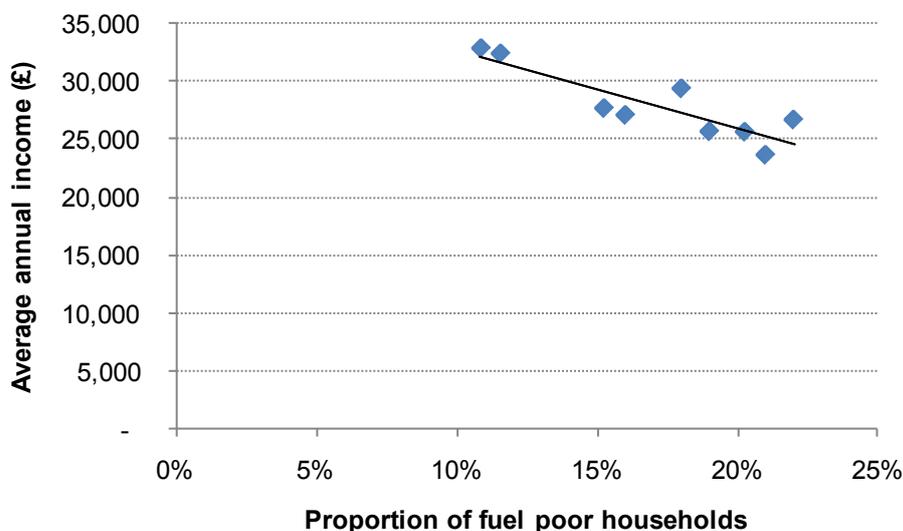
The rate of fuel poverty differs across the country, as seen in Chart 4.3 below. In 2010, the West Midlands had the highest rate of fuel poverty, with around 22 per cent of households needing to spend more than 10 per cent of their income on fuel to maintain the adequate level of warmth. London had the lowest fuel poverty rate at 11 per cent. This is the first time in four years that the South East has not had the lowest rate of fuel poverty, although the rate in the South East is only marginally above that for London.

Chart 4.3 – Fuel poverty rates and average income by English region, 2010



As discussed in Section 4.1, low income is a key driver of fuel poverty. Chart 4.3 also shows the average income in each of the English regions and suggests that there is a relatively strong link between income levels and fuel poverty rates. This is not surprising given that income is directly used in the fuel poverty ratio calculation. The East of England has a higher fuel poverty rate than might be expected for its high average income, however the average SAP rating for dwellings in this region is lower than in other regions. Chart 4.4 below is a scatter diagram showing the linear relationship between income and fuel poverty, where each point represents one of the English regions.

Chart 4.4 – Relationship between fuel poverty rates and average annual incomes in the English regions, 2010



There is a strong negative correlation between the variables, of -0.88. In other words, as average income increases, the proportion of fuel poor households in the region decreases.

Table 4.1 below shows the average SAP rating for households in each of the English Regions in the order of lowest energy efficiency to the highest.

Table 4.1 – Average annual income, fuel poverty ratio and SAP rating by English region, 2010

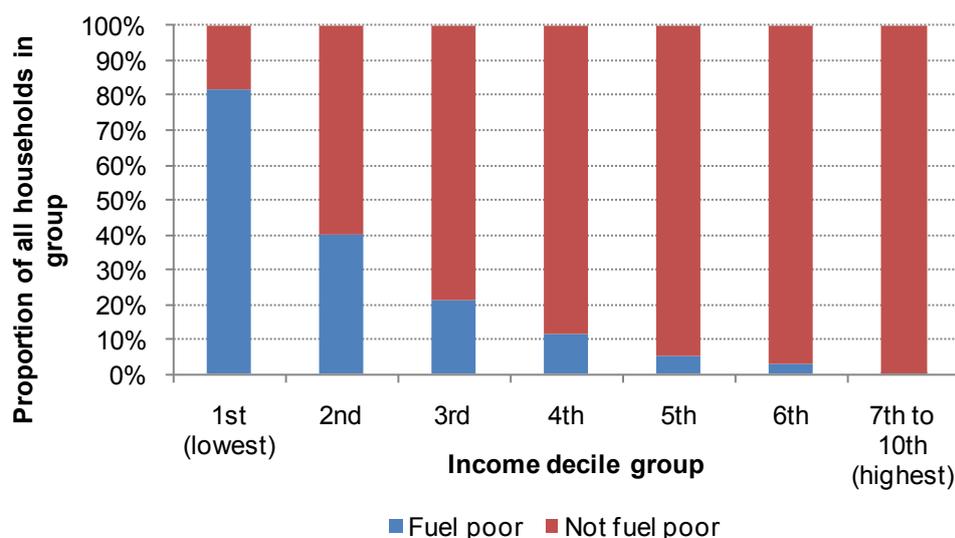
| English Region | Average annual income (£) | Average Fuel Poverty ratio | Average SAP rating |
|--------------------------|----------------------------------|-----------------------------------|---------------------------|
| West Midlands | 26,700 | 0.08 | 53.0 |
| East Midlands | 27,100 | 0.08 | 53.2 |
| South West | 27,700 | 0.07 | 53.3 |
| East of England | 29,400 | 0.07 | 53.7 |
| South East | 32,400 | 0.06 | 55.0 |
| Yorkshire and The Humber | 25,700 | 0.07 | 55.2 |
| North West | 25,700 | 0.08 | 55.2 |
| London | 32,900 | 0.06 | 56.4 |
| North East | 23,700 | 0.08 | 58.0 |

Although the North East has the lowest average annual income, it has the highest average SAP rating, which will act to reduce the average fuel costs. This is likely to be the reason why the fuel poverty rate in the North East is lower than that in the West Midlands, despite the latter having a larger average annual income. The four regions with the highest SAP also have the highest proportion of social housing (which tends to be more energy efficient) and the highest proportion of households on the gas grid (which contributes to a higher SAP).

4.3 Household income and associated variables

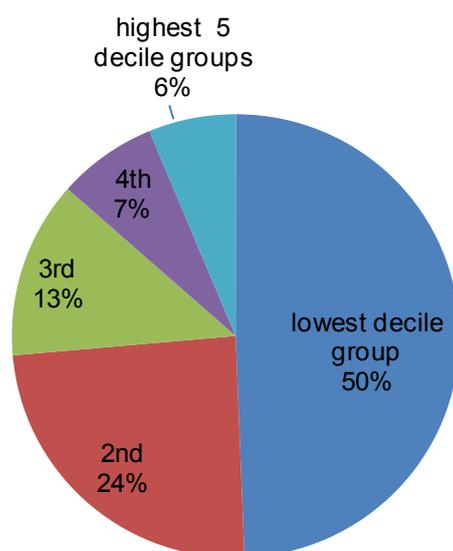
Chart 4.5 below shows the proportion of households in each income decile group that are in fuel poverty and the proportion that are not. Households in the lowest income decile group have the highest rate of fuel poverty, with around 82 per cent of households in fuel poverty. Naturally, the rate of fuel poverty decreases with the higher income groups.

Chart 4.5 – Proportion of households in fuel poverty by income decile group, 2010



As seen in Chart 4.6, the fuel poor households in the lowest two income decile groups account for almost three-quarters of all fuel poor households.

Chart 4.6 – Proportion of all fuel poor households by income decile groups, 2010



In around 69 per cent of households in the lowest income decile group, the household reference person¹⁹ is classified as economically inactive, with a further 14 per cent classified as unemployed. This compares to 37 per cent economically inactive and 4 per cent unemployed across all households. Chart 4.7 below shows the proportion of households in each of the three employment status groups. The highest fuel poverty rate is amongst the unemployed, where over 50 per cent of

¹⁹ The Household Reference Person (HRP) is the person in whose name the dwelling is owned or rented or who is otherwise responsible for the accommodation. In the case of joint owners and tenants, the person with the highest income is taken as the HRP. Where incomes are equal, the older is taken as the HRP. This procedure increases the likelihood that the HRP better characterises the household's social and economic status.

households (approximately 394,000 households) are in fuel poverty, although unemployed households account for the smallest proportion of all households out of the three groups illustrated.

Chart 4.7 – Proportion of households in fuel poverty by employment status, 2010

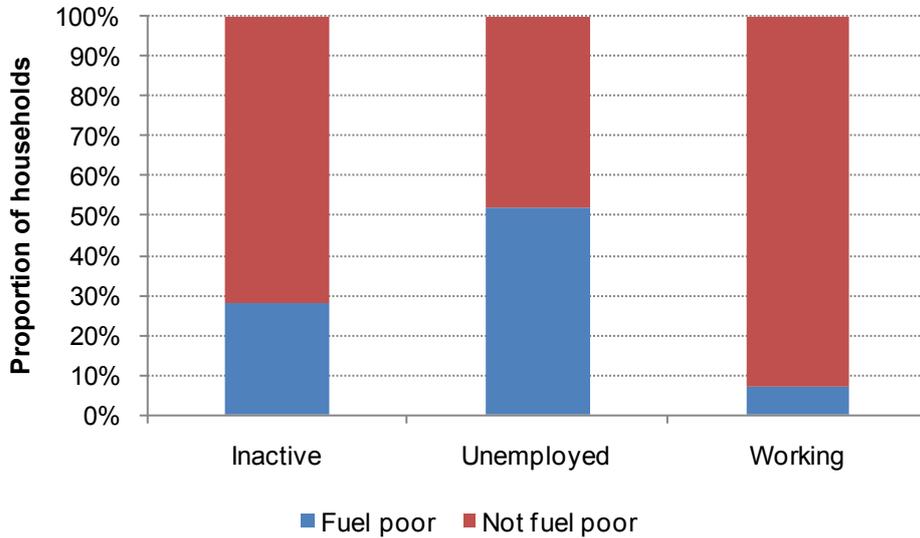


Chart 4.8 below shows the distribution of full annual income for both the fuel poor households and the non-fuel poor households. As expected, the mean annual income of the fuel poor households is lower at £11,000 than the mean annual income of the non-fuel poor households at £32,000. In addition, the distribution of incomes in the fuel poor group is much less dispersed than that of the non-fuel poor group. The middle 50 per cent of fuel poor households have an income between £7,800 and £13,300 (the inter-quartile range), whereas 50 per cent of the non-fuel poor group have an income between £17,900 and £39,600. Eight per cent of fuel poor households have an income greater than £17,900.

Chart 4.8 – Distribution of annual income in fuel poor and non-fuel poor households, 2010

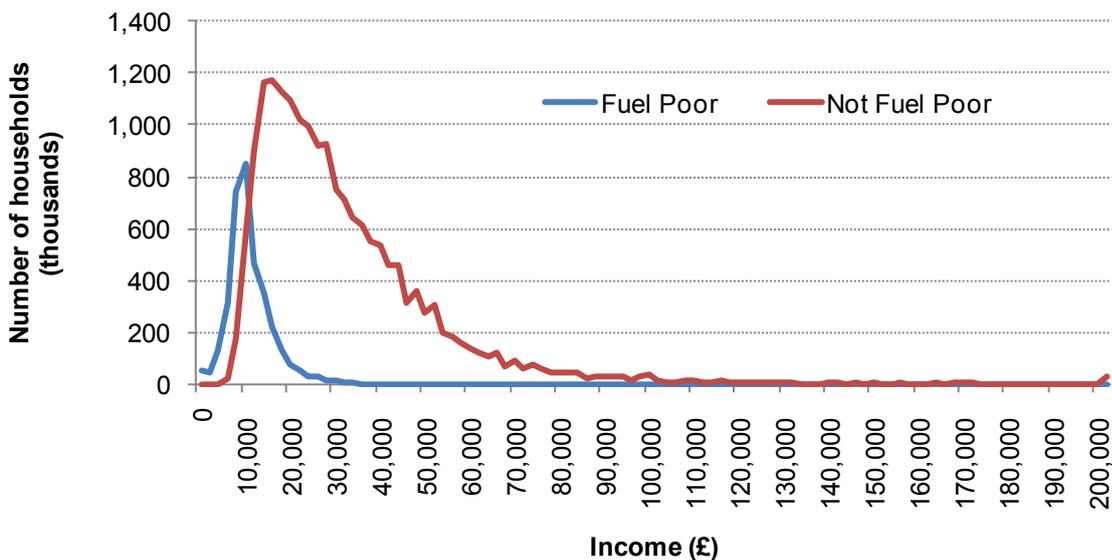


Chart 4.8 also illustrates that there are non-fuel poor households that have a low annual income but are not in fuel poverty. Many of these households will occupy small and efficient dwellings, therefore protecting them from the costs of heating larger homes.

4.4 Household characteristics

Chart 4.9 below shows over half (60 per cent) of fuel poor households consist of a single adult, which is perhaps unsurprising given the single income of the household (and that the cost to power the home is, on average, more than half of that of a two person household). This is reflected in Table 4.2, which shows the average annual income for each of the household composition groups. On average, couples under 60 receive around double the level of income of single adult under 60 households.

Chart 4.9 – Proportion of all fuel poor households by household composition, 2010

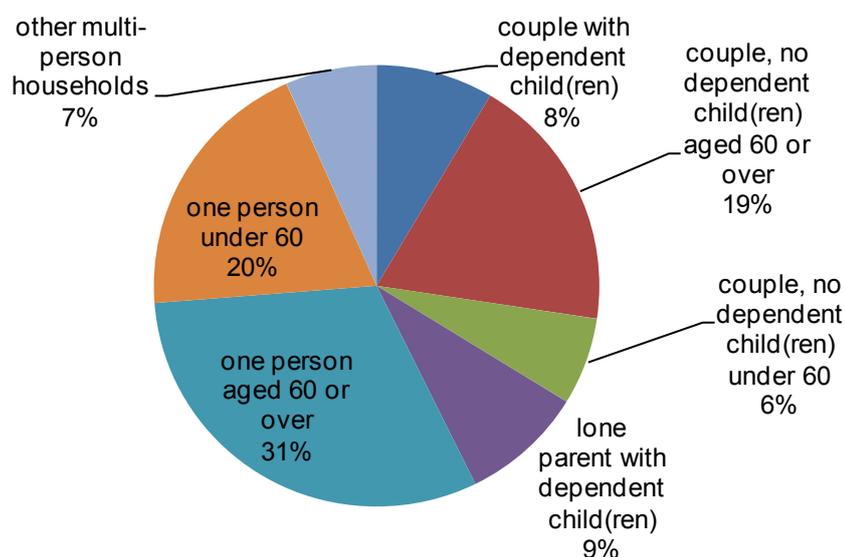


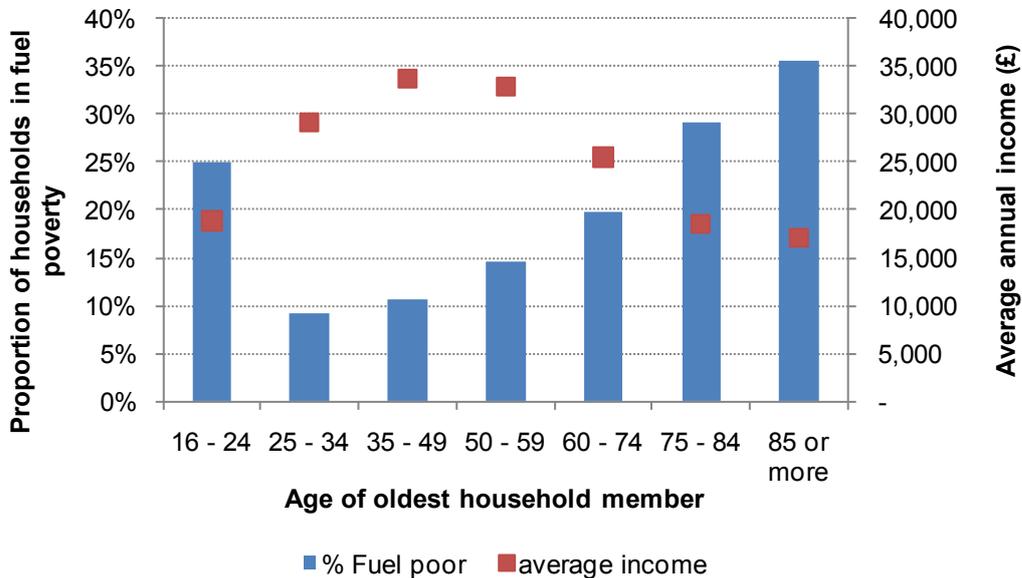
Table 4.2 – Average annual income by household composition, 2010

| Household composition group | Average annual income (£) | Proportion of group that are fuel poor |
|--|---------------------------|--|
| Couple with dependent child(ren) | 38,500 | 6% |
| Couple, no dependent child(ren), aged 60 or over | 27,300 | 18% |
| Couple, no dependent child(ren), under 60 | 40,200 | 6% |
| Lone parent with dependent child(ren) | 19,300 | 18% |
| One person aged 60 or over | 14,300 | 35% |
| One person under 60 | 18,200 | 25% |
| Other multi-person households | 29,500 | 15% |
| All households | 28,500 | 16% |

Chart 4.9 also indicates that around half of all fuel poor households contain someone aged 60 or over, households that have average incomes below the average across

all households represented in the EHS. Chart 4.10 below illustrates how the age of the oldest person in the household is related to the propensity to fuel poverty.

Chart 4.10 – Proportion of households in fuel poverty and average annual income by age of oldest household member, 2010



With the exception of households where the oldest member is under 25, the fuel poverty rate increases as the age of the oldest householder increases. In those households where the oldest person is aged between 65 and 84, over a quarter are in fuel poverty. Over a third of households where the oldest person is aged 85 or over are fuel poor. There is also a strong link between the proportion of fuel poor households in an age group and the average annual income of the age group. The 35-49 age group has a higher rate of fuel poverty than 25-34 year olds, despite having higher income. However, households where the oldest person is 35-49 have lower SAP, higher fuel bill and floor area on average than for 25-34 year olds.

Table 4.3 below shows the proportion of households in each employment status group (according to household reference person) by age of oldest household member, which helps to explain the fuel poverty rates in Chart 4.10.

Table 4.3 – Proportion of household reference person in each employment status group by age of the oldest household member, 2010

| Age of oldest household member | Employment status of HRP | | |
|--------------------------------|--------------------------|------------|---------|
| | Inactive | Unemployed | Working |
| 16 - 24 | 43% | 9% | 48% |
| 25 - 34 | 14% | 6% | 80% |
| 35 - 49 | 11% | 5% | 84% |
| 50 - 59 | 17% | 4% | 79% |
| 60 - 74 | 65% | 1% | 34% |
| 75 - 84 | 94% | 0% | 6% |
| 85 or more | 94% | 0% | 6% |
| All households | 37% | 4% | 59% |

In households where the oldest person is aged 60 or over, the vast majority have a household reference person who is economically inactive. In other words, these are households containing retired people and, as such, are likely to have a reduced income (because their main income is from a pension). Although nearly half of the 'Under 25' category (i.e. households where the oldest person is under 25) are in employment, almost as many are classed as economically inactive. These households often contain students who typically have low incomes (and may live in less energy efficient accommodation), which perhaps helps to explain why 25 per cent of 'under 25' households are in fuel poverty.

4.5 Dwelling characteristics and efficiency

Chart 4.11 below shows the fuel poverty rate in households with varying numbers of bedrooms. In households with 1, 2, or 3 bedrooms, the fuel poverty rate is broadly similar at around 16 to 18 per cent. However, in households with four or more bedrooms the fuel poverty rate is lower at around 11 per cent. This is likely to be because households living in properties with four or more bedrooms tend to have a greater household income than households living in smaller properties, as shown in Table 4.4.

Chart 4.11 – Proportion of households in fuel poverty by number of bedrooms, 2010

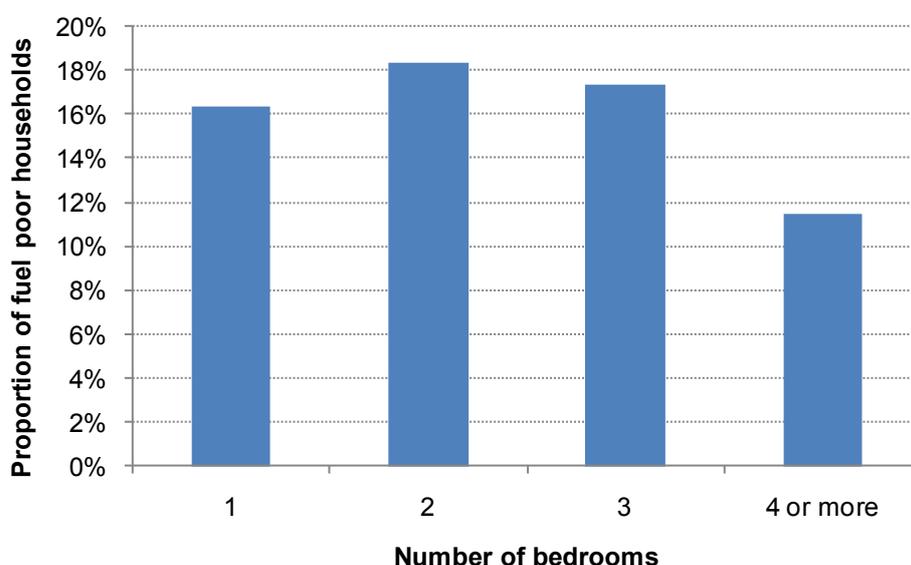


Table 4.4 – Average annual income by number of bedrooms, 2010

| Number of bedrooms | Average annual income (£) |
|--------------------|---------------------------|
| 1 | 17,400 |
| 2 | 22,400 |
| 3 | 27,600 |
| 4 or more | 45,000 |
| All households | 29,000 |

However, there is a tendency for some households to under occupy their properties. Under occupied dwellings are defined as those that are excessive in size for the number of occupants that live there²⁰. In 2010, 24 per cent of under occupying households were in fuel poverty, compared to 13 per cent of non-under occupying households, reflecting the fact that the modelled cost per person per unit of floor area for under-occupied households tends to be higher than for those households not under occupying. Almost half of all under occupied properties contain a single occupant.

As discussed in Section 4.1, the level of energy efficiency of the dwelling is another key driver in the propensity of a household to fuel poverty. Chart 4.12 shows the fuel poverty rate by different SAP rating bands, illustrating again that the least energy efficient households are the ones most likely to be fuel poor.

Chart 4.12 – Proportion of households in each SAP band that are fuel poor, 2010

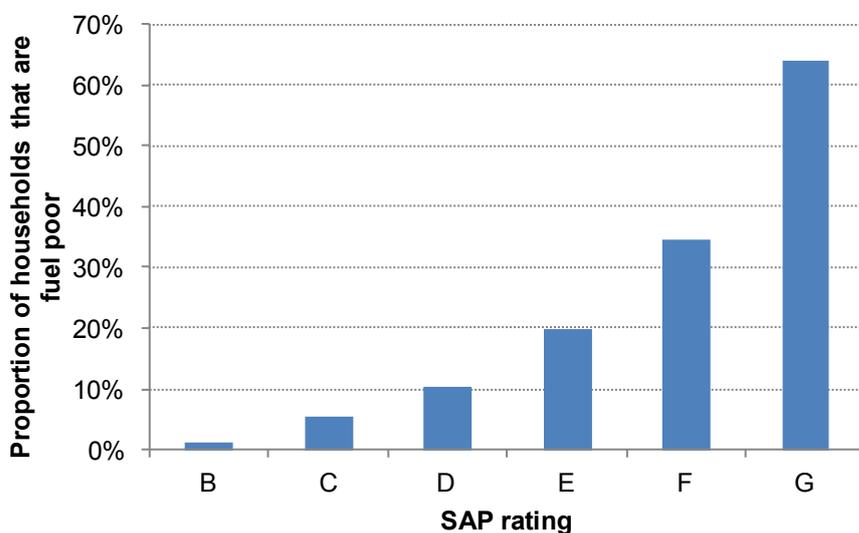
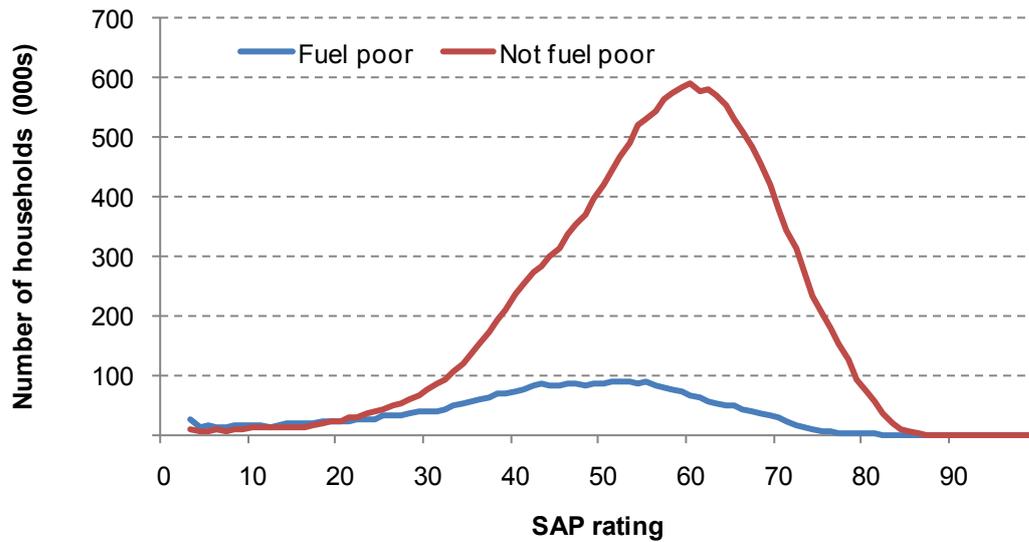


Chart 4.13 below shows the distribution of SAP ratings for both the fuel poor households and the non-fuel poor households²¹. The average SAP rating amongst fuel poor households in 2010 was 44.2, much lower than the average SAP rating of 56.8 amongst non-fuel poor households. However, the distribution of SAP ratings in the fuel poor group is more spread than that of the non-fuel poor group. The middle 50 per cent of the fuel poor group have a SAP between 34 and 56, whereas 50 per cent of the non-fuel poor group have a SAP between 48 and 65.

²⁰ For the full definition of under occupancy, see the fuel poverty methodology handbook, which is available at: <http://www.decc.gov.uk/assets/decc/Statistics/fuelpoverty/614-fuel-poverty-methodology-handbook.pdf>

²¹ Both of these distributions have been smoothed using a 7 point moving average.

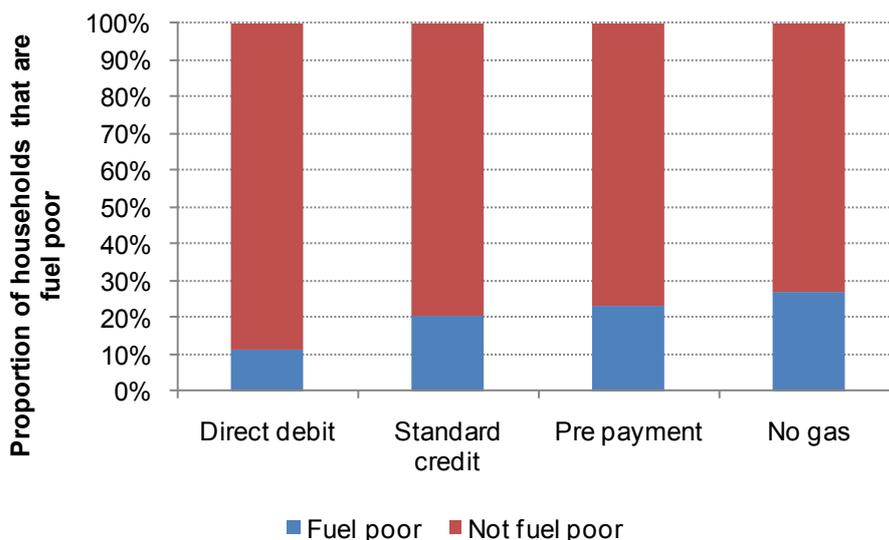
Chart 4.13 – Distribution of the SAP ratings of fuel poor and non-fuel poor households



4.6 Consumer choices

Chart 4.14 below shows the proportion of households that are fuel poor (and non-fuel poor) by how they choose to pay for their gas consumption, or whether there is no gas consumption (in most cases these would be households off the gas grid). Of the three payment types (where gas is used), the highest fuel poverty rate is amongst households that pay using a pre-payment meter, at 23 per cent.

Chart 4.14 – Proportion of households in fuel poverty by payment method, 2010



However, although prepayment meters are often associated with the fuel poor, a relatively small proportion of the few fuel poor use pre-payment meters for gas consumption. Chart 4.15 shows that, of all fuel poor households, just 15 per cent use pre-payment meters for gas.

Chart 4.15 – Proportion of all fuel poor households by payment method for gas, 2010

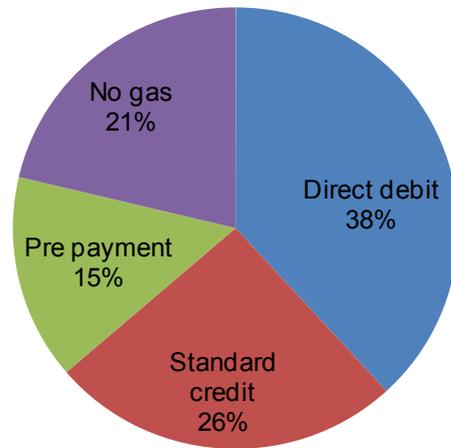


Chart 4.16 – Proportion of households in fuel poverty by main heating fuel, 2010

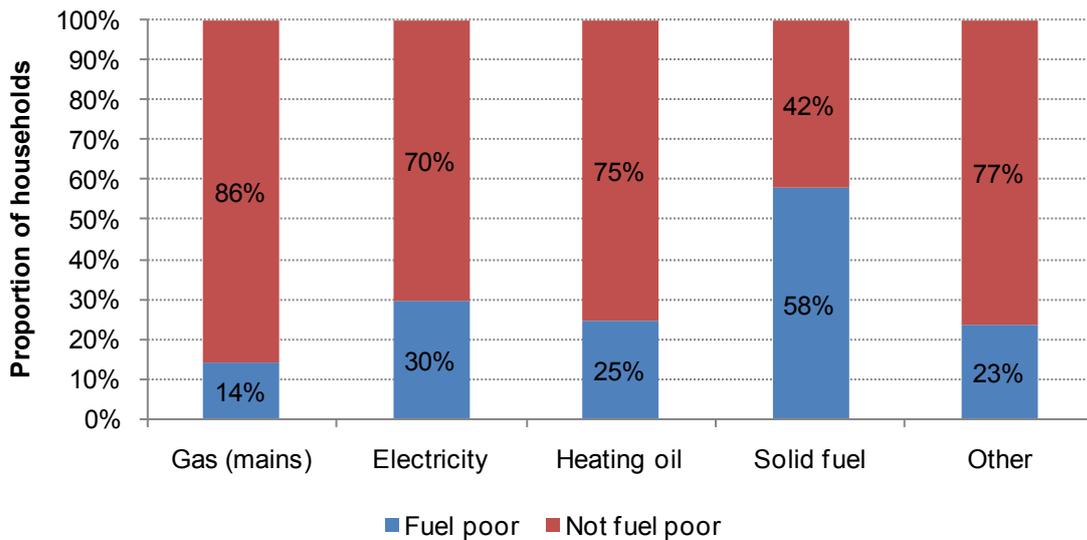


Chart 4.16 shows that a relatively high proportion (29 per cent) of those households who do not use gas (i.e. use electricity, heating oil, solid fuel or other) are fuel poor²².

In those households using gas as their main heating fuel, around 14 per cent are fuel poor. This compares to households using solid fuel, where over half are fuel poor. However, nearly 85 per cent of all households in England use gas as their main heating fuel, and therefore gas users still form the majority of the fuel poor. By contrast, only 1 per cent of households use solid fuel as their main heating fuel.

²² The 'Other' category includes LPG, propane and community heating schemes. Electricity includes economy 7 and similar.

5. Trends in fuel poverty in England, 2003 to 2010

5.1 Introduction

This chapter considers some of the key changes in fuel poverty between 2003 and 2010 in England, the main drivers of which, as mentioned throughout this report, are income, fuel prices and energy efficiency. These, together with factors such as household size, occupancy and payment method, are considered in more detail in terms of their relationship with fuel poverty over time.

Supporting the analysis within this chapter is a spreadsheet containing detailed fuel poverty analysis for England from 2003 to 2010. This is available online at: http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/fuelpov_stats.aspx.

2010 saw the first decrease in fuel poverty levels for several years, with 3.5 million households being fuel poor, representing 16.4 per cent of all households in England. This compared with 4.0 million households in 2009. This is likely to be partly due to reductions in energy prices between 2009 and 2010. Using figures from the Retail Prices Index (as compiled by the Office for National Statistics), domestic gas prices fell by 6 per cent and electricity prices by 2 per cent in cash terms from 2009 to 2010. Improvements in energy efficiency are also likely to have contributed, with the mean SAP rising from 53 to 55 in this time.

Despite this decrease, it is important to note that 2010 levels of fuel poverty were still considerably higher than those in 2003, when only 1.2 million households were in fuel poverty, representing 5.9 per cent of all households in England.

5.2 Vulnerable households

As described in Section 2.1, a vulnerable household is one that contains children, the elderly or someone who is disabled or has a long term illness. In 2003, there were 1.0 million vulnerable households in fuel poverty, increasing to 2.8 million in 2010 (having dropped slightly from 3.0 million in 2009).

Chart 5.1 shows that the number of fuel poor households more than doubled across all household age groups (illustrated by age of the oldest occupant) in England between 2003 and 2010. However, the scale of these increases varied, with the largest increase seen in the group where the household reference person was aged 60 to 74.

Chart 5.1 – Number of households in fuel poverty by age of oldest occupant, 2003 and 2010

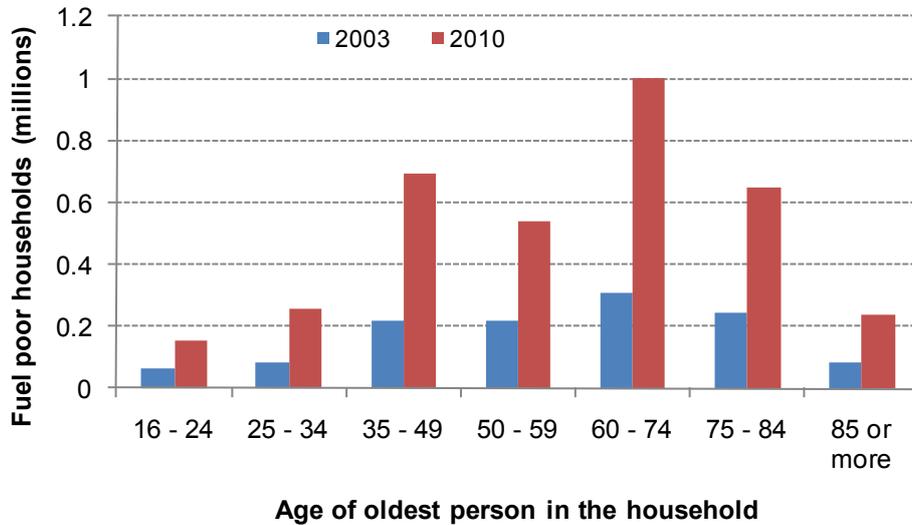
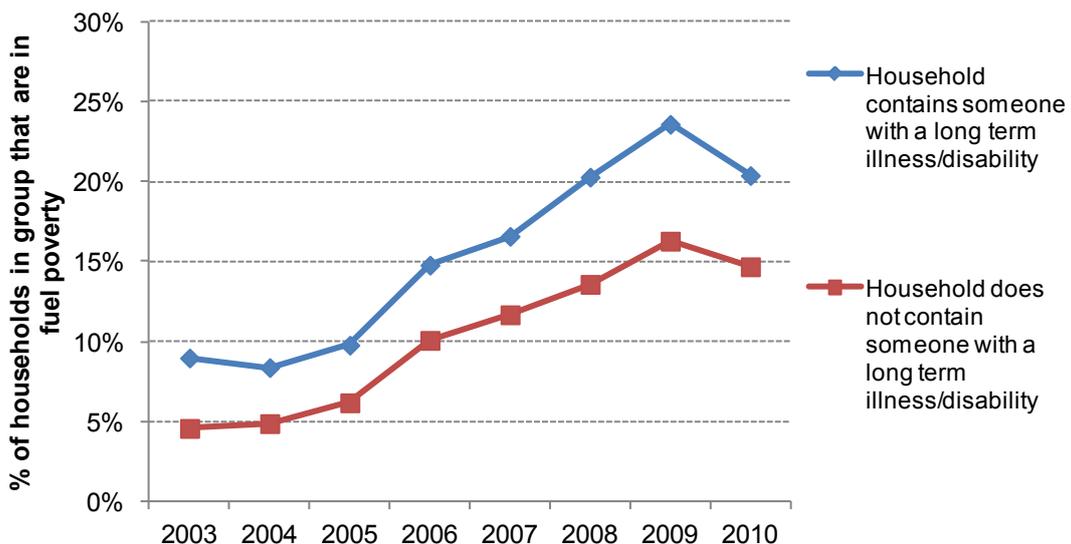


Chart 5.2 shows that, throughout the period 2003 to 2010, households containing someone with a disability or a long-term illness had a higher rate of fuel poverty than other households. Although the percentage of households in fuel poverty in this group increased from 2003 to 2010, the rate of increase was similar to those households not containing someone with a disability or long-term illness. However, compared with 2009, 2010 saw a larger decrease in fuel poverty among households containing someone with a disability or long-term illness (24 per cent down to 20 per cent) compared with those that didn't (16 per cent down to 15 per cent).

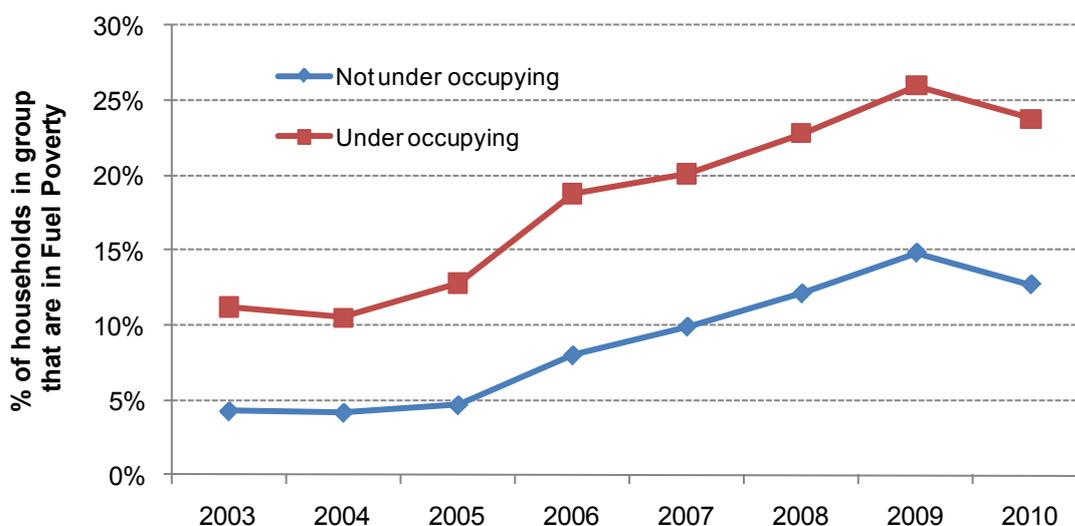
Chart 5.2 – Fuel poverty rate of households containing somebody ill or disabled, 2003 to 2010



5.3 Household occupancy

There was a 47 per cent increase in the number of under occupied²³ households in England between 2003 and 2010. This period saw a large rise in the rate of fuel poverty amongst both under-occupying households and households not under occupying. As chart 5.3 shows, the proportion of under-occupying households that are fuel poor is consistently around double that of households not under-occupying.

Chart 5.3 – Fuel poverty rates by under-occupancy, 2003 to 2010



There were increases in the rate of fuel poverty for all household sizes between 2003 and 2010. However, single person households have consistently had the highest fuel poverty rate over the period, with a much larger proportion of these being fuel poor compared with other household sizes (see chart 5.4).

²³ Under occupied dwellings are those that are excessive in size for the number of occupants that live there. For the full definition, see the comprehensive fuel poverty methodology documentation: http://www.decc.gov.uk/media/viewfile.ashx?filepath=what_we_do/supporting_consumers/addressing_fuel_poverty/strategy/annual_report/file29694.pdf&filetype=4

Chart 5.4 – Fuel poverty rate by number of people in household, 2003 to 2010

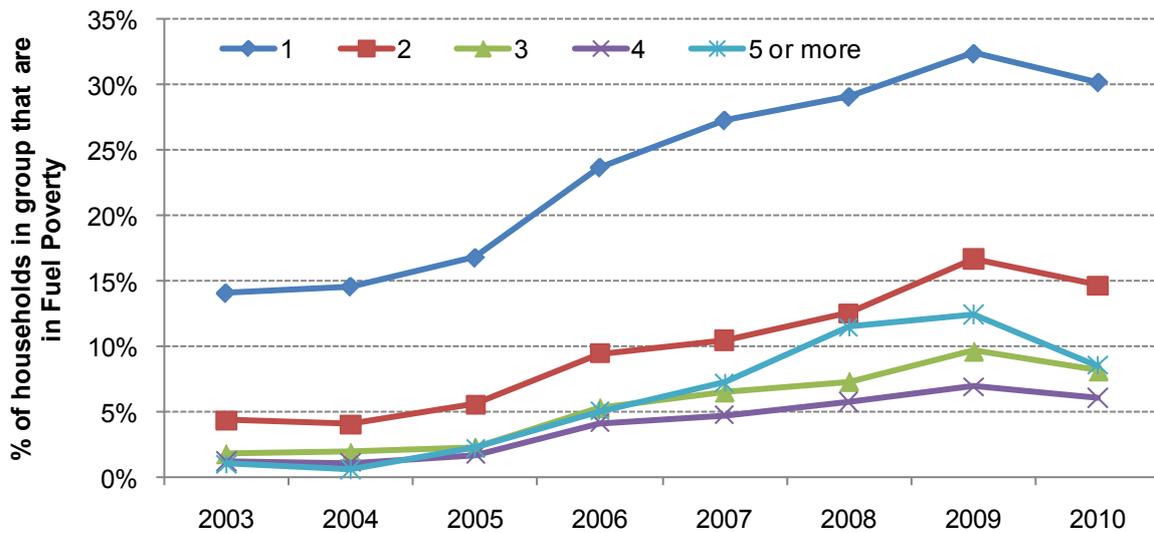
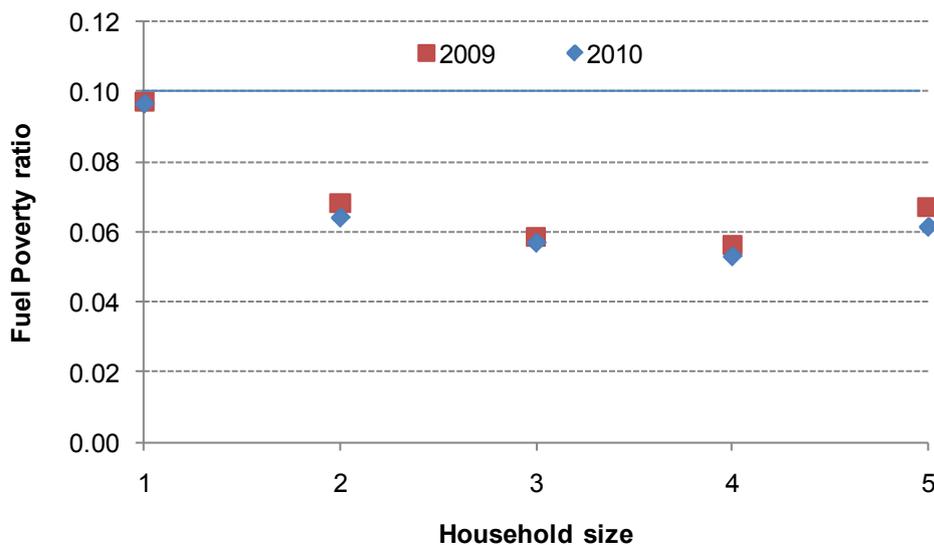


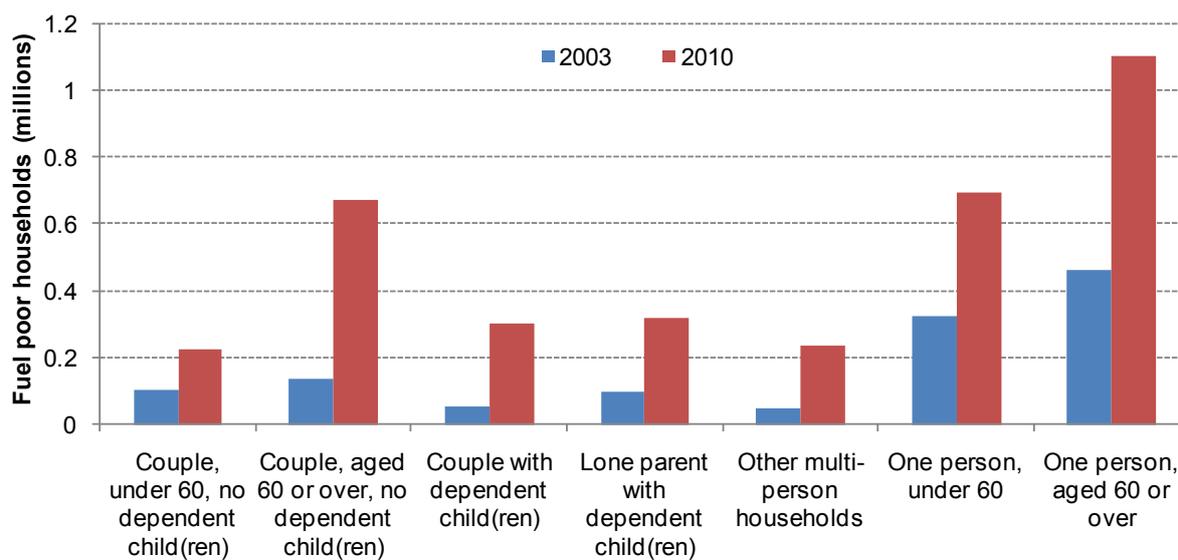
Chart 5.4 also shows that between 2009 and 2010, the biggest decrease in fuel poverty was seen amongst households with 5 or more occupants, down from 12 per cent in 2010 to 9 per cent in 2009. This appears to be driven largely by changes in fuel bills among these groups, with fuel bills in households containing 5 or more people falling by more than households containing fewer people. In turn, these lower fuel bills seem to have been driven by energy efficiency improvements, which were greater in households containing 5 or more people than in smaller households. Indeed, average SAP amongst these largest households increased from an average of 53.7 in 2009 to 56.0 in 2010. This caused the average fuel poverty ratio of this group to fall by more than smaller households, as can be seen in chart 5.5. The fact that single person households are closer to the 10 per cent fuel poverty threshold tallies with Chart 5.6.

Chart 5.5 – Fuel Poverty ratio by household size, 2009 and 2010



As chart 5.6 shows, fuel poverty levels more than doubled amongst all types of household between 2003 and 2010. The largest increases were seen amongst larger household types, such as couples with children and other multi-person households, with fuel poverty levels increased by as much as five times over the period. Single person households showed smaller increases from 2003 to 2009 compared with other household types, and similarly showed some of the smaller decreases in fuel poverty from 2009 to 2010.

Chart 5.6 – Number of households in fuel poverty by household composition, 2003 and 2010



5.4 Employment status

For our purposes, employment is defined as the employment status of the household reference person (HRP)²⁴ within the English Housing Survey. In contrast with falling fuel poverty generally, the number of unemployed households that were in fuel poverty rose from 0.38m to 0.39m between 2009 and 2010. This may reflect the increase in unemployment levels in this time, from 2.4 million to 2.5 million individuals²⁵. In turn these are likely to lead to a reduction in income for these households. However, a similar increase in fuel poverty was not seen for inactive households, despite numbers of these also rising from 2009 to 2010. In fact, fuel poverty levels amongst inactive households fell sharply from 2009, by 11 per cent (see chart 5.7).

Chart 5.7 shows the proportion of households in fuel poverty in each employment status group from 2003 to 2010. From this chart, it can be seen that the households

²⁴ Household Reference Person (HRP) is the person in whose name the dwelling is owned or rented or who is otherwise responsible for the accommodation. In the case of joint owners and tenants, the person with the highest income is taken as the HRP. Where incomes are equal, the older is taken as the HRP. This procedure increases the likelihood that the HRP better characterises the household's social and economic position.

²⁵ ONS Labour Market Statistics, April 2012. Based on International Labour Organisation (ILO) definition of unemployment.

where the HRP is unemployed have the highest fuel poverty rate. In 2003, 26 per cent of unemployed HRP households were in fuel poverty, rising to 52 per cent by 2010. Overall, households where the HRP is working represent over half of all households, but have the lowest fuel poverty levels by some distance. This mainly reflects the fact that the average income of this group is far higher than the other two groups (table 5.1).

Chart 5.7 – Fuel poverty rate by employment status, 2003 to 2010

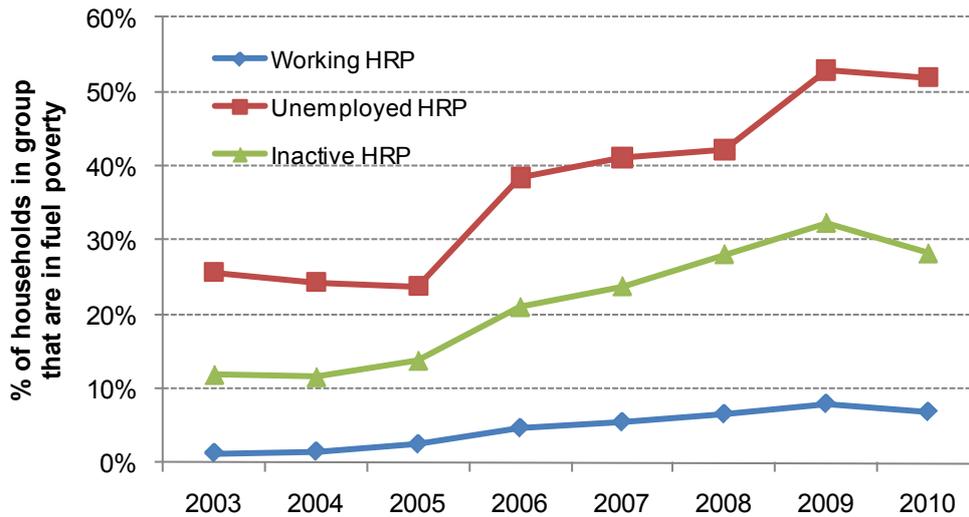


Table 5.1 – Number and proportion of households and their average income, by employment status of HRP, 2010

| Employment status | Number of households (thousands) | Proportion of households found in this group | Average income (£) |
|-------------------|----------------------------------|--|--------------------|
| Inactive | 8,028 | 37% | 18,500 |
| Unemployed | 759 | 4% | 13,000 |
| Working | 12,813 | 59% | 35,700 |
| Total | 21,600 | 100% | 28,500 |

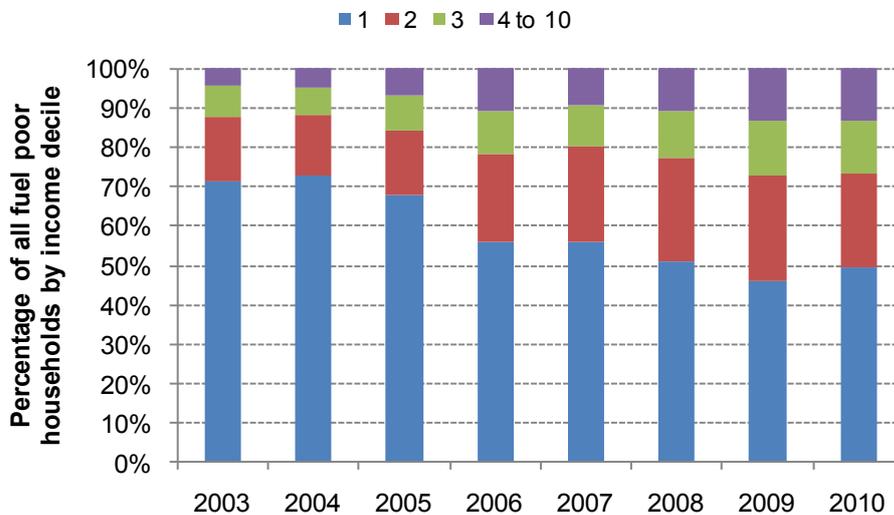
5.5 Income

As chart 5.8 shows, in each year since 2003, the majority of households in fuel poverty have been in the lowest three income decile groups. However, the proportion of fuel poor households found in these groups fell from 96 per cent in 2003 to 87 per cent in 2010 (chart 5.8). This does not mean that those in the lower income decile groups experienced less fuel poverty, but that fuel poverty has become a wider problem, and is more frequently experienced beyond just low income households.

As chart 5.8 shows, after several years of decreases in the proportion of all fuel poor households found in the lowest income decile, this proportion rose slightly in 2010.

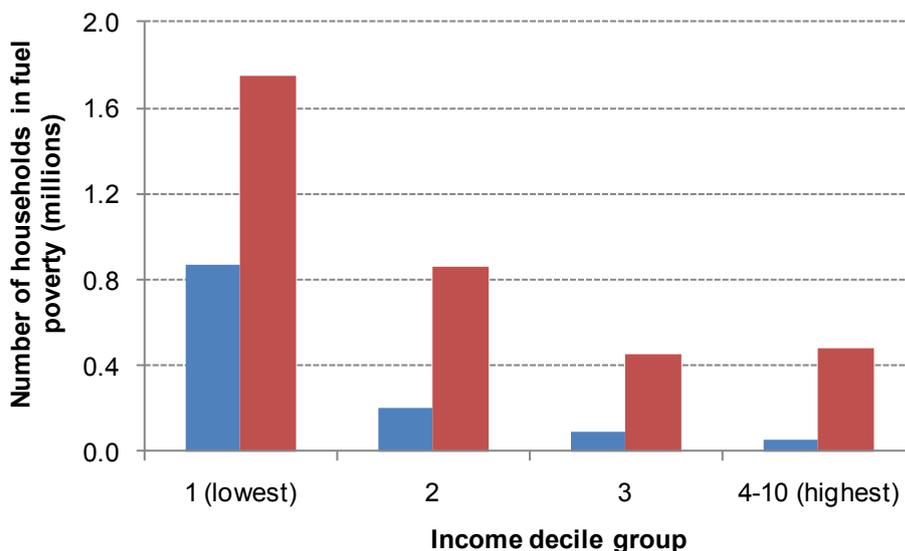
By contrast, the proportion of fuel poor households found in income decile 2 decreased in this period.

Chart 5.8 – Proportion of all fuel poor households in income deciles, 2003 to 2010



Increasing energy prices from 2003 to 2010 led to increases in fuel poverty across all income groups (see chart 5.9). It is interesting to note that while fuel poverty levels doubled in income decile group 1, they increased much more, by a factor of nine, for income decile groups 4-10. Therefore this group saw the largest percentage increase in fuel poverty levels, albeit starting from the lowest base.

Chart 5.9 – Number of households in fuel poverty, 2003 and 2010, by income decile group



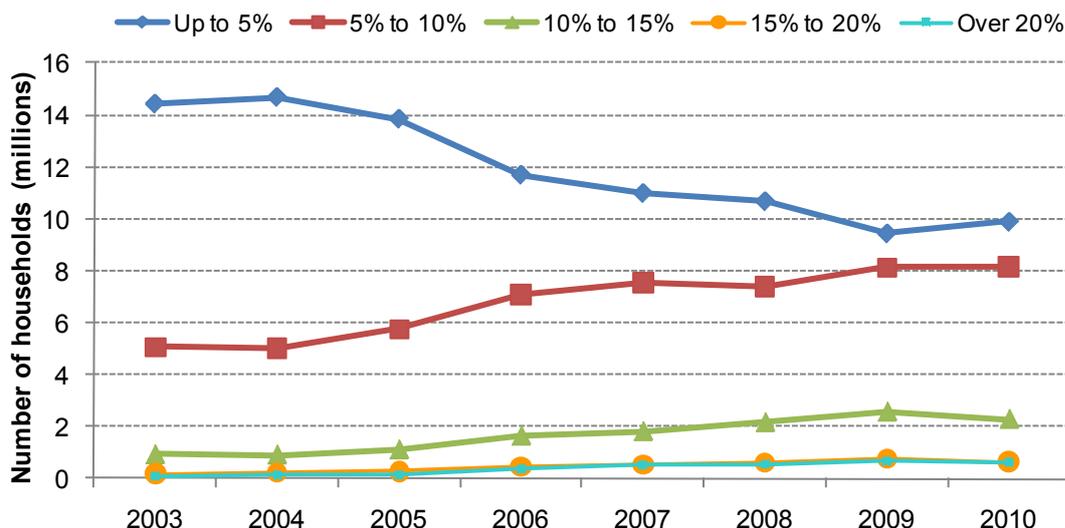
5.6 Fuel expenditure

Average modelled²⁶ fuel expenditure increased from £694 to £1,338 between 2003 and 2010, an increase of over 90 per cent. However, modelled fuel expenditure in 2010 was down slightly on 2009, when the average was £1,342. Average incomes also rose over the period 2003 to 2010, but only by 24 per cent, meaning the average modelled fuel cost to income ratio rose from 3 per cent in 2003 to 4.7 per cent in 2010 in England.

As seen in Chart 5.10, the number of households spending up to 5 per cent of their income on fuel to maintain the adequate standard of warmth decreased from 14.4 million in 2003 to 9.9 million in 2010. By contrast, the number of households needing to spend between 5 per cent and 10 per cent of their income on fuel to maintain the adequate standard of warmth increased from 5.1 million households in 2003 to 8.2 million households in 2010. Over this period many households have moved closer to the fuel poverty threshold, such that an increase in prices will push more households into fuel poverty in 2010 than in 2003 (this is further illustrated in chart 2.4). The fall in bills from 2009 to 2010 reversed this trend slightly, with an increase in the number of households with very low fuel expenditure (less than 5 per cent of their income), and a decrease in the numbers of households spending more than 10 per cent of their income on fuel.

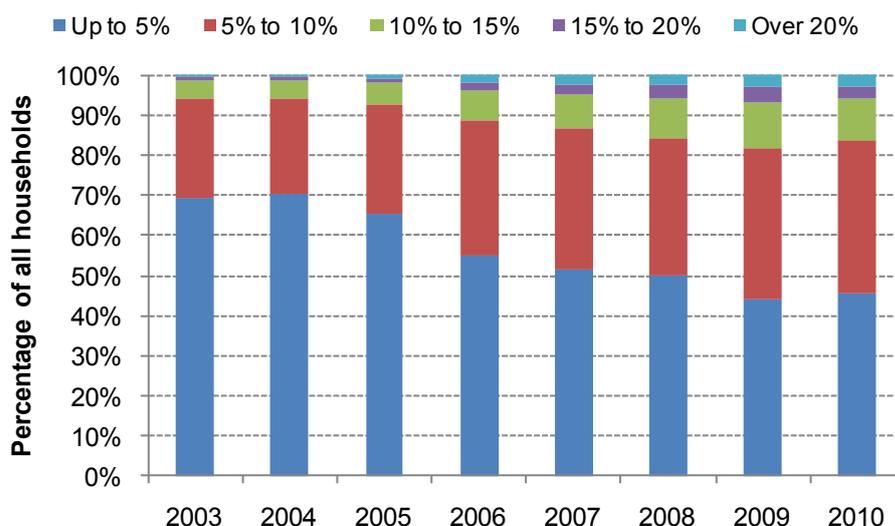
As a whole, fuel poverty rose substantially between 2003 and 2010. Less than half of English households had a fuel poverty ratio below 5 per cent in 2010, compared to 70 per cent in 2003 (see Chart 5.11).

Chart 5.10 – Number of households by modelled expenditure on fuel as a proportion of income, 2003 and 2010



²⁶ Consumption is modelled to ensure the adequate standard of warmth is achieved.

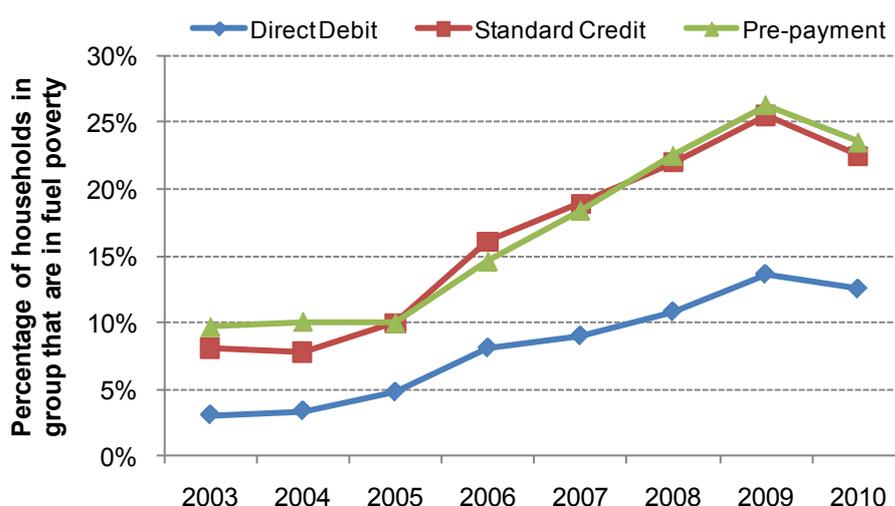
Chart 5.11 – Percentage of households within the banded fuel poverty ratios, 2003 to 2010



5.7 Payment method

In 2010, fuel poverty rates were highest amongst those paying for their electricity by pre-payment meter (24 per cent). However, over time the fuel poverty rates amongst those paying by pre-payment meter and standard credit have been similar, with fuel poverty rates amongst standard credit customers actually being higher for some years (see chart 5.12). Fuel poverty rates amongst those paying for their electricity by direct debit were around 10 percentage points lower than the other two payment methods in 2010.

Chart 5.12 – Fuel poverty rate by method of payment for electricity, 2003 to 2010

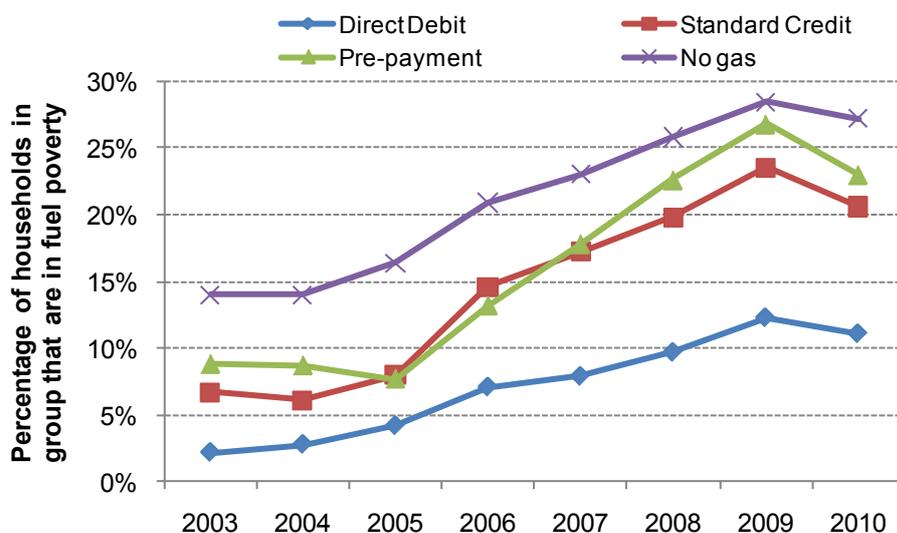


As chart 5.13 shows, the situation for the various gas payment methods is similar, with direct debit customers having the lowest fuel poverty levels. Households not on the gas network consistently had the highest fuel poverty rate, increasing from 14

per cent in 2003 to 27 per cent in 2010. This can largely be explained by poor energy efficiency, as this group have a much lower average SAP rating than the other groups, and thus much higher average bills (table 5.2).

Differences in fuel poverty rates by payment methods closely match the energy bills seen in DECC'S Quarterly Energy Prices (QEP) statistics. These show that in 2010, direct debit customers had the lowest gas and electricity bills (given a fixed level of consumption), and that pre-payment meter customers had the highest electricity bills. The slight exception is that pre-payment meter customers had lower gas bills than standard credit customers, yet had high fuel poverty rates.

Chart 5.13 – Fuel poverty rate by method of payment for gas, 2003 to 2010



Whilst pre-payment meter households have the lowest income on average, they also have the lowest average modelled fuel bill and the highest average SAP rating. The latter indicates a higher level of energy efficiency, which is often associated with social housing, in which 17 per cent of households live. This may suggest that for these households, lower income is a key cause of their relatively high fuel poverty rate.

Table 5.2 – Average income, fuel bill and SAP by payment method for gas, 2010

| Payment method | Average Income (£) | Average modelled fuel bill (£) | Average SAP |
|-------------------|--------------------|--------------------------------|-------------|
| Direct debit | 31,600 | 1,301 | 56 |
| Standard credit | 26,100 | 1,338 | 56 |
| Pre payment meter | 19,000 | 1,227 | 60 |
| No gas | 26,800 | 1,594 | 42 |

5.8 Energy efficiency

As described in Section 3.4 of this report, a SAP rating is a measure of energy efficiency within a property, using a scale from 1 to 100. Low values (or later letters

alphabetically when considering EPC/SAP bands) indicate poor levels of energy efficiency, whilst higher numbers (and lower letters) indicate more energy efficient properties.

Chart 5.14 shows the fuel poverty rate between 2003 and 2010 for households in different SAP bands. Although the fuel poverty rate has increased for households within all the bands, those households with a SAP rating of G (the least energy efficient) consistently have the highest rate, while those with a SAP rating of B or C (the most energy efficient) consistently have the lowest rate. This highlights the importance of energy efficiency in reducing fuel poverty. It is also worth noting that when fuel poverty rates fell in general from 2009 to 2010, they still rose slightly for households in SAP band G.

Chart 5.14 – Fuel poverty rate by banded SAP rating, 2003-2010

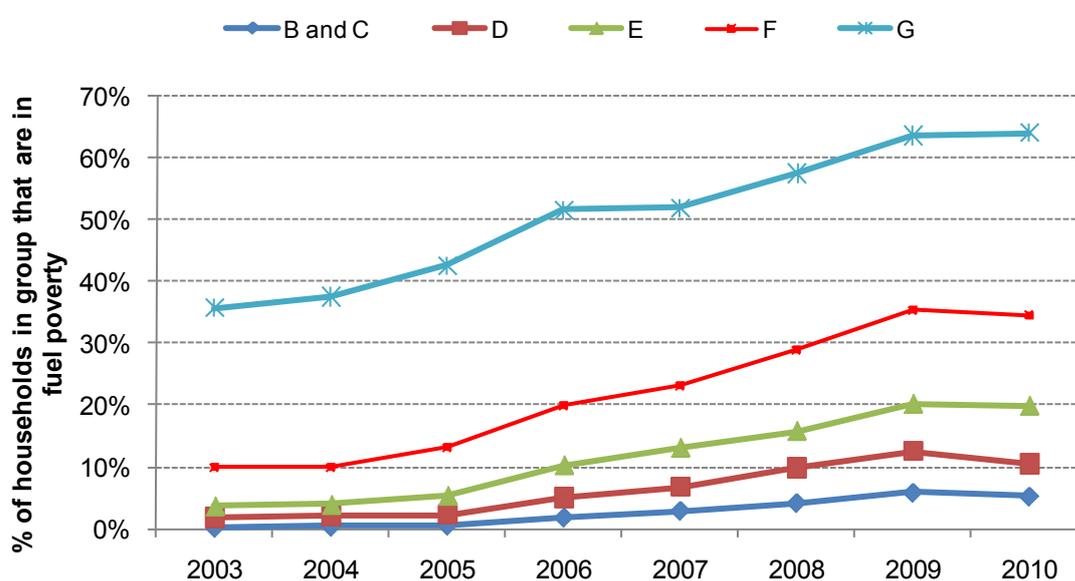
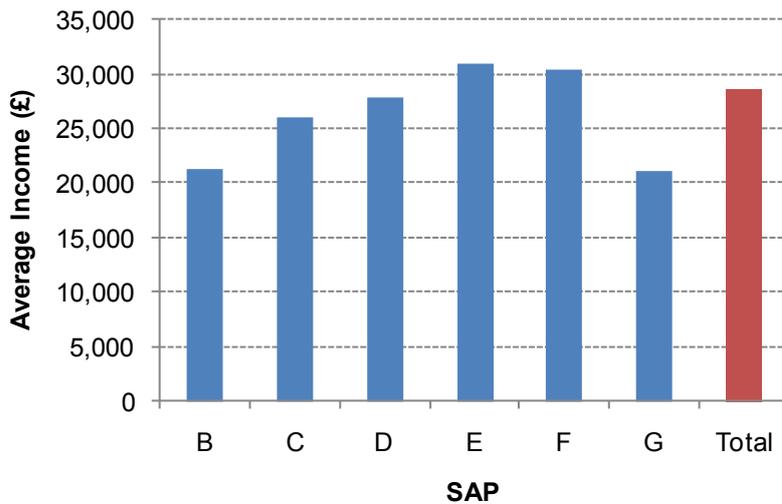


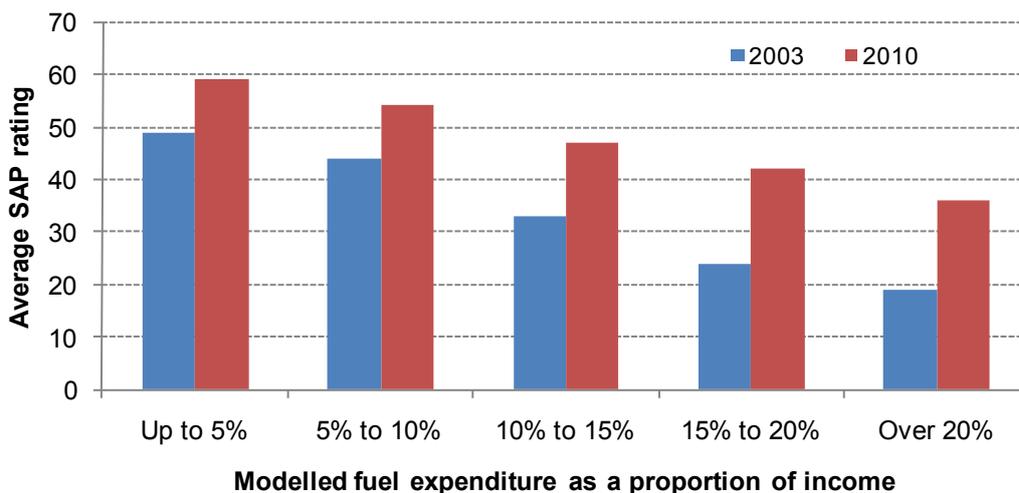
Chart 5.15 details the average income of households in each of these SAP bands in 2010. Those households with an income less than the English average tend to live in properties with either a particularly high or low SAP rating. Those with high SAP ratings are likely to live in social housing, where the local authority or social landlord has improved the energy efficiency of the homes. The properties with the lowest SAP ratings tend to be more rural, are often not on the gas network, and are more likely to be privately rented. In particular, a large proportion of SAP G households contain single people, or those over 60. Nearly half of all SAP G households are couples or single people over 60.

Chart 5.15 – Average income by banded SAP rating, 2010



On a related note, chart 5.16 shows the average SAP rating for households with differing fuel poverty ratios. From this chart it can be seen that, in both 2003 and 2010, households that need to spend more than 10 per cent of their income on fuel have a lower average SAP rating than those households that need to spend less than 10 per cent. However, since 2003 the average SAP rating has increased most sharply (almost doubled) amongst households that are most deeply in fuel poverty. However, this may simply reflect the fact that it is easier for a very energy inefficient household to improve their SAP than it is for an already efficient household to improve their SAP by the same amount. Additionally, changes in income imputation methodology between 2003 and 2010 may mean that this group will also contain some potentially energy efficient dwellings, lived in by households reporting very low or zero incomes.

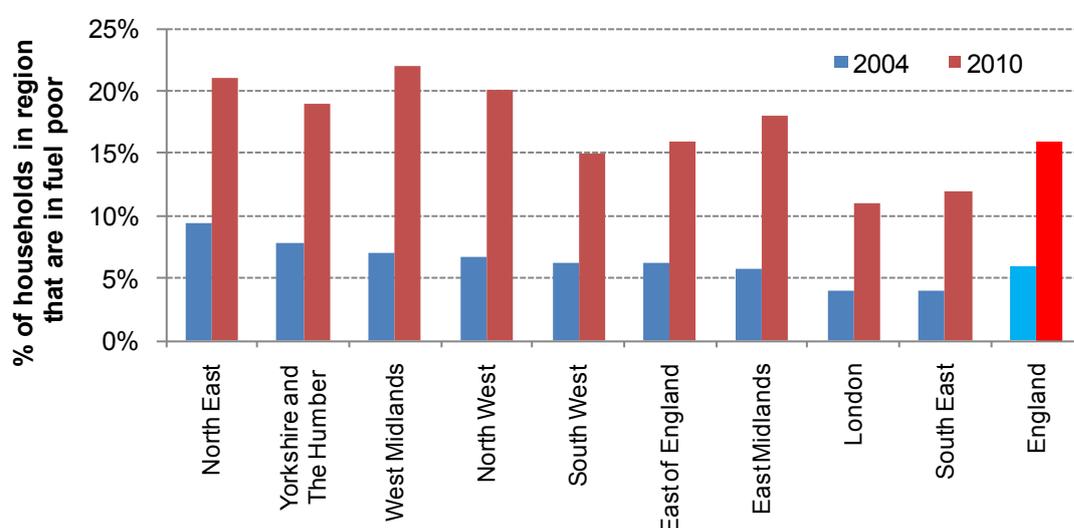
Chart 5.16 – Average SAP rating by fuel poverty ratio, 2003 and 2010



5.9 English Regions

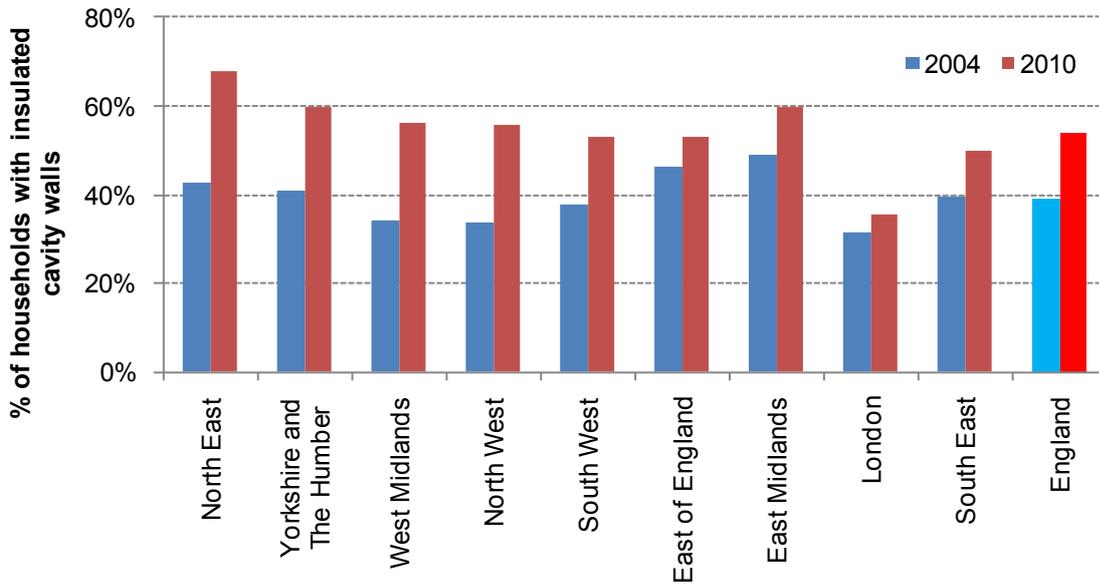
Chart 5.17 shows the proportion of households in each of the English regions (formerly Government Office Regions) that were in fuel poverty in 2004 and in 2010. The percentage of fuel poor households increased substantially in all regions between 2004 and 2010. However, whilst in 2004 the North East was the region with the highest rate of fuel poverty, in 2010 the West Midlands had the highest rate (22 per cent), with the North East the second highest. The fall in fuel poverty in England from 2009 to 2010 also affected regions differently. For example, whilst the North East, West Midlands, South West and East Midlands saw 3 or 4 percentage point drops, fuel poverty levels in Yorkshire and Humberside, the East of England and the South East did not change from 2009 to 2010.

Chart 5.17– Fuel poverty rate by English Region, 2004 and 2010



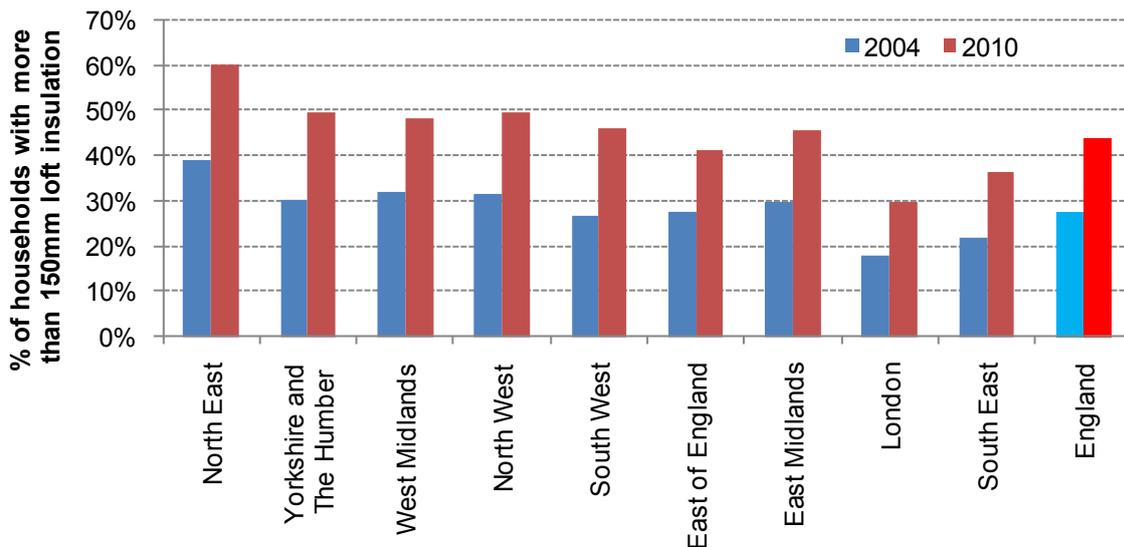
Charts 5.18 and 5.19 show the prevalence of cavity wall and loft insulation (over 150mm thickness) in each of the regions in 2004 and 2010, as recorded in the EHCS and EHS. In all regions, the proportion of households (with cavity walls) having cavity wall insulation increased between 2004 and 2010. However, the increases vary considerably between regions. For example, the North East saw a 59 per cent increase in the proportion of households with cavity wall insulation between 2004 and 2010. This may help to explain why the North East is no longer the region with the largest fuel poverty rate (chart 5.17). Other regions however, such as London and the East of England, saw much smaller increases of 14 per cent. In the case of London, this is probably due to differences in the housing stock and tenure compared with the rest of the country. For example, London has a higher proportion of flats than all other regions, and a higher proportion of private rented dwellings, which are harder to insulate cavity walls for.

Chart 5.18 – Percentage of households (with cavity walls) that have cavity wall insulation, by English Region, 2004 and 2010



The North East also had the highest percentage of households (with lofts) with loft insulation thicker than 150mm in 2010. What's more, the proportion of insulated homes increased by over 50 per cent in the North East between 2004 and 2010. This was also the case for all other regions, with the South West seeing the biggest increase, of nearly 75 per cent. Therefore it seems that whilst improvements in cavity wall insulation have varied considerably by region, improvements in loft insulation have taken place similarly across all regions.

Chart 5.19 – Percentage of households (with lofts) that have loft insulation thicker than 150mm, by English Region, 2004 and 2010



6. Additional work and developments

6.1 Matching meter point data - pilot study

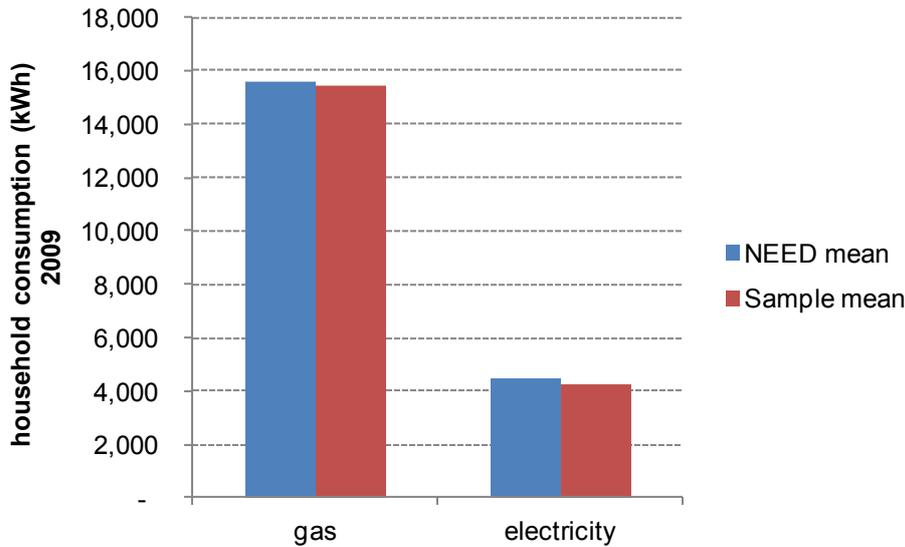
For some time DECC has been exploring the link between modelled energy consumption, i.e. what we think people need to spend to heat their home, and actual consumption i.e. what they actually spend. With assistance from DCLG, DECC are now developing a method to allow actual energy consumption to be matched to fuel poverty data and English Housing Survey (EHS) data. This allows a range of analysis that has not previously been possible, to help develop policy. Data from a pilot study are shown below. Although the sample size in the pilot study is fairly small, the early data provides some useful insights into the extent to which different groups heat their homes, and can pave the way for fuller analyses in the future.

A question was introduced to the EHS in Quarter 3 of 2009, asking participants if they would allow DECC to match their survey responses with data on the meter point records of gas and electricity used at the address. Of the households asked, 75 per cent agreed. Over 80 per cent of these households were automatically matched to the administrative data containing their gas and electricity meter point consumption based on their address. When these were matched to those households which had had a physical survey, around 3,000 cases remained to be analysed.

As a means of double checking our data, we can also compare the results with DECC's National Energy Efficiency Data Framework (NEED), which contains meter point data for all domestic properties. Chart 6.1 shows that the results of the pilot study are very similar to the national averages in NEED, within 1 per cent for gas and 6 per cent for electricity. The most recent NEED data is for 2008, so this was scaled using 2009 total consumption (8 per cent reduction for gas, 2 per cent inflation for electricity) figures to allow comparison. The comparison was made with NEED rather than the meter point data published by DECC, because NEED data is cleaned, for example by removing negative values.

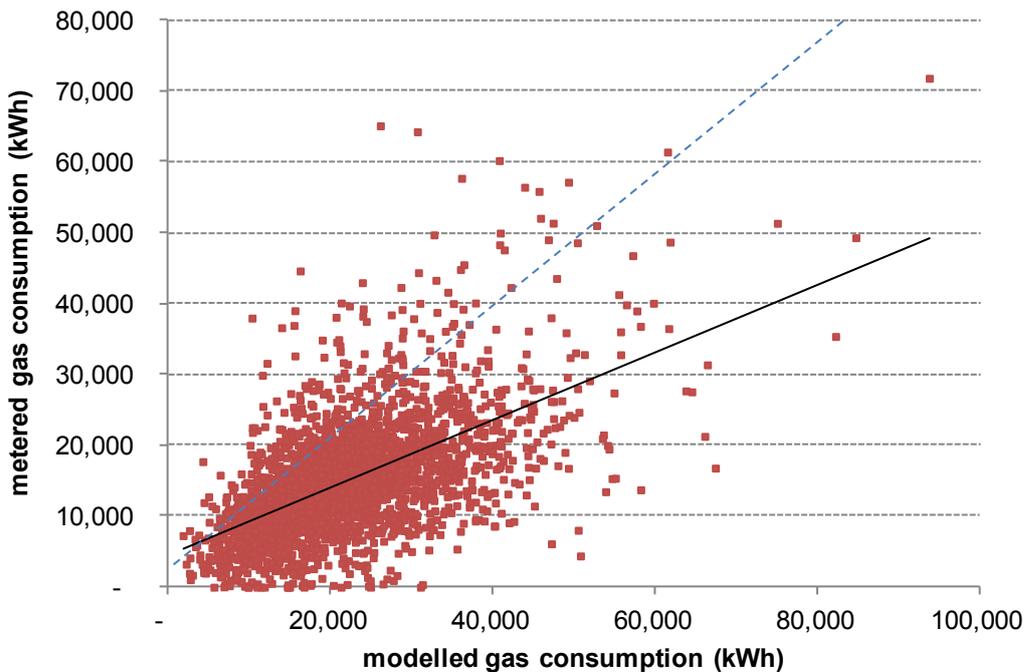
http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/en_effic_stats/need/need.aspx

Chart 6.1 – Mean gas and electricity consumption in NEED and in the pilot study



Modelled consumption is calculated using the BREDEM model, and is based on the assumption that people heat their homes to an adequate standard of warmth. Chart 6.2 shows a comparison of modelled and metered gas consumption. The line of $x=y$ is shown as a dotted line and represents a situation where modelled consumptions matches perfectly with actual consumption, while the trend line in the observed comparison is shown as a solid line and indicates that modelled consumption tends to be higher than actual consumption.

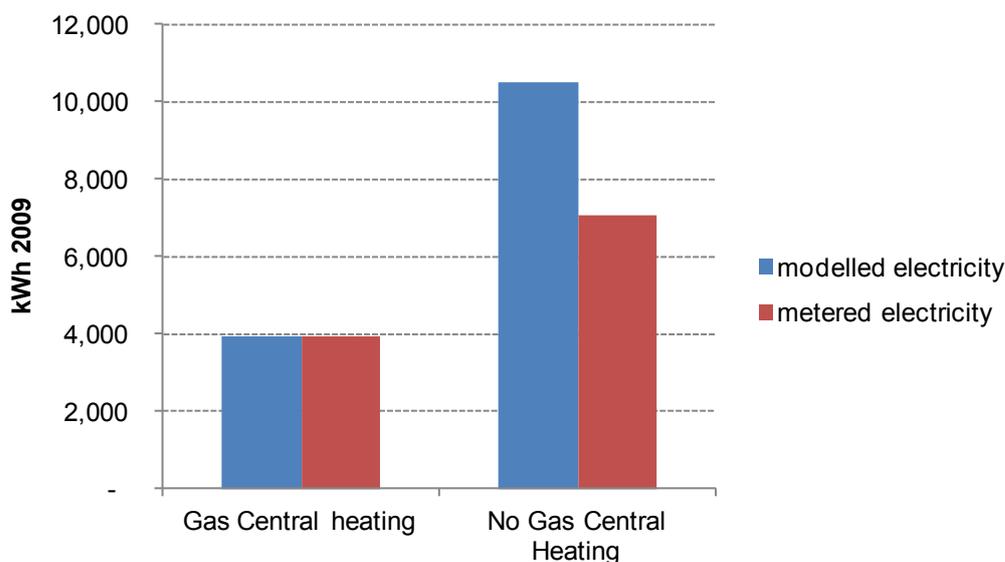
Chart 6.2 – Modelled against metered gas consumption



On average, modelled consumption is 32 per cent higher for gas, and 9 per cent higher for electricity, when compared with actual consumption. This is because gas

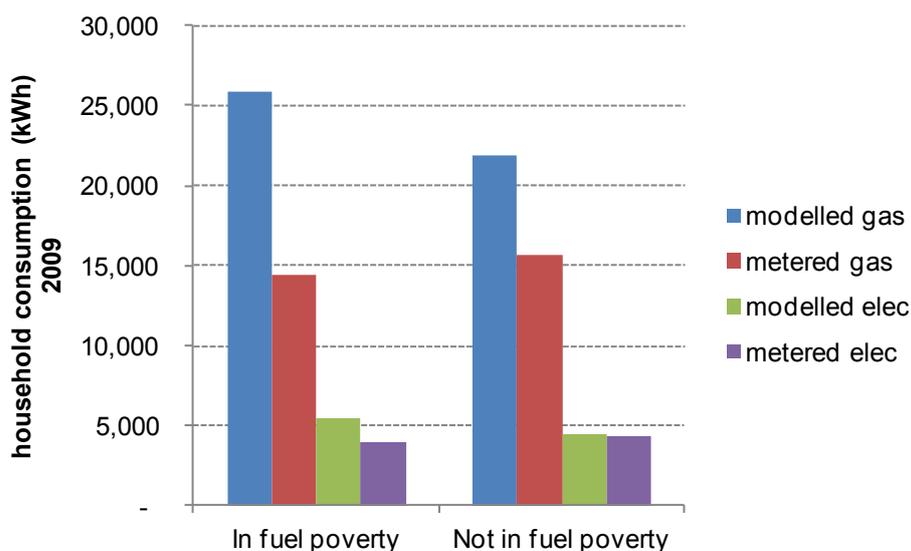
is more commonly used for space heating than electricity, and the modelling tends to overestimate the extent to which households heat their home (a comparison of actual spend on energy from the Living Costs and Food Survey and modelled spend from the fuel poverty data shown in section 8.1 further endorses this). Electricity consumption (used mainly for lights and appliances) is more closely related to actual use and this is illustrated by chart 6.3. The columns on the right are higher and show a larger difference because it is likely these households use electricity for at least some of their space heating. Modelled consumption for lights and appliances is based on floor area and number of people in the dwelling, and is far more correlated with actual consumption.

Chart 6.3 – Electricity consumption for households with and without gas central heating



Fuel poor households have higher modelled consumption but lower metered consumption than non fuel poor households as shown in chart 6.4. There are a number of reasons why this might be the case – in part it is likely to be due to an increased level of under-heating for these households, but it might also identify differences in lifestyle of the fuel poor, in particular some of the elderly households within this group, or different dwelling types and sizes. It is difficult to fully interpret based on the pilot sample and so care should be taken before making conclusions about these patterns.

Chart 6.4 – Modelled and metered consumption for fuel poor and non fuel poor households



Beyond the ‘automatic’ matching (based on address) DECC has also undertaken some work to look at manually matching some of the harder to match cases – for example those that live in named (rather than numbered) accommodation. The marginal benefit of this appears to be fairly small at this stage but will be further considered moving forward.

Analysis of the pilot has been successful and DECC will be matching 2010 data later this year and report further analyses based on this in the Annual Report on Fuel Poverty Statistics in 2013. Further work will involve understanding the differences between metered data and NEED, and the differences between actual and modelled consumption.

6.2 Measuring Fuel Poverty After Housing Costs

As in 2008, we have also considered fuel poverty with a measure of income adjusted for housing costs. We recognise there is interest in this measurement from users, and have therefore repeated the work of 2008 here. The main rationale behind an after housing costs (AHC) measure of income is that money that needs to be spent on housing costs is not part of a household’s disposable income, and thus cannot be spent on their fuel bill.

Under the current fuel poverty methodology, the denominator of the fuel poverty ratio is based on the full income of the household, i.e. housing costs are not deducted. Deducting these costs would reduce the income of households with mortgage or rent payments. Reducing the income of a large subset of households in this way is likely to push some households into fuel poverty that were not previously fuel poor.

How We Deducted Housing Costs from Income

Data on housing costs are available from the English Housing Survey (EHS). In our after housing costs measure, housing costs only include mortgage payments and rent. Ideally we would also include more complex aspects of housing costs, such as water rates, community or council water charges, structural insurance premiums, ground rent, and service charges. Unfortunately data on these is not available in the EHS.

One further complication in calculating housing costs is that ideally, we would restrict mortgage payments to interest payments on the mortgage loan, rather than include the capital repayment, which can be seen as a form of investment. However, we have not been able to make this split, since the EHS does not separate the two. As a result of this, housing costs will be exaggerated (and income lower) for most households paying off a mortgage.

The Effects of Deducting Housing Costs

Table 6.1 – Number and proportion of fuel poor households in England under a before and after housing costs approach to measuring income

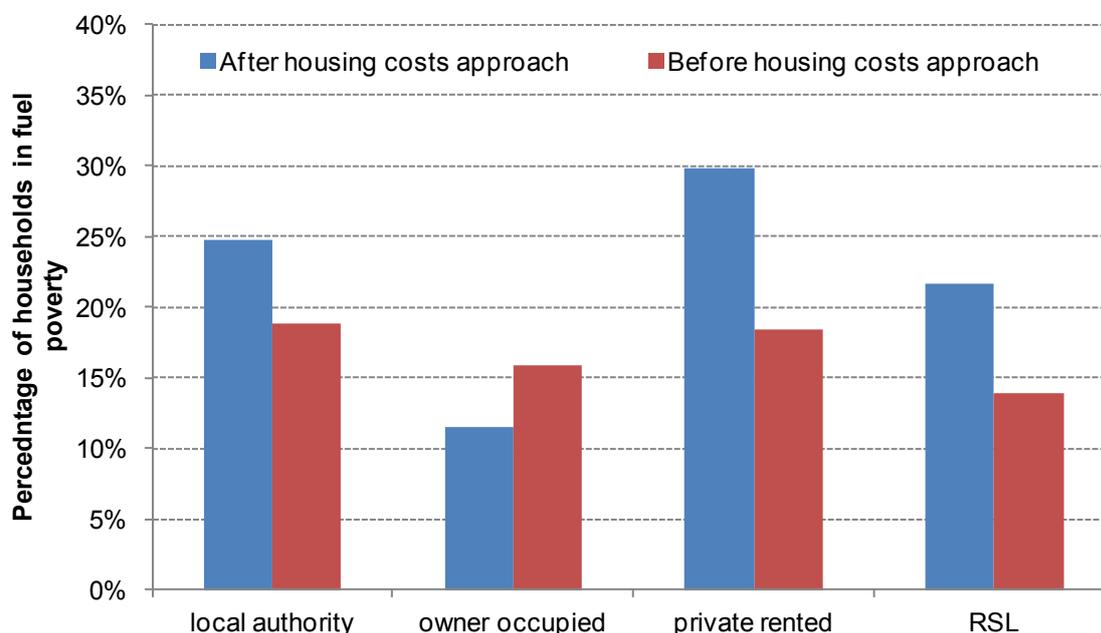
| | Before housing costs income approach | After housing costs income approach |
|---|---|--|
| Number of households in fuel poverty (thousands) | 3, 536 | 5,975 |
| Percentage of households in fuel poverty | 16.4% | 27.7% |

As table 6.1 shows, deducting housing costs considerably increases the number and proportion of fuel poor households in England. In order for approximately the same number of households to be counted as fuel poor as under the before housing costs approach, the fuel poverty threshold would have to be set at 13.4 per cent i.e. those households that need to spend more than 13.4 per cent of their income (after housing costs are deducted) would be classed as fuel poor. Table 6.2 shows what this percentage would have been in other years, including 2008, when we last considered an after housing costs measure of fuel poverty. These percentages tend to reflect fuel poverty levels in that year, such that in years where fuel poverty levels are low, such as 2004, households need to spend a greater percentage of their income on fuel to be considered fuel poor.

Table 6.2 – Fuel poverty threshold needed to give the same number of fuel poor households under an after housing costs measure as for a before housing costs measure, 1996-2010

| Year | Fuel poverty threshold needed to give the same number of fuel poor households as a before housing costs measure |
|------|---|
| 1996 | 12.5% |
| 2004 | 14.6% |
| 2008 | 13.4% |
| 2009 | 13.1% |
| 2010 | 13.4% |

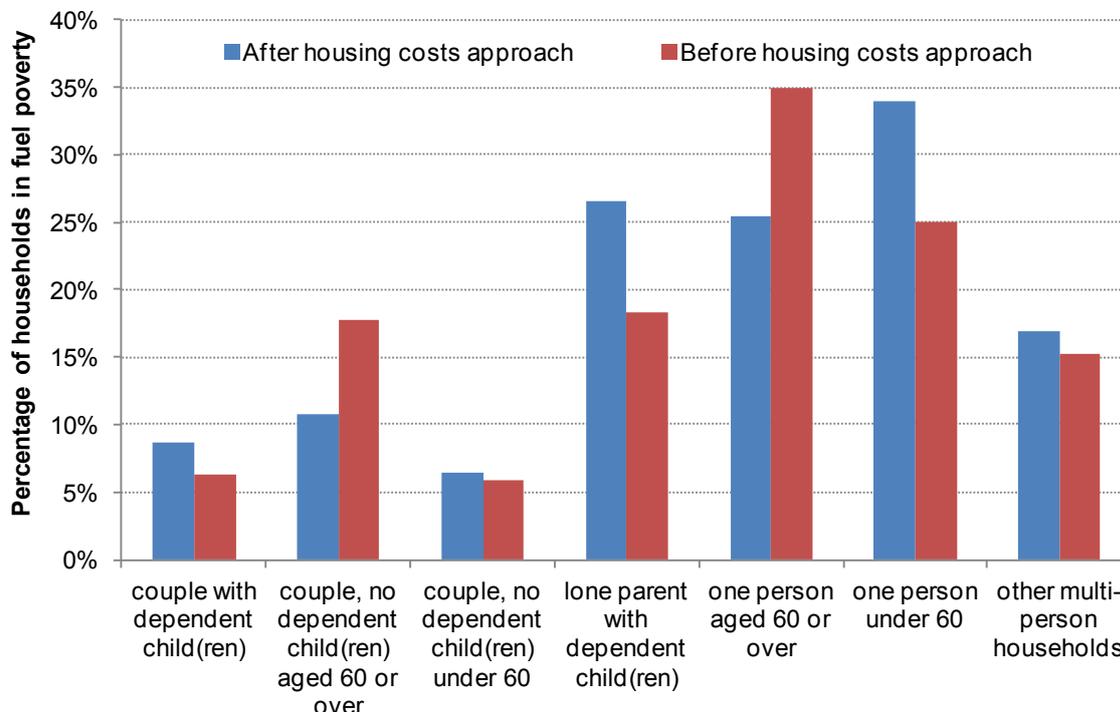
An after housing costs approach affects the income of different types of households in different ways. Those who own their home outright will not be affected, while those with mortgages or paying rent will incur lower incomes when measured after housing costs. Therefore, the distribution of fuel poverty under an after housing costs approach will also change. Chart 6.5 compares an after housing costs measure of fuel poverty with a before housing costs measure, setting the total number of fuel poor households to be the same for both (i.e. using a fuel poverty threshold of 13.4 per cent for the after housing costs measure). This chart shows that under an after housing costs measure, the proportion of owner occupied households in fuel poverty decreases, whilst all other types of household see an increase in fuel poverty. This makes sense given that we are deducting their housing costs and thus effectively reducing their income.

Chart 6.5 – The proportion of households in fuel poverty under before and after housing costs approaches, by household tenure, 2010

In addition to affecting different tenures in different ways, an after housing costs approach also affects different household compositions differently, as chart 6.6 shows. For example, it puts far more lone parents and single people under 60 into fuel poverty. This is likely to reflect the fact that relatively few people in these groups own their home outright, and so housing costs place a considerable burden on their

disposable income. Older couples and single people over 60, meanwhile, are much more likely to own their home outright.

Chart 6.6 – The proportion of households in fuel poverty under before and after housing costs approaches, by household composition, 2010



6.3 Measuring Fuel Poverty Using the Measure Proposed by the Hills Review

As discussed in chapter 1, in March 2012 the Hills Review of fuel poverty published its final report. This can be found here:

http://www.decc.gov.uk/en/content/cms/funding/Fuel_poverty/Hills_Review/Hills_Review.aspx

The review set out an alternative way of measuring fuel poverty, focusing on both the extent and depth of fuel poverty in England. The proposed measure therefore consisted of two parts:

1. The **number** of households that had both low incomes and high fuel costs.
2. The **depth** of ‘fuel poverty’ amongst these households – measured in terms of a fuel poverty gap, which represents the difference between the modelled fuel bill for each household, and the reasonable costs threshold for the household.. This is summed for all households that have both low income and high costs to give an aggregate fuel poverty gap.

To calculate the level of “fuel poverty” under this measure, incomes and fuel bills are derived in the following ways, consistent with the Hills Review proposal:

Incomes

1. Incomes are calculated after housing costs, to reflect the fact that money spent on housing costs cannot be spent on fuel. Therefore mortgage and rent payments were deducted from the full income of each household to give an after housing costs measure of income (see section 6.2).
2. Once housing costs had been deducted, incomes were equivalised, to reflect the fact that different types of households have different spending requirements. For example, a single person on a given income will have more disposable income than a family of 4 on the same income. The equivalisation factors used for this were those suggested by the Hills Review, i.e. those used by the Department for Work and Pensions.

Fuel Bills

1. Fuel bills were also equivalised, using the equivalisation factors proposed in the Hills Review final report. This reflects the fact that different types and sizes of household have different required spend on fuel. For example, a single person will need to spend less on fuel than a family of 4 living in the same home.

Further details on the thresholds used to determine whether a household has low income and high costs can be found in chapter 2 of the final report of the Hills Review:

<http://www.decc.gov.uk/media/viewfile.ashx?filetype=4&filepath=11/funding-support/fuel-poverty/4662-getting-measure-fuel-pov-final-hills-rpt.pdf&minwidth=true>

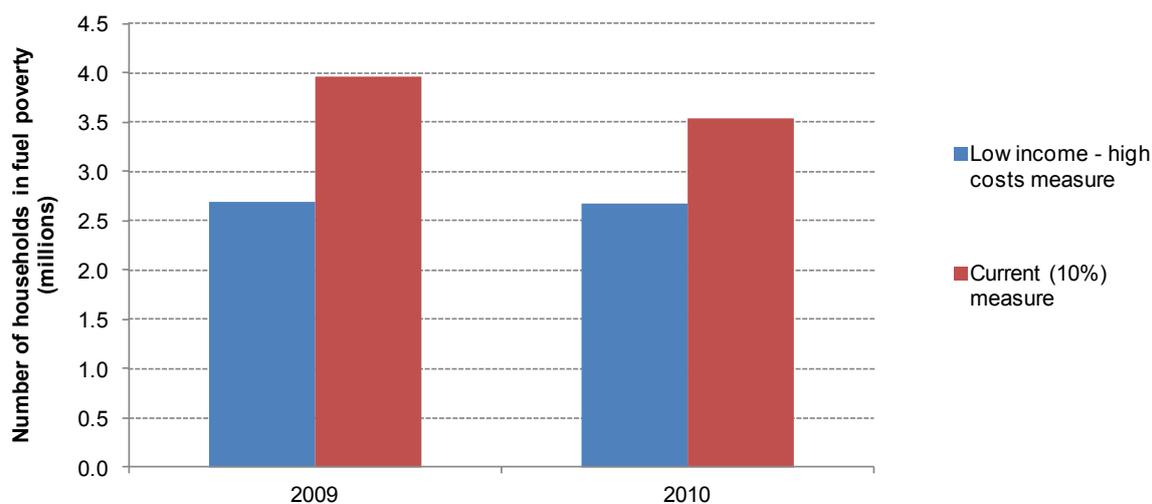
Comparing Fuel Poverty in 2010 to the Hills Review Low Income-High Costs Measure

As table 6.3 shows, under the low income–high costs measure, 2.7 million households were fuel poor in 2010, representing 12 per cent of all households. This compares with 3.5 million fuel poor households under the current 10 per cent measure. This difference is consistent with recent years, when the low income–high costs measure also showed a smaller number of households to be in fuel poverty.

Table 6.3 – Number and percentage of households in fuel poverty under the low income-high costs measure and the current measure, 2010

| | Number of households in fuel poverty (millions) | Percentage of households in fuel poverty |
|-------------------------------|---|--|
| Low income-high costs measure | 2,666 | 12% |
| Current (10%) measure | 3,536 | 16% |

An interesting difference lies in the way the two measures have changed since 2009. As discussed in chapter 2, the current measure showed a marked drop in the number of fuel poor households between 2009 and 2010, from 4.0 million to 3.5 million. By contrast, under the low income-high costs measure the number of fuel poor households remained unchanged, at 2.7 million. This can be seen in chart 6.7.

Chart 6.7 – Number of households in fuel poverty under the low income-high costs measure and the current measure, 2009 and 2010

The two measures differ largely because of the different effects of income changes on them. For the current measure, any rise in incomes is likely to reduce the extent of fuel poverty, as seen in chapter 3. However, under the low income high costs measure, the key factor is how the incomes of households with low incomes and high costs change, relative to other households. A change in income for all households will therefore not necessarily reduce fuel poverty, unless households with low incomes and high costs see relatively larger income changes than the overall average. Figure 6.1 shows that incomes rose for all quadrants of the matrix between 2009 and 2010. However, median incomes for households with low income and high costs rose by less than the overall median (£362 compared with £432), meaning that relative to all households, households with low incomes and high costs fared slightly less well.

As mentioned above, the number of households in fuel poverty is only part of the story under the low income-high costs measure. Equally important is the depth of fuel poverty amongst those households with both low incomes and high costs. In 2010, this fuel poverty gap was £1.1 billion, which was similar to 2009. In other words, the depth of fuel poverty changed very little between 2009 and 2010. The average fuel poverty gap in 2010 was £415. This means that, on average, the modelled fuel bill of each fuel poor household would need to be £415 less in order to take them out of fuel poverty.

The lack of change in the fuel poverty gap can be explained mainly by changes in modelled bills. Between 2009 and 2010, median bills fell slightly for households with low income and high costs. However, this was only by a similar amount to the fall in bills across all households, as seen in figure 6.1. Therefore the average fuel poverty gap for households with low incomes and high costs did not change much between the two years. Although households with low incomes and high costs did experience rises in their income, this was not enough in most cases to reduce their fuel poverty gap (i.e. move them out of the low income high costs quadrant). Therefore the income that drives the reduction in the number of fuel poor households under the current measure does not have the same effect in terms of reducing the fuel poverty gap.

Figure 6.1 – Changes in incomes and fuel bills in each quadrant of the low income high costs matrix, 2009 to 2010

| | Low income | High income | |
|------------|------------|-------------|--|
| Low costs | +£503 | +£360 | Change in income from 2009 to 2010 Change in bill from 2009 to 2010 |
| | -£15 | -£3 | |
| High costs | +£362 | +£969 | |
| | -£9 | +£17 | |

Average income change: +£432

Average bill change: -£11

6.4 Variables in the Fuel Poverty Dataset

Both of the datasets below will be available in July 2012, at the time of publishing the detailed EHS data.

Main dataset

This is available from the [UK data archive](#). It contains information on household income, energy costs, fuel poverty status, method of payment for gas and electricity, and flags indicating vulnerable or underoccupied households. Please note that you must first [register](#) before you can access the data.

Advanced use dataset

You can request the advanced use dataset by emailing fuelpoverty@decc.gsi.gov.uk. This dataset consists of:

- Income split by earnings, benefits, investments, Winter Fuel Payments and other
- Cost of energy by type of use e.g. gas for space heating, electricity for space heating. etc
- Energy consumption by the same categories, in kWh per year
- A flag indicating whether the householder is 'off gas grid' (as identified in the EHS)
- Heating regime
- A flag estimating whether a household is in the CERT²⁷ priority group
- A flag estimating whether a household is in the CERT Super Priority group
- Eligible for Warm Front Grant

Eligibility for the CERT groups or Warm Front funding is approximated based on the householder circumstances.

²⁷ CERT is the Carbon Emission Reduction Target and eligibility for either of the priority groups is dependent on the circumstances of the household and the benefits the household recipients receive.

7. Sub-regional fuel poverty in 2010

Following a consultation of the key users of sub-regional data in March 2010, DECC found that there was a clear demand for sub-regional fuel poverty statistics to be produced on an annual basis, and are committed to serving this need where possible. What is more, over the past couple of years we have been able to improve the timeliness of these statistics, and so for the first time this year we are able to present sub-regional fuel poverty data alongside the national and regional fuel poverty data for 2010.

7.1 Data Available

For each of the following geographical levels, data is available on the estimated total number of households, the estimated number of fuel poor households, and the proportion of households in fuel poverty:

- English Region (former Government Office Region)
- County
- Parliamentary Constituency
- Local Authority
- Lower Super Output Area (LSOA)

These data are available in a spreadsheet, which users can download from the DECC website at:

http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/regional/regional.aspx

Data at Census Output Area (COA) level is also available to users on request, by emailing fuelpoverty@decc.gsi.gov.uk. Census output area data should be used with caution, as the small geographical areas involved mean that data will be very approximate.

7.2 Mapping fuel poverty

Maps provide a useful way of comparing fuel poverty across different areas of England. Figures 7.1 and 7.2 show the proportion of households in fuel poverty in England, at local authority level and LSOA level respectively. At a glance, it is clear that many of the local authorities and LSOAs in London and the South East have lower fuel poverty levels, whilst the West Midlands and northern parts of the country contain many LSOAs with relatively higher fuel poverty levels. This data is consistent with the regional data shown in the detailed tables, which shows the West Midlands to have the highest fuel poverty rate (21.6 per cent) out of all the regions.

Figure 7.1: Percentage of households in fuel poverty at local authority level, England, 2010

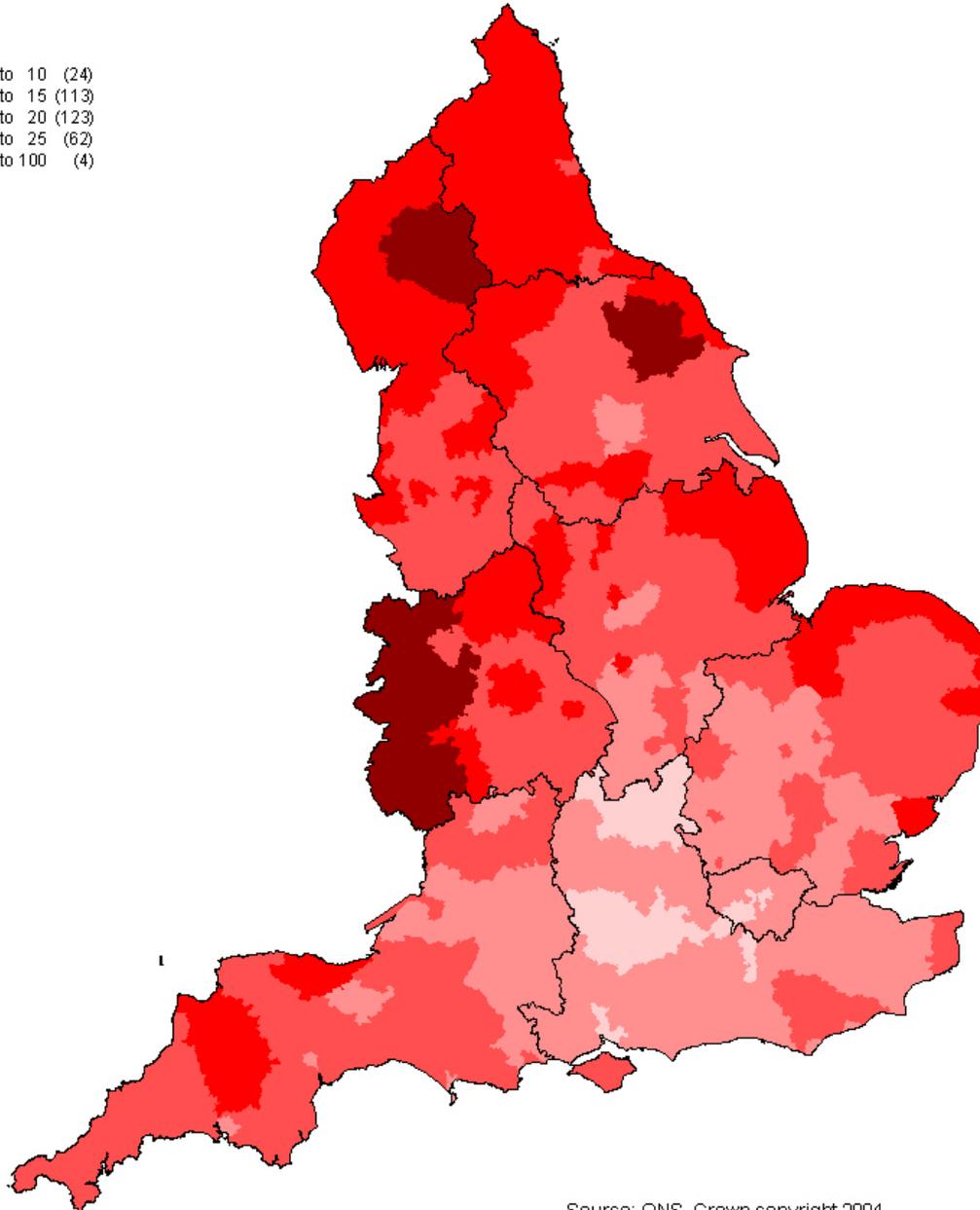
Fuel Poverty in England, 2010

Percentage of households in Fuel Poverty by Local Authority (LA)



Key

- 0 to 10 (24)
- 10 to 15 (113)
- 15 to 20 (123)
- 20 to 25 (62)
- 25 to 100 (4)



Source: ONS. Crown copyright 2004.
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Figure 7.2: Percentage of households in fuel poverty at LSOA level, England, 2010

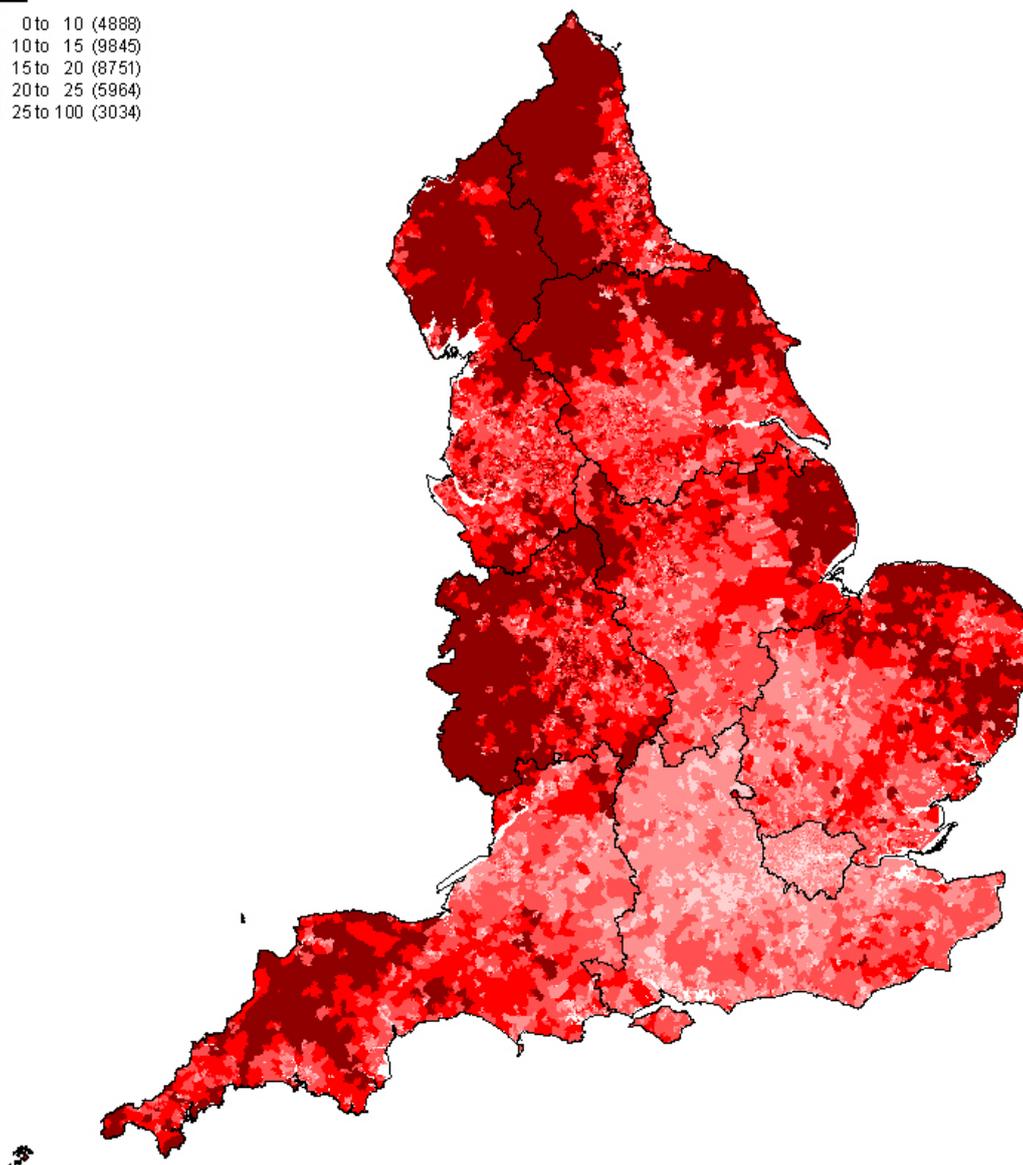
Fuel Poverty in England, 2010

Percentage of households in Fuel Poverty by Lower Super Output Area (LSOA)



Key

- 0 to 10 (4888)
- 10 to 15 (9845)
- 15 to 20 (8751)
- 20 to 25 (5964)
- 25 to 100 (3034)



Source: ONS, Super Output Area Boundaries.
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For larger maps showing fuel poverty levels in each of the English regions at LSOA level, please see annex B of this report.

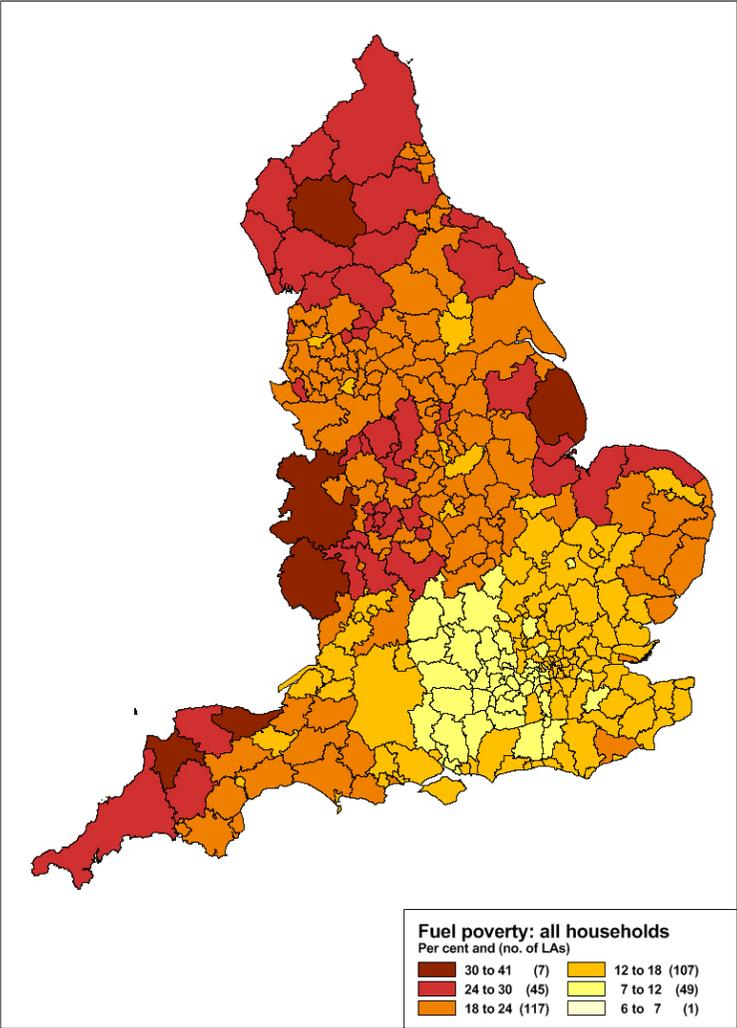
7.3 Comparisons with 2009 Data

Between 2009 and 2010, 87 per cent of local authorities saw a decrease in the proportion of households in fuel poverty, along with 70 per cent of LSOAs. Twenty seven local authorities saw fuel poverty rates fall by more than 5 percentage points i.e. considerably above average decreases. Of those local authorities that saw increases in fuel poverty, most were fairly small, with only four having an increase of greater than 2 per cent. The largest of these was Cambridge, which saw an increase of over 4 percentage points in the proportion of households in fuel poverty. Of all the local authorities, Eden had the highest proportion of fuel poor households (29 per cent), whilst the city of London had the lowest (5 per cent).

There are a number of explanations why the levels of fuel poverty have decreased more in some local authorities than others between 2009 and 2010. For example, at a national level fuel poverty in the social rented sector decreased by more than in the private rented and owner occupied sectors, and so areas with a high proportion of social housing are likely to see bigger decreases in fuel poverty levels.

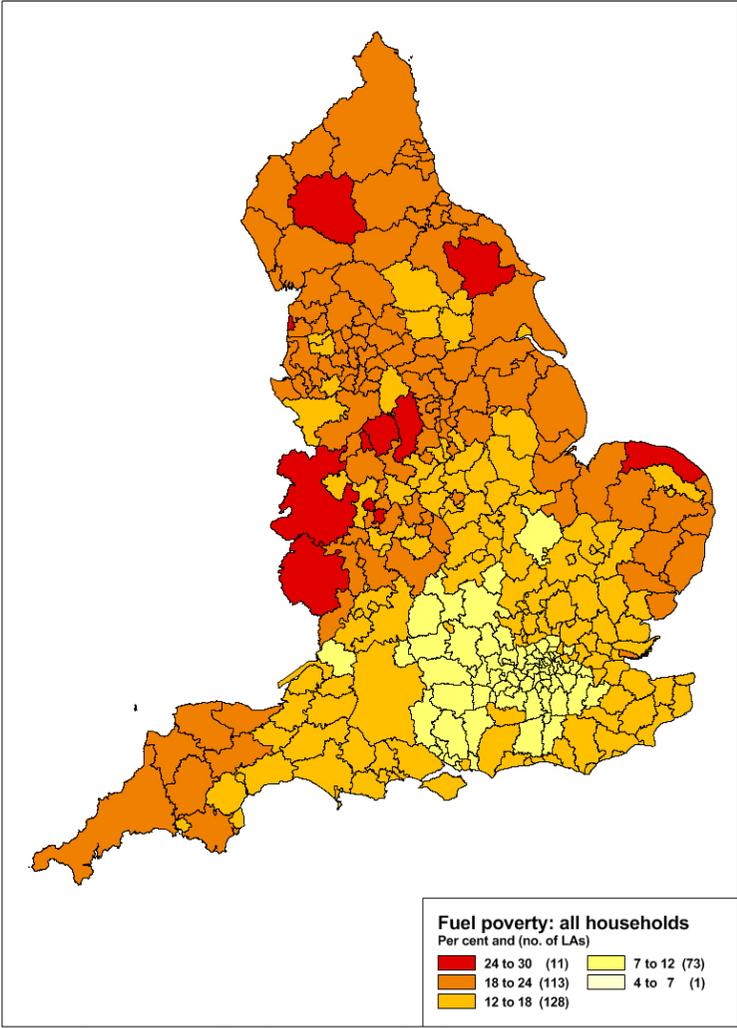
Generally speaking, the distribution of fuel poverty changed little between 2009 and 2010, with similar areas having the highest and lowest fuel poverty levels (see figures 7.3 and 7.4). However, these figures also show that, as described above, the rates of fuel poverty did change, falling for most authorities, in line with changes at a national and regional level. In part, the fact that fuel poverty at a local area broadly follows changes in the figures at regional level is not surprising, since the aggregated local area fuel poverty levels are constrained to match those at a regional level.

Figure 7.3: Fuel Poverty in England by Local Authority, 2009
 (ranges based on modelled 2009 fuel poverty data)



Boundary data for all maps: Source: 2001 Census, Output Area Boundaries, Crown Copyright 2009.
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Figure 7.4: Fuel Poverty in England by Local Authority, 2010
 (ranges set to match 2009 modelled fuel poverty data)



Boundary data for all maps: Source: 2001 Census, Output Area Boundaries, Crown Copyright 2009.
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7.4 Methodology

The national and regional fuel poverty statistics are based on data from the English Housing Survey (EHS). However, given the small sample size of the EHS (around 16,000 households in 2010), it is not possible to use this data to directly estimate fuel poverty in smaller geographical areas, such as the 326 local authorities. Therefore a logistic regression model is created, matching data from the EHS on whether the household is fuel poor or not (as the binary dependent variable) with data from other sources available for all Census Output Areas, e.g. Census 2001 data (as the independent variables). In this way, the model could be used to predict the levels of fuel poverty for all COAs across England.

In fact, two separate models were created – one for the private sector and one for the social housing sector. This is because of evidence suggesting that there are differences in the distributions of fuel poverty between the private and the social rented sectors. As such, using one model is less likely to adequately account for the variations between the two distributions, and produce less accurate modelling.

The models, produced by BRE at the request of DECC, use a stepwise selection methodology to identify the variables with the most explanatory power for both models. A few of the key predictor variables used in the models include:

- *Dwelling age*: This is a categorical variable which provides an indication of the likely energy efficiency of a dwelling. For example, older dwellings may have solid walls or be listed buildings, which make fitting energy saving measures difficult. Such households are likely to have higher fuel bills in order to heat the dwelling to a defined adequate level of warmth.
- *English region*: This is a categorical variable which indicates the English Region (former Government Office Region) that a COA is located within. Chapter 4.2 illustrates the regional differences in levels of fuel poverty.
- *Lifestyle characteristics*: This is a categorical variable which provides an indication of the economic status of the households in a given COA, and therefore the likelihood of households being able to afford to adequately heat their home.

The output from these models is the percentage of households in fuel poverty at COA level. To convert this to a number of households, we apply this percentage to an estimate of household numbers at COA level, taken from the 2001 Census. However, because this data is increasingly out of date, we also use supplementary data at LSOA level from the ONS' Neighbourhood Statistics website. On this website, data from the Department for Communities and Local Government (DCLG) is available on the total number of households at LSOA level (split by council tax bands). The difference between these totals in the 2001 and 2010 data sets was used as an inflation factor to increase the 2001 Census household totals to approximate the number in 2010. These had to then be adjusted slightly in order to ensure that, when summed to the regional or national level, they matched the overall 2010 EHS household totals, as used when compiling the 2010 fuel poverty figures.

Chapter 7 – Sub-regional fuel poverty in 2010

Unfortunately, the DCLG data are only available at the LSOA level and not at COA level. Therefore, in order to estimate the number of households at COA level, the proportion of households across COAs in each LSOA have remained the same as reported in the 2001 Census. While this method is a reasonable approximation, it will be less reliable where large numbers of dwellings have been built in particular COAs.

8. Other data relating to drivers of fuel poverty

This chapter considers data associated with the main drivers of fuel poverty. This includes consideration of actual expenditure on fuel, compared with the modelled expenditure used in the definition of fuel poverty.

A full set of supplementary indicators is available at:

http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/fuelpov_stats.aspx

8.1 Expenditure on fuel

While the fuel poverty methodology models the level of consumption of each household so that an adequate standard of warmth²⁸ is achieved, it is also of interest to consider the actual spend on energy by different types of households.

The Living Costs and Food Survey (LCFS) is a survey of around 6,000 households in the UK. Information about semi-regular purchases (e.g. utilities) is obtained from a household interview. The second column of Table 8.1 shows 2010 data²⁹ from the LCFS on the average annual expenditure on fuel, which includes electricity, gas, coal, oil and other fuels (but excludes use of petrol and diesel for transport purposes). The third column shows the average modelled annual fuel bill for each income decile group (derived using fuel poverty and EHS data). In other words, the spend required to maintain the adequate standard of warmth as per the fuel poverty definition.

Table 8.1: Actual and modelled annual spend on fuel, 2010

| Income decile group | Average actual annual expenditure on fuel (£) | Modelled average annual spend on fuel (£) | Percentage difference |
|---------------------|---|---|-----------------------|
| 1st (lowest) | 702 | 1,186 | 41% |
| 2nd | 889 | 1,152 | 23% |
| 3rd | 972 | 1,195 | 19% |
| 4th | 988 | 1,249 | 21% |
| 5th | 1,076 | 1,285 | 16% |
| 6th | 1,134 | 1,348 | 16% |
| 7th | 1,160 | 1,385 | 16% |
| 8th | 1,212 | 1,396 | 13% |
| 9th | 1,352 | 1,496 | 10% |
| 10th (highest) | 1,638 | 1,687 | 3% |
| All households | 1,113 | 1,338 | 17% |

Unsurprisingly, those households with higher incomes tend to have a higher actual spend on fuel than those with low incomes. As table 8.1 shows, households in the highest income decile group spend, on average, over twice as much as those households in the lowest income decile group. This is likely to reflect both the greater

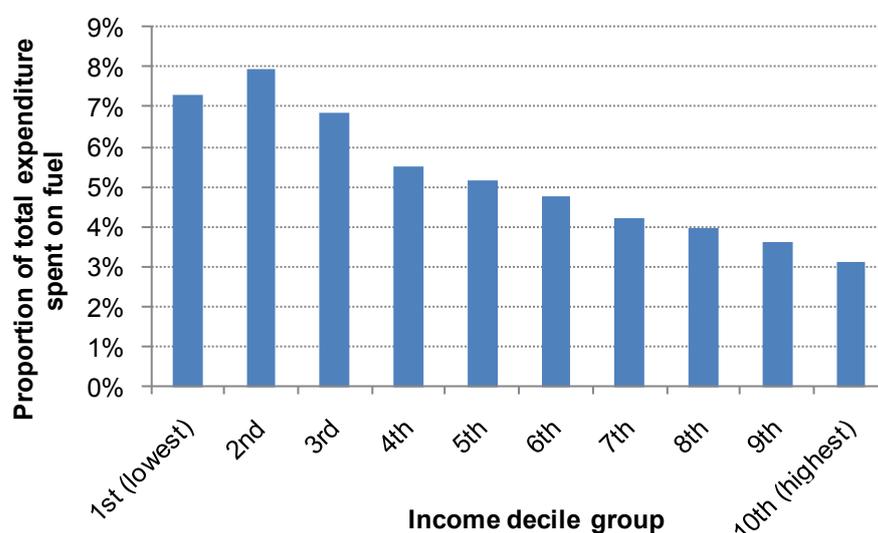
²⁸ See Chapter 1 for more information.

²⁹ In the LCFS, data is published as average weekly spend, therefore these were multiplied by 52 in order to calculate the yearly averages shown in Table 8.1.

affluence of the higher income households, and also their larger dwellings, which require more heat and light than smaller dwellings. The modelled spend is larger than the actual spend for all income decile groups, which may indicate that the heating regimes in the model are not reflecting actual use. This is a similar finding to the pilot study matching meter point consumption to modelled fuel poverty data (see chapter 6.1). However, the difference between modelled and actual spend is clearly greater amongst the lower income households. For example, in the lowest income decile group, households only spent around 59 per cent (on average) of the required spend to maintain an adequate standard of warmth.

Although the low income households spend the lowest absolute amount on fuel, it accounts for a greater proportion of their overall expenditure than high income households. Around 7 per cent of total expenditure in the lowest income decile group is on domestic fuels, compared to just 3 per cent in the highest income decile group (see chart 8.1).

Chart 8.1: Proportion of total expenditure spent on fuel, by income decile group, 2010



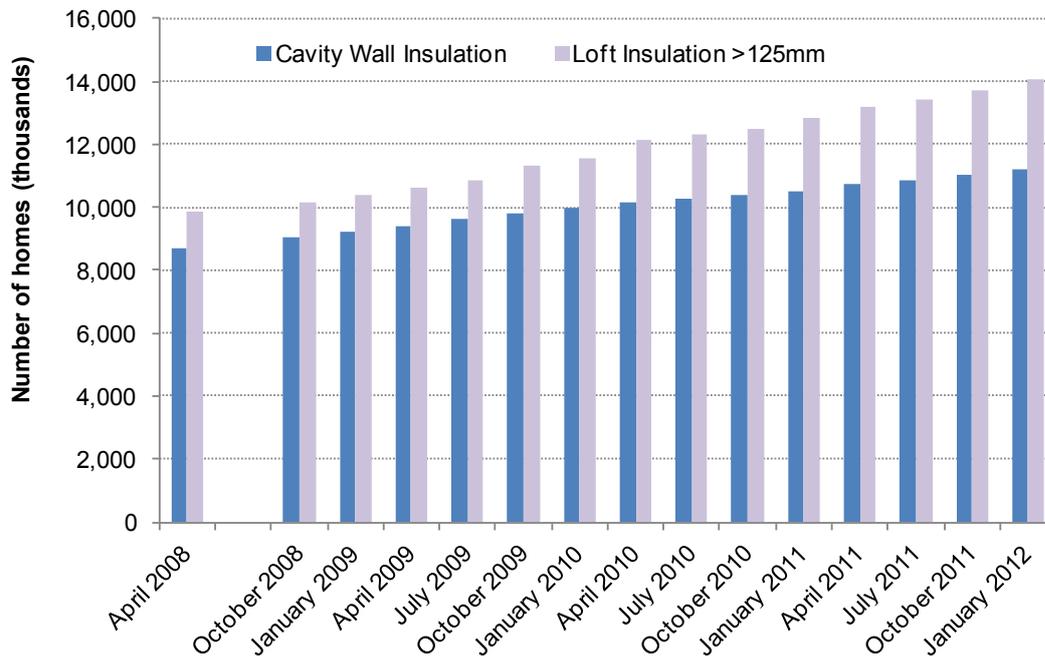
Source: Living Costs and Food Survey, ONS

These results can also be compared with actual spend on fuel, as measured by meter point data. For more information, see section 6.1.

8.2 Energy efficiency measures

One way to remove households from fuel poverty is by improving the energy efficiency of the housing stock, particularly for those dwellings lived in by the fuel poor. As discussed in Chapter 5, the average SAP rating of all households has increased between 2003 and 2010. DECC publishes estimates of home insulation levels in Great Britain on a quarterly basis. Chart 8.2 below shows the number of homes with cavity wall insulation and loft insulation (greater than 125mm in thickness).

Chart 8.2: Number of homes with cavity wall insulation and loft insulation in Great Britain, April 2007 to January 2012³⁰



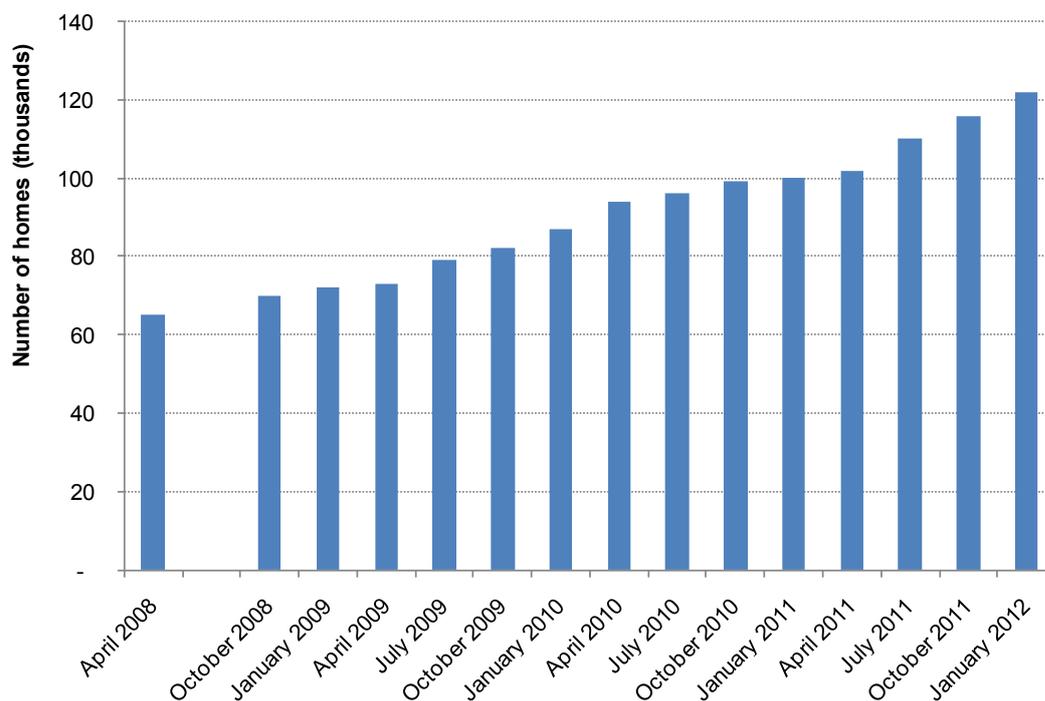
In January 2012, there were a total of 26.7 million homes in Great Britain, of which 23.3 million have lofts. Between April 2008 and January 2012, the number of homes with loft insulation with thickness greater than 125mm increased from 9.5 million to 14.1 million, a rise of 48 per cent. Therefore, in January 2012, around 60 per cent of homes with lofts had loft insulation thicker than 125mm.

Since April 2008, the number of homes with cavity wall insulation increased from around 8.5 million to around 11.2 million, a rise of 32 per cent. In January 2012, there were around 18.9 million homes with cavity walls, meaning around 59 per cent of homes with wall cavities had cavity wall insulation.

Chart 8.3 below shows the number of homes with solid wall insulation.

³⁰ Note that this series was annual until quarter 4 of 2008.

Chart 8.3: Number of homes with solid wall insulation in Great Britain, April 2008 to January 2012



Between April 2008 and January 2012, the number of homes with solid wall insulation has increased from 65,000 to 122,000, representing an increase of 88 per cent. In January 2012, there were 7.8 million homes with solid walls, of which around 1.6 per cent had solid wall insulation³¹.

More information on these energy efficiency statistics and the methodology used to derive them are available on the DECC website at:

http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/en_effic_stats/en_effic_stats.aspx

8.3 Household income distribution

The Department of Work and Pensions (DWP) publication 'Households below average income', also known as HBAI, will be released in May 2012.

Unlike in the fuel poverty calculation, which measures ability to afford a certain product as a proportion of all income, most of the income measures used in HBAI are equivalised, which means that they take into account variations in the size and composition of the households in which people live. Equivalisation reflects the fact

³¹ Solid wall insulation is defined here as internal or external wall insulation installed through Government programmes such as Carbon Emissions Reduction Target (CERT) or Energy Efficiency Commitments (EEC1, EEC2). It does not include households paying for their own solid wall insulation. In addition, in April 2008, about 900,000 homes are known to have other forms of non-cavity wall insulation that fall outside this definition of solid wall insulation.

that a family of several people needs a higher income than a single person in order for them to enjoy a comparable standard of living.

More information is available on these statistics on DWP's website at:

<http://statistics.dwp.gov.uk/asd/hbai/hbai2010/index.php?page=contents>

9. Projections

9.1 Introduction

The 2011 Annual Report on Fuel Poverty Statistics presented projections of fuel poverty for 2010 and 2011. These estimated that there would be little change between fuel poverty levels in 2009 and 2010, followed by a small rise (of around 0.1m households) in 2011. Clearly the projection for 2010 and the actual level of fuel poverty in 2010 are significantly different and the first section of this chapter explains why this is the case.

This chapter also presents an updated projection for 2011 and a new projection for 2012.

9.2 Comparison of the projected level of fuel poverty with the actual level, 2010

In the 2011 Annual Report on Fuel Poverty statistics, DECC projected a level of fuel poverty in 2010 of around 4.0 million households, around 0.5 million higher than actual figures have shown. This section attempts to explain why this projection was too high.

- Overall, average prices were projected reasonably accurately. Differences between projected and actual bills (averaged across households and with some allowance for changes in energy efficiency) for households using mains gas, electricity and heating oil were within around 3 per cent. There were some larger differences for households using less common fuels for their heating, where actual prices were lower than projected.
- Incomes were also projected accurately on average, with the average income across England varying by less than 1 per cent between the projected and actual levels. However, this masked some discrepancies that were evident for different income groups. For lower income households, income changes were under projected by as much as 4 per cent and over projected for higher income households by around 1 per cent. Generally speaking, for households in the top half of the income distribution, income changes were reasonably well projected.
- The impact of energy efficiency improvements was under estimated in the projections. In part, this is expected, as we noted in the projections chapter last year, the assessment made of the impact of energy efficiency improvements was conservative – so only installations of cavity wall insulation and loft insulation were considered. There is evidence to suggest (see Chapter 3.5) that the installation of new condensing boilers has assisted a number of households in reducing their energy bills and therefore will have an impact on the level of fuel poverty. Therefore, this year, an estimate has been made of the impact of installing energy efficient condensing boilers in the projections.

The role of social tariffs and the £80 rebate scheme was not fully incorporated into the projections last year and this will also have led to a higher projected value.

A further reason that the projections do not match the outturns is intrinsic in their methodology. The basis for the projection is always the current dataset, used as the baseline on which to project income, price and energy efficiency changes. However, this assumes that all groups of households recorded in the EHS sample (and especially those with fuel poverty ratios close to 10 per cent) will look very similar in subsequent years. In reality, variations in the samples achieved will mean that the households in the current combined year EHS that are very close to being fuel poor (and so projected to move into fuel poverty with a small price increase) will look different in some ways to the same set of households next year – while their incomes are likely to be broadly similar, there may be greater variation in their household size and composition, or dwelling fabric, insulation, heating methods or payment types that affect their bills. For this reason, there is always an element of uncertainty that cannot be accounted for within the projections.

It is difficult to assign a specific contribution of each of the areas above (particularly the last one) to the difference between the projected and actual levels of fuel poverty. However, it is safe to say that the largest impact was from under-estimation of the increases in income for low income households, with the reduction in energy consumption due to energy efficiency improvements likely to be second in the list.

9.3 Projected levels of fuel poverty in England, 2011 and 2012

The main sources used for projecting the three drivers of fuel poverty are broadly similar to last year:

1. Changes in incomes have been derived from the Office for Budget Responsibility, through Annex D of the HM Treasury budget report³².
2. Components of the Retail Prices Index (RPI)³³ (for non metered fuels) have been combined with early estimates of average bills produced by DECC (for gas and electricity) for price changes of domestic energy. This year, it has been necessary to estimate price changes for much of 2012 as, at the time of publishing, prices from May 2012 were unknown. Last year, six months of prices for the projection period were unknown but as a consequence of further advancing the publication of this report, eight months of 2012 prices are unknown. This therefore increases the uncertainty over the 2012 projection.
3. Energy efficiency measures themselves are not estimated directly. Unlike changes in income and prices (which affect all households), only a minority of households will experience any change in their dwelling (due to cavity wall or loft insulation, or a new boiler for example) from one year to the next. To “predict”

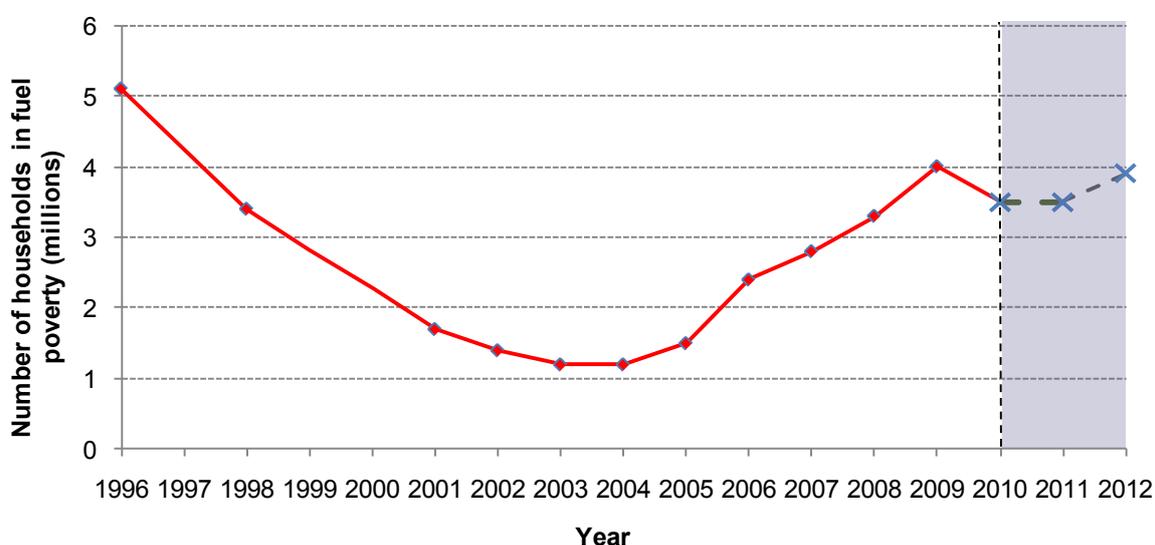
³² Budget reports can be found here: http://www.hm-treasury.gov.uk/budget2012_documents.htm.

³³ More information on Consumer Price Indices can be found here: <http://www.statistics.gov.uk/CCI/nugget.asp?ID=19>.

which households receive these measures would be hap-hazard in nature. Therefore, an assessment of the likely impact on fuel poverty of Government schemes, DIY and other initiatives was estimated by using a combination of published data on efficiency measures³⁴ and trends in boiler types from the EHS. This was then applied to the projected level of fuel poverty arising from the result of income and fuel price projections.

Chart 9.1 below shows the new projections for fuel poverty in 2011 and 2012. It shows fuel poverty is projected to remain at around 3.5 million households in England in 2011, before price rises in the latter part of 2011 lead to an increase of around 0.4m households in 2012.

Chart 9.1 – Number of households in fuel poverty 1996 to 2010, and projections for 2011 and 2012, England



The pattern of projections for 2011 and 2012 is influenced by changes in prices, incomes and the efficiency of the housing stock. A number of points around domestic energy prices should be considered alongside these projections.

As noted above, the projection (for 2012) depends on prices that are, as yet, unknown. This uncertainty has an impact on the accuracy of the projection against the outturn. For the purpose of these projections, we have assumed that average prices will rise for both electricity and gas in early autumn by around 10 per cent. The extent to which actual price changes will affect the accuracy of these projections is likely to be fairly small – with a maximum likely impact of around +/- 0.1 million households. So for example, if there are no further price changes, then the projected level would be around 0.1m lower. This is because price changes announced later in 2012 will have a relatively small impact on the two year (combined) 2012 data (i.e. since we already know price levels for the first year and four months of the period).

³⁴ For more information, see: http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/en_effic_stats/en_effic_stats.aspx

As noted above, the projections include an estimate for the impact of energy efficiency schemes on household energy bills. This has been estimated broadly from the impact of a range of policies to improve energy efficiency, 'do it yourself' type improvements (such as loft insulation) and new boilers. The projections also make a conservative estimate of the impact of social and discounted tariffs, which will reduce bills for those households on such tariffs.

The extent to which the actual fuel poverty levels for 2011 and 2012 will differ from the above projections will depend on a number of important and, until the results of survey data from those year are compiled, uncertain factors. These include:

- Any price changes that apply for the remainder of the period (up to the end of 2012);
- Actual income changes;
- Any changes in the fuels used in households, and therefore the energy costs households experience;
- The impact of social and discounted tariffs;
- Changes to the structure and type of households;
- The overall number of households in England;
- The actual impact of energy efficiency improvements on households
- The economic climate and the degree to which employment levels change

For the reasons above, care should be taken when interpreting the projections of fuel poverty presented here.

Annex A: Related data

This is the headline statistical report on the 2010 fuel poverty data. Aside from this report, a range of additional analyses, annexes and data are available that directly link to this report.

- **Detailed tables:** These tables present the 2010 figures on fuel poverty and households numbers, split by a range of dwelling characteristics and demographics. They are available to download as a spreadsheet.
- **Long term detailed tables:** These tables, which are available to download as a spreadsheet, present trends in fuel poverty between 2003 and 2010. The tables are a compilation of the key annual detailed tables (see above) from the last few years.
- **Monitoring Indicators:** This document presents a range of indicators linked to fuel poverty, which can be used alongside this report to provide greater depth to the understanding of changes in fuel poverty. For example, there are indicators that focus on income, fuel bills and housing. The suite of indicators included in this document was discussed and agreed by the Fuel Poverty Methodology Group, and has been continually reviewed since.
- **Fuel Poverty Methodology Handbook:** This is a comprehensive methodology document containing detailed technical information on the modelling of fuel poverty, as well more general information about the fuel poverty data.

All of the above are available on the DECC website at:

http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/fuelpov_stats.aspx

- **Fuel poverty data set:** The full fuel poverty data will be available on request, from the end of July 2012. Alternatively, the data will also be available on the UK Data Archive.
- **Sub-regional fuel poverty statistics:** Spreadsheets containing 2010 sub-regional fuel poverty data are available to download from the DECC website at:
http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/regional/regional.aspx
The data are available for all Lower Layer Super Output Areas (LSOA), local authorities, and parliamentary constituencies in England.

The monitoring indicators, described above, contain data from a number of other sources that have overlaps with the fuel poverty data. These include:

- **Households Below Average Incomes (HBAI):** This is published by the Department for Work and Pensions (DWP) and provides information on low income households. More information is available at:
<http://research.dwp.gov.uk/asd/index.php?page=hbai>
- **English Housing Survey (EHS):** As described in Section 1.3, this is the main source of dwelling and household data used in compiling the fuel poverty statistics. EHS data is available to download from the UK Data Archive. For more information on the EHS generally, see:
<http://www.communities.gov.uk/housing/housingresearch/housingsurveys/englishhousingsurvey/>
- **Living Costs and Food Survey (LCFS, previously known as the Expenditure and Food Survey):** This is a useful source of information on actual (rather than modelled) spending on a range of household goods and services. The LCFS is compiled by the Office for National Statistics (ONS), and feeds into their Family Spending publications. More information is available at:
<http://www.ons.gov.uk/about/surveys/a-z-of-surveys/living-costs-and-food-survey/index.html>
- **Quarterly Energy Prices (QEP):** This quarterly DECC publication reports average annual domestic gas and electricity bills for different regions of the UK and for different payment methods (e.g. standard credit, direct debit and prepayment meters). The data used to compile these tables is the main source of price data used in producing modelled bills in the fuel poverty data. QEP is available on the DECC website at:
<http://www.decc.gov.uk/en/content/cms/statistics/publications/prices/prices.aspx>
- **Energy Consumption in the UK (ECUK):** DECC publishes spreadsheets containing various data relating to energy consumption and energy efficiency, split by type of consumer and fuel type. The spreadsheets are available to download on the DECC website at:
<http://www.decc.gov.uk/en/content/cms/statistics/publications/ecuk/ecuk.aspx>
- **Identifying local areas with higher than expected domestic gas use (Energy Trends March 2012):** Analysis aiming to produce a statistical model predicting gas consumption at a local area level using published data.
<http://www.decc.gov.uk/en/content/cms/statistics/publications/trends/trends.aspx>

Annex B: Sub-regional fuel poverty in 2010, Regional Maps

Figure B1: Percentage of households in fuel poverty at LSOA level, London, 2010

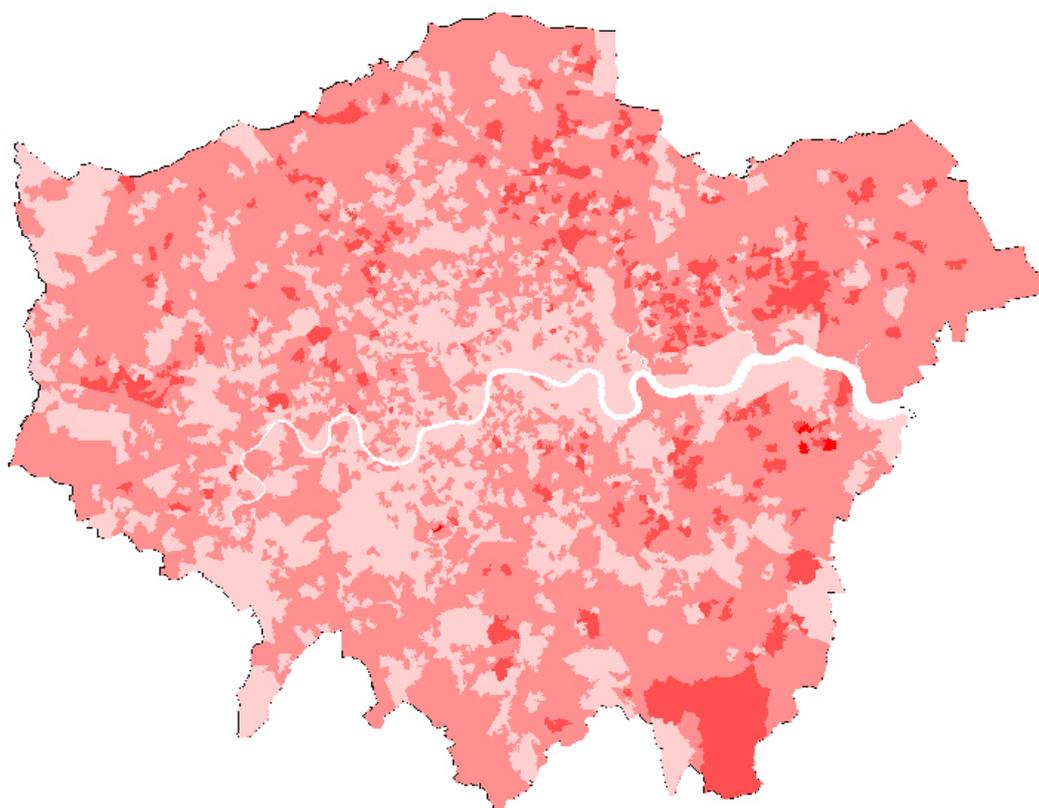
Fuel Poverty in London, 2010

Percentage of households in Fuel Poverty
by Lower Super Output Area (LSOA)



Key

- 0 to 10
- 10 to 15
- 15 to 20
- 20 to 25
- 25 to 100



Source: ONS, Super Output Area Boundaries.
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Figure B2: Percentage of households in fuel poverty at LSOA level, South East, 2010

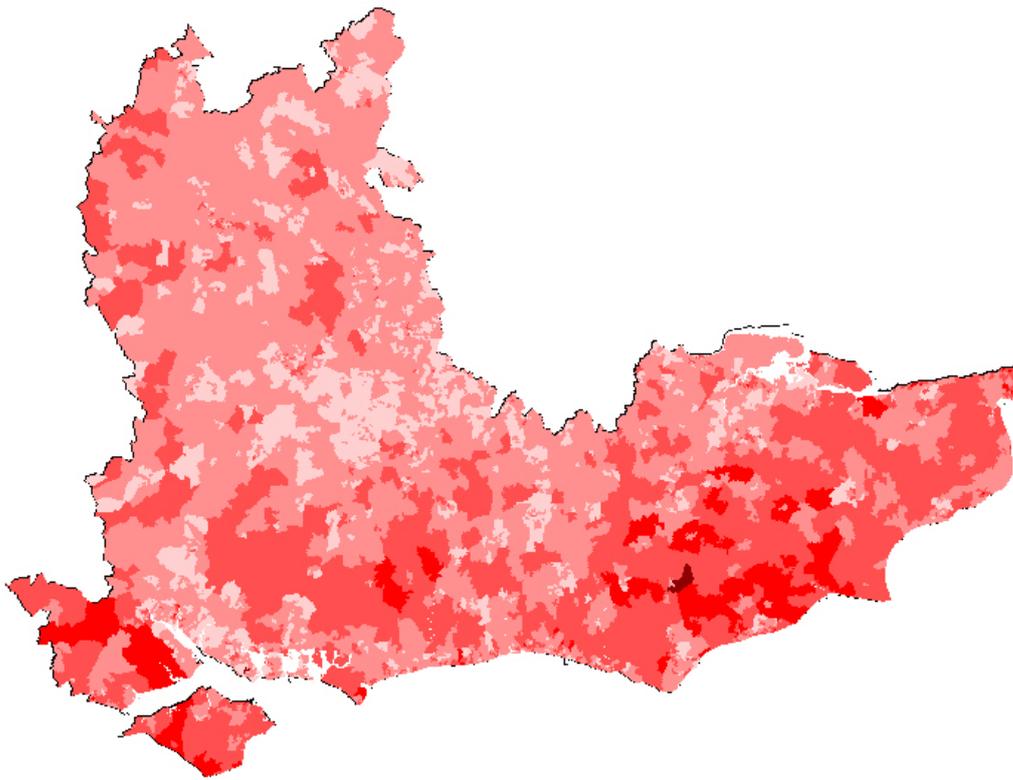
Fuel Poverty in the South East, 2010

Percentage of households in Fuel Poverty by Lower Super Output Area (LSOA)



Key

- 0 to 10
- 10 to 15
- 15 to 20
- 20 to 25
- 25 to 100



Source: ONS, Super Output Area Boundaries.
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Figure B3: Percentage of households in fuel poverty at LSOA level, South West, 2010

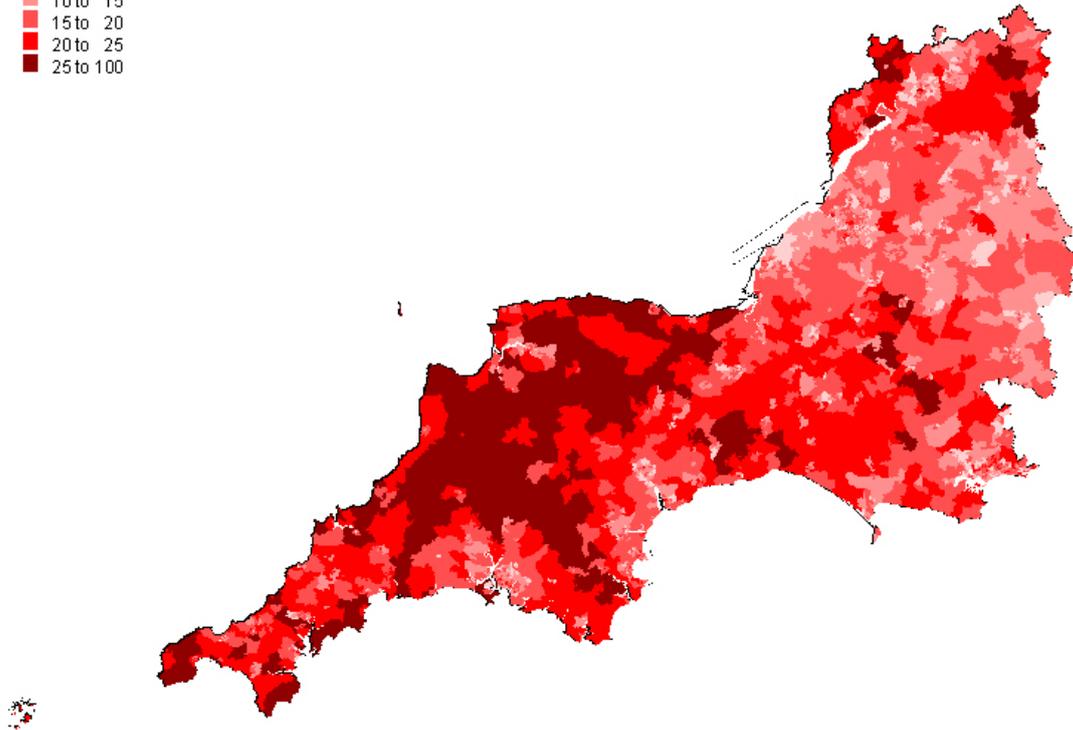
Fuel Poverty in the South West, 2010

Percentage of households in Fuel Poverty by Lower Super Output Area (LSOA)



Key

- 0 to 10
- 10 to 15
- 15 to 20
- 20 to 25
- 25 to 100



Source: ONS, Super Output Area Boundaries.
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Figure B4: Percentage of households in fuel poverty at LSOA level, East of England, 2010

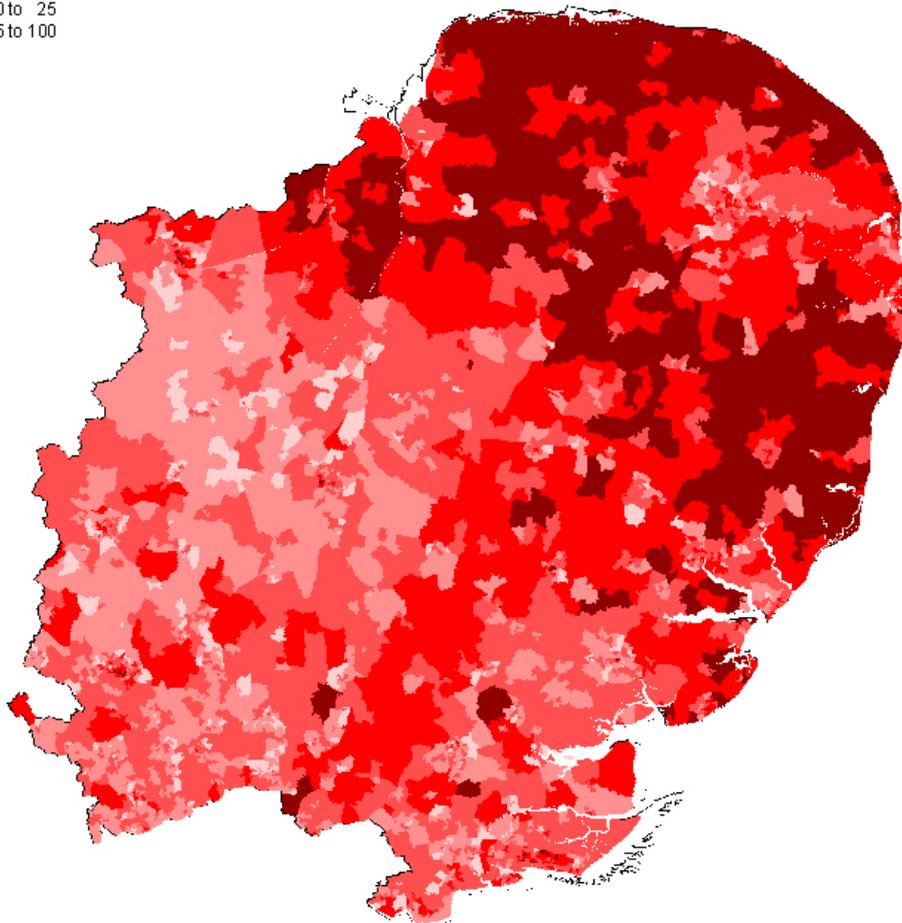
Fuel Poverty in the East of England, 2010

Percentage of households in Fuel Poverty
by Lower Super Output Area (LSOA)



Key

- 0 to 10
- 10 to 15
- 15 to 20
- 20 to 25
- 25 to 100



Source: ONS, Super Output Area Boundaries.
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Figure B5: Percentage of households in fuel poverty at LSOA level, East Midlands, 2010

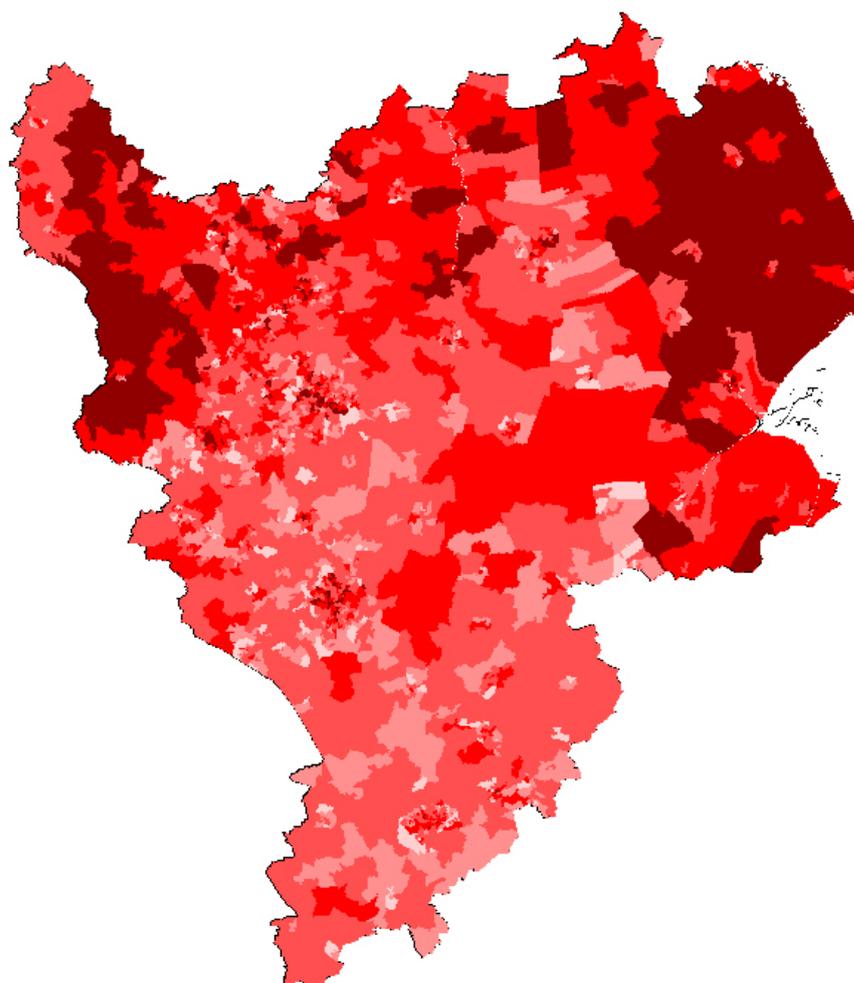
Fuel Poverty in the East Midlands, 2010

Percentage of households in Fuel Poverty by Lower Super Output Area (LSOA)



Key

- 0 to 10
- 10 to 15
- 15 to 20
- 20 to 25
- 25 to 100



Source: ONS, Super Output Area Boundaries.
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Figure B6: Percentage of households in fuel poverty at LSOA level, West Midlands, 2010

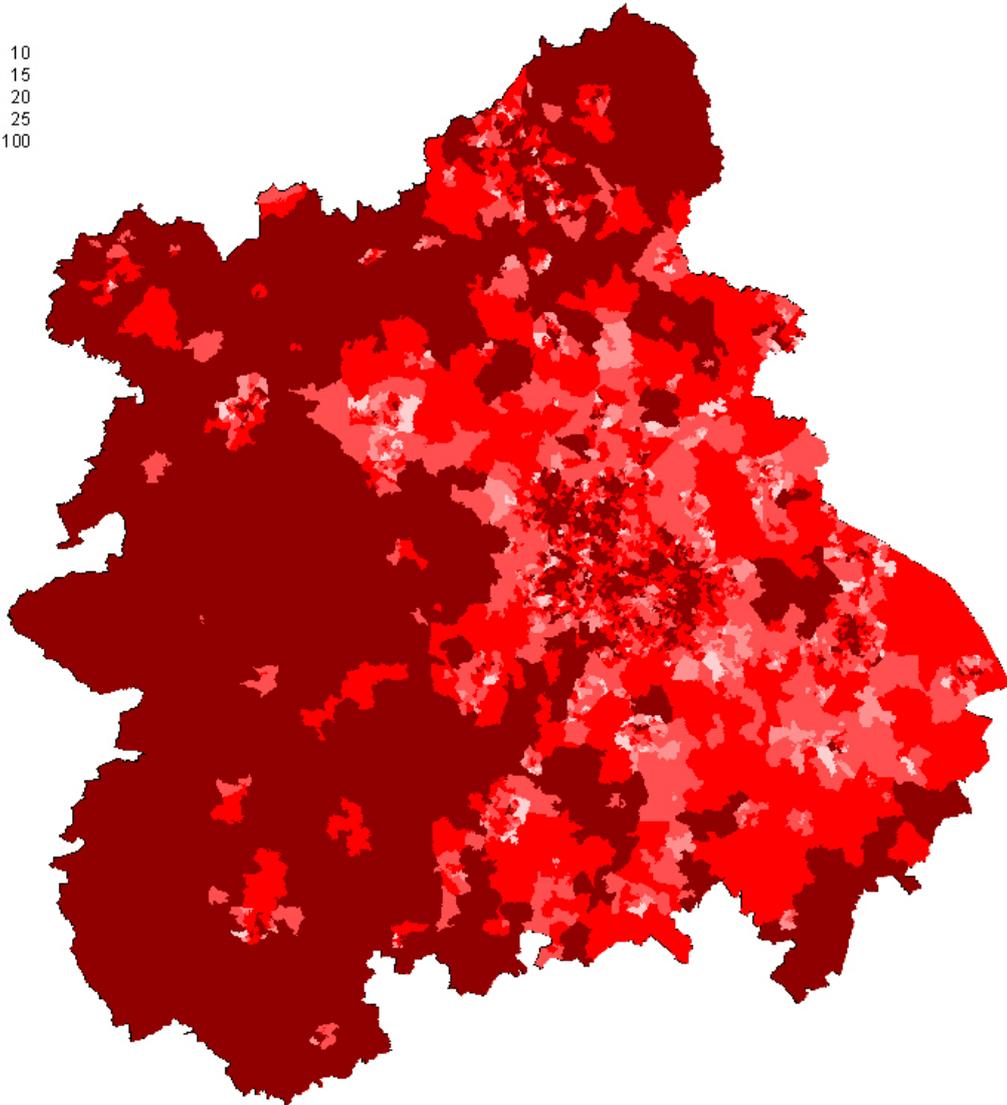
Fuel Poverty in the West Midlands, 2010

Percentage of households in Fuel Poverty by Lower Super Output Area (LSOA)



Key

- 0 to 10
- 10 to 15
- 15 to 20
- 20 to 25
- 25 to 100



Source: ONS, Super Output Area Boundaries.
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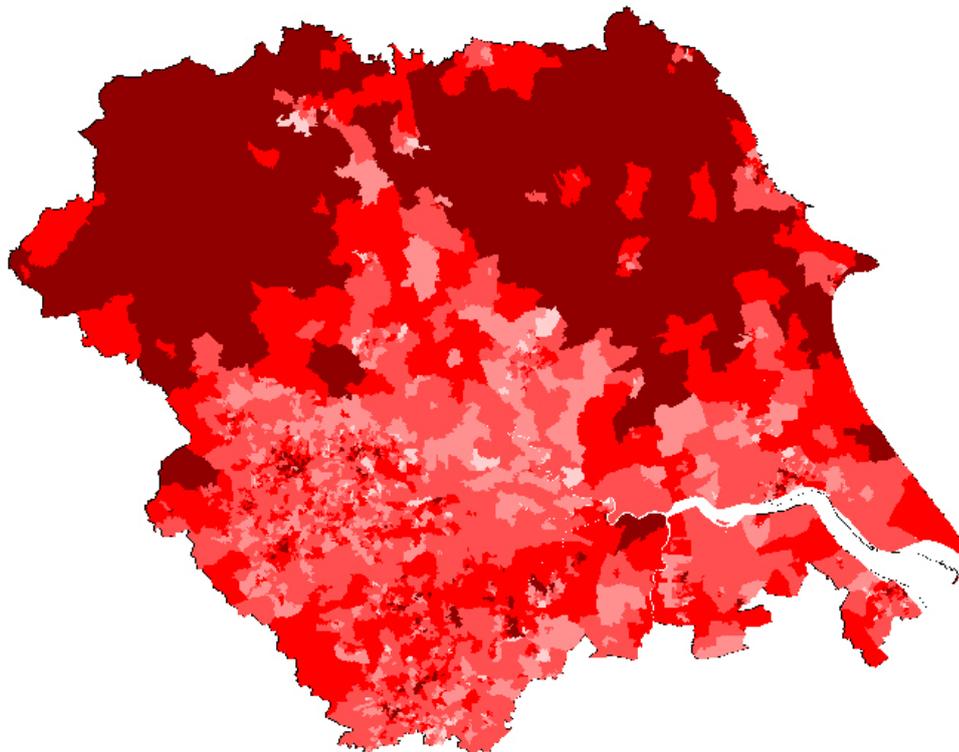
Figure B7: Percentage of households in fuel poverty at LSOA level, Yorkshire and the Humber, 2010

Fuel Poverty in Yorkshire and the Humber, 2010
Percentage of households in Fuel Poverty by Lower Super Output Area (LSOA)



Key

- 0 to 10
- 10 to 15
- 15 to 20
- 20 to 25
- 25 to 100



Source: ONS, Super Output Area Boundaries.
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Figure B8: Percentage of households in fuel poverty at LSOA level, North East, 2010

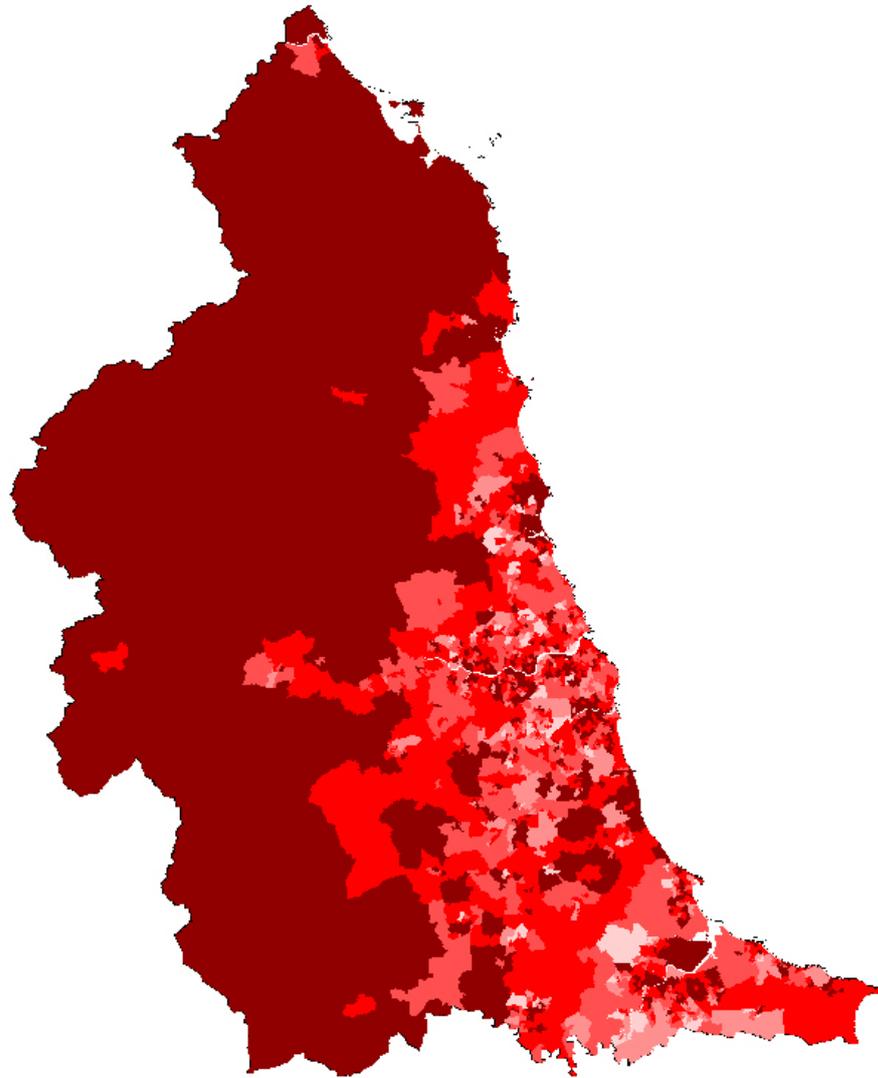
Fuel Poverty in the North East, 2010

Percentage of households in Fuel Poverty by Lower Super Output Area (LSOA)



Key

- 0 to 10
- 10 to 15
- 15 to 20
- 20 to 25
- 25 to 100



Source: ONS, Super Output Area Boundaries.
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Figure B9: Percentage of households in fuel poverty at LSOA level, North West, 2010

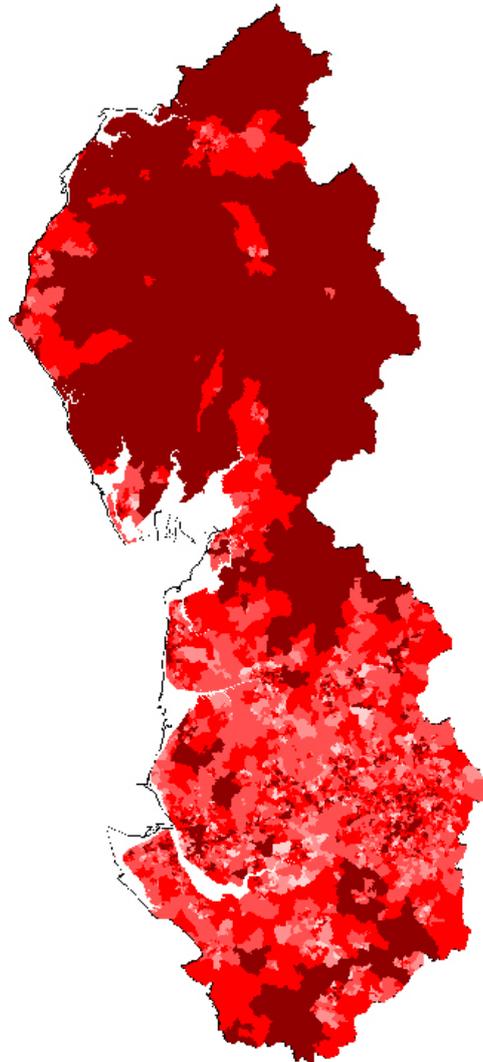
Fuel Poverty in the North West, 2010

Percentage of households in Fuel Poverty by Lower Super Output Area (LSOA)



Key

- 0 to 10
- 10 to 15
- 15 to 20
- 20 to 25
- 25 to 100



Source: ONS, Super Output Area Boundaries.
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