



A National Statistics Publication



**ANNUAL  
REPORT  
ON FUEL  
POVERTY  
STATISTICS  
2011**



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## 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 warmth<sup>1</sup>.

Although the emphasis in the definition is on heating the home, 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:

$$\text{Fuel poverty ratio} = \frac{\text{Required fuel costs (i.e. required usage x price)}}{\text{Income}}$$

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.

**Table 1.1 – Number of fuel poor households in England**

England <sup>2</sup>	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

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)

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

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

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. While 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 type of people that live in the home,
- the fuels used, and
- the dwelling characteristics.

It is necessary to model bills as the consumption is 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.

For the first time, the 2009 fuel poverty data includes the impact of social tariffs. However, as the fuel poverty statistics are calculated using a two year combined EHS dataset (i.e. 2008 and 2009), social tariffs have only been applied to the 2009 half of the dataset. Further information is available in Section 6.1 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](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 falling into fuel poverty. Although it is impossible to identify individual households experiencing fuel poverty, the data can point to generic groups that are most likely to be at risk. Since the data 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).

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 reports concentrates on a detailed analysis of the fuel poor in England, which is produced by DECC.

### **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 differences<sup>3</sup> 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 the adequate standard of warmth is achieved at a higher temperature for these groups in the Scotland measurement.
- 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 2010 and relates to fuel poverty in 2009. The report is available at:

<http://www.scotland.gov.uk/Publications/2010/11/23125350/0>

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/LA0709>

These data were published in November 2010 and relate to fuel poverty in 2007, 2008 and 2009 combined.

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<sup>3</sup> 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 Government published the latest Living in Wales Survey in November 2010 and 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](http://www.nihe.gov.uk/index/sp_home/research-2/house_condition_survey.htm)

## **1.3 The English Housing Survey (EHS)**

The EHS is a national survey of housing in England, commissioned by the Department for 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 2009, 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.

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

For more information on the EHS in general, see:

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

DCLG published the main EHS report and data relating to 2009 on 5<sup>th</sup> July 2011. The report is available for download on the DCLG website at:

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

## **1.4 National Statistics Assessment**

During the first half of 2010, the UK Statistics Authority (UKSA) assessed the fuel poverty statistics for accreditation as National Statistics for the first time. The assessment was successful and fuel poverty statistics were granted National Statistics status, subject to the completion of three requirements as identified by the UKSA.

These requirements were subsequently fulfilled to the satisfaction of the UKSA, who confirmed the designation of the fuel poverty outputs as National Statistics in February 2011. The work done to fulfil the requirement to “publish further information about the impact on published estimates of variations to the assumptions made in modelling fuel poverty” is explained further in Section 6.3.

The successful accreditation reflects the positive steps that DECC have made in producing a statistical report, detailed analysis and pre-announcing publication dates on fuel poverty in recent years. This year’s report also reflects the work that DECC has done to advance the publication date, which is three months earlier than the 2010 report.

The full National Statistics assessment report and the letter of confirmation are available on the UKSA website, under assessment number 53, at:

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

## **1.5 Developments since the last publication**

The analysis contained in this report builds on the previous annual fuel poverty statistics report, published in October 2010. It repeats and, in some cases, extends the most useful pieces of analysis from the last publication. For example, the methodology has been updated to take into the account the effects of social tariffs on the level of fuel poverty and this is described further in Section 6.1.

Use of sub-regional levels of fuel poverty have also been monitored since publishing the 2006 levels. Specifically, 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, 2008 levels were published earlier this year. The data is available on the DECC website at:

[http://www.decc.gov.uk/en/content/cms/statistics/fuelpov\\_stats/regional/regional.aspx](http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/regional/regional.aspx)

One action from the UKSA assessment (see Section 1.4) was to undertake analysis to try to evaluate the effects of uncertainty in the modelling assumptions on the headline fuel poverty estimates. In particular, the analysis explored the effect of uncertainty in fuel prices, household income and the two combined. The report on this analysis is available on the DECC website at:

[http://www.decc.gov.uk/en/content/cms/statistics/fuelpov\\_stats/fuelpov\\_stats.aspx](http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/fuelpov_stats.aspx)

All three of these analyses are explored in more detail in Chapter 6 of this report.

## **1.6 Further information**

For further information on the data presented in this report, please email [fuelpoverty@decc.gsi.gov.uk](mailto:fuelpoverty@decc.gsi.gov.uk).

## 2. Summary of fuel poverty in the UK and England, 2009

### 2.1 Fuel poverty in the UK

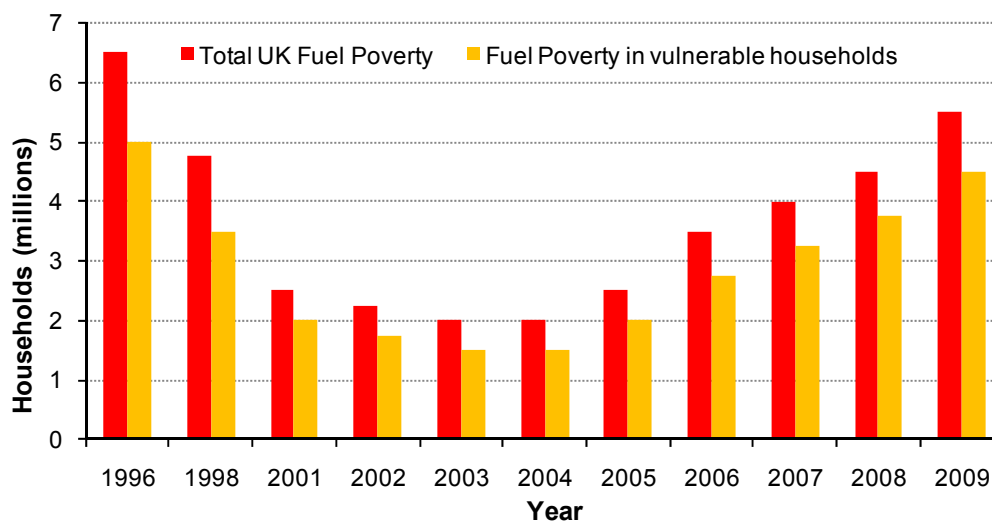
In 2009, the number of fuel poor households in the UK was estimated at around 5.5 million, a rise of around 1 million when compared to 2008, and representing approximately 21 per cent of all UK households.

The UK fuel poverty estimate is based on the latest figures for England, Scotland and Northern Ireland, along with an extrapolated estimate for Wales (which is based on earlier figures).

In 2009, around 4.5 million vulnerable<sup>4</sup> households in the UK were fuel poor, an increase from around 3.75 million the previous year. In England, over 70 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 2009, while Table 2.1 gives the numbers behind the chart.

**Chart 2.1 – Fuel poverty in the UK, all households and vulnerable, 1996 to 2009<sup>5</sup>**



<sup>4</sup> A vulnerable household is one that contains the elderly, children or someone who is disabled or has a long term illness.

<sup>5</sup> Fuel poverty was not calculated in 1997, 1999 or 2000.

**Table 2.1 – Fuel Poverty in the UK, 1996 to 2009**

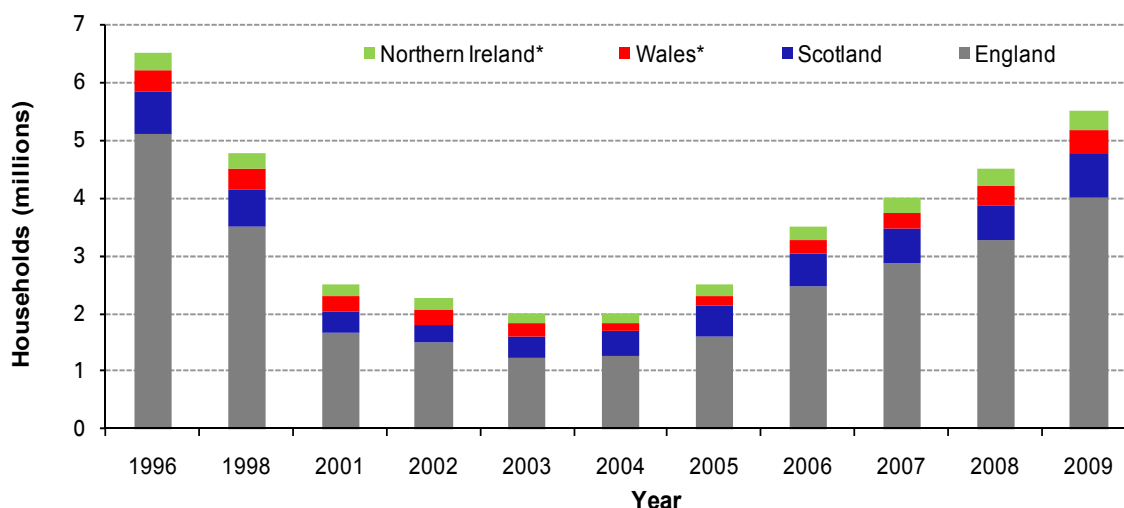
Fuel poverty (millions of households)		1996	1998	2001	2002	2003	2004	2005	2006	2007	2008	2009
UK	All	6.5	4.75	2.5	2.25	2	2	2.5	3.5	4	4.5	5.5
	Vulnerable	5	3.5	2	1.75	1.5	1.5	2	2.75	3.25	3.75	4.5

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 increased by over 75 per cent, while gas prices increased by over 122 per cent over the same period<sup>6</sup>. This led to the rise in fuel poverty seen over this period. For some households, the energy price rises have been partially offset by rising incomes and improvements in household energy efficiency. Nevertheless, the overall effect of price rises since 2004 has far outweighed the impact of increasing incomes and energy efficiency. Further information on the relative effects of each component of fuel poverty is available in Chapter 3 of this report.

**Chart 2.2 – Fuel poverty in each country of the UK, 1996 to 2009**



\*Figures for Northern Ireland and Wales estimated in some years

<sup>6</sup> 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>

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 2004 and then increasing again every year up to, and including, 2009. 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 the level of fuel poverty, as well as the housing stock of the country, the prevalent heating fuels and the level 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 had the greatest proportion of fuel poor households, followed by Scotland, then Wales and finally England. The most recent proportions of fuel poor households by country are as shown in Table 2.2. 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 average incomes.

**Table 2.2 – Proportion of fuel poor households by nation**

<b>Country</b>	<b>Proportion of households that are fuel poor</b>	<b>Year of estimate</b>
England	18.4%	2009
Scotland	32.7%	2009
Wales	26.2%	2008
Northern Ireland	43.7%	2008
UK	21.0%	2009

## 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 2009, while Table 2.3 gives the numbers behind this chart.

Chart 2.3 – Fuel poverty in England, 1996 to 2009

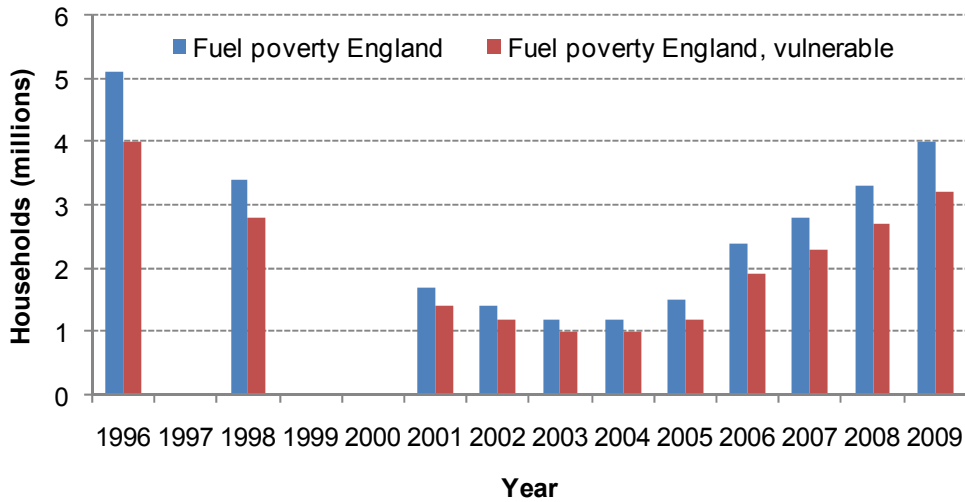


Table 2.3 – Fuel poverty in England, 1996 to 2009

<i>Fuel poverty (millions of households)</i>		1996	1998	2001	2002	2003	2004	2005	2006	2007	2008	2009
England	All	5.1	3.4	1.7	1.4	1.2	1.2	1.5	2.4	2.8	3.3	4
	Vulnerable	4	2.8	1.4	1.2	1	1	1.2	1.9	2.3	2.7	3.2

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

In 2009, 4.0 million households in England were fuel poor, equivalent to around 18.4 per cent of all households in England. This is a rise of around 0.6 million (or a fifth) since 2008. Around 3.2 million of these fuel poor households were vulnerable, which represents around 20.7 per cent of all vulnerable households in England.

## 2.3 Fuel poverty distribution in England

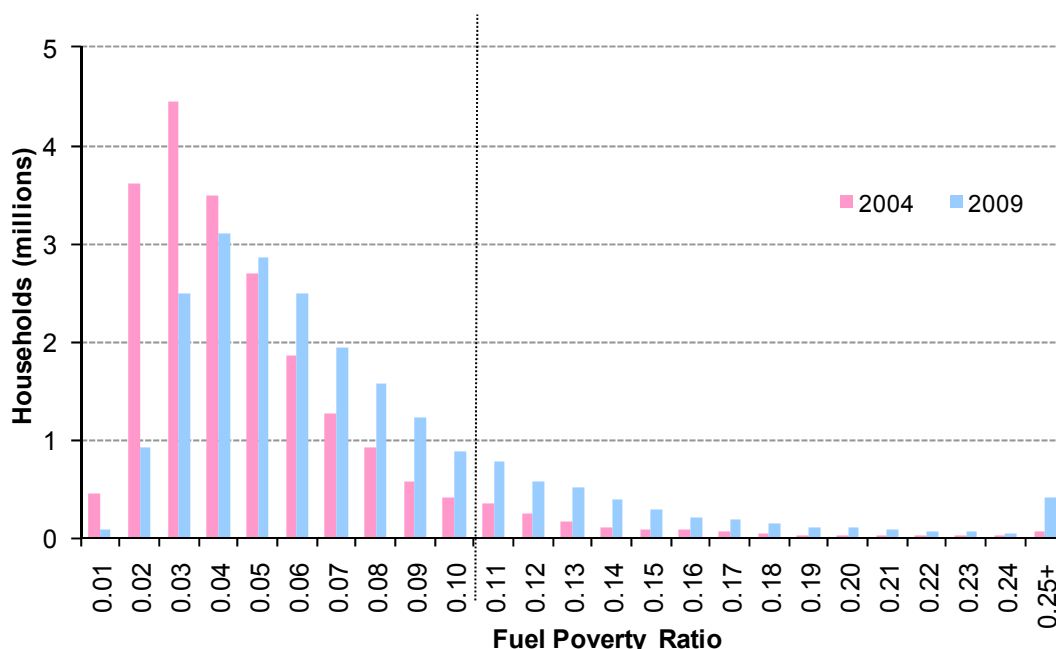
The measurement of fuel poverty uses the ratio shown below:

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

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) and 2009.

**Chart 2.4 – Fuel poverty ratios (required spend on energy as a proportion of income), 2004 and 2009<sup>7</sup>**

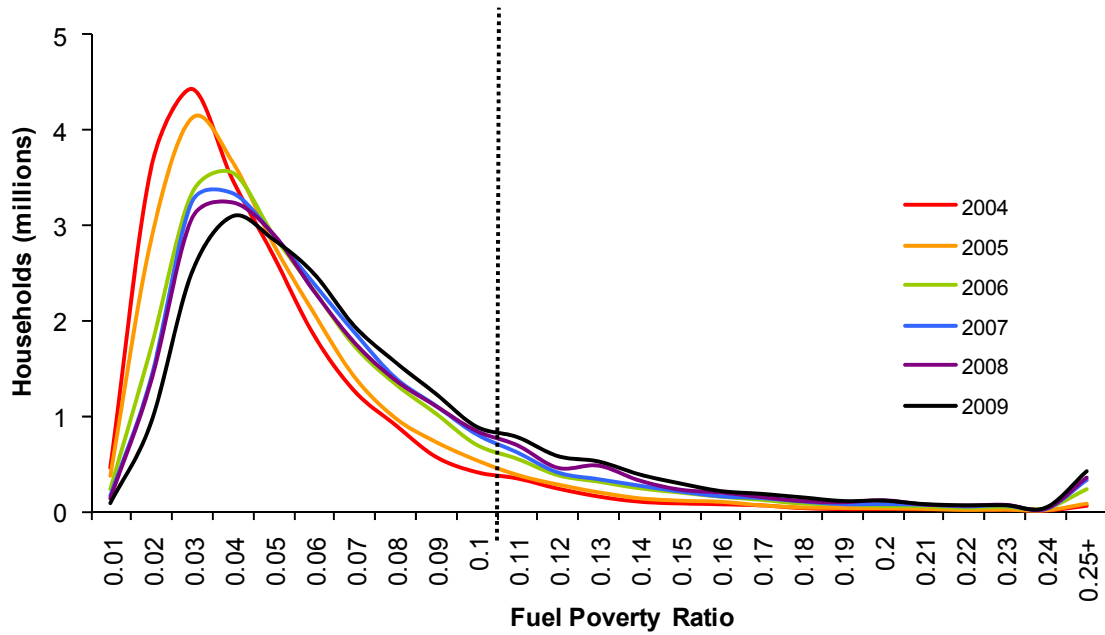


Between 2004 and 2009, rising domestic energy prices have led to a shift of households towards the fuel poverty threshold (illustrated by the vertical dotted line) and, in some cases, beyond. The modal value has shifted from 3 per cent of income in 2004 to 4 per cent in 2009, while the median has shifted from 3.5 per cent in 2004 to 5.5 per cent in 2009. There are also more households closer to the 10 per cent line in 2009 than in 2004, with over twice

<sup>7</sup> 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)

as many households in the 8-9 or 9-10 percentiles compared with 2004. This further reflects the impact of rising energy prices on nearly all households. The gradual shift between 2004 and 2009 is emphasised in Chart 2.5 below, which shows the distribution of fuel poverty ratios in each year over this period. The chart shows that, over time, the distribution shifts to the right and flattens, illustrating both that more households are now in fuel poverty and that an increasing number are at risk.

**Chart 2.5 - Fuel poverty ratios (required spend on energy as a proportion of income), 2004 to 2009**



## 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 factors:

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

This chapter considers the change in each of the factors over recent years, particularly focusing on the change between 2008 and 2009, and how this has affected the level of fuel poverty.

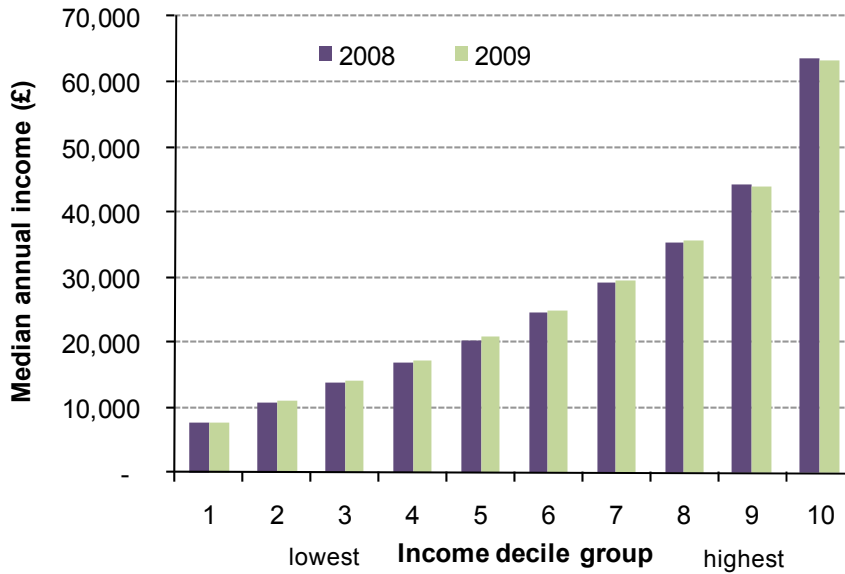
When fuel prices rise at a higher rate than income, fuel poverty is likely to rise, and rising prices in recent years have been the most influential factor in the change in fuel poverty levels. However, the impact of rising incomes and improvements in the energy efficiency of housing have helped to partially offset the effect of price changes.

### 3.2 Income

In 2009, rising incomes continued to help households to avoid falling into fuel poverty.

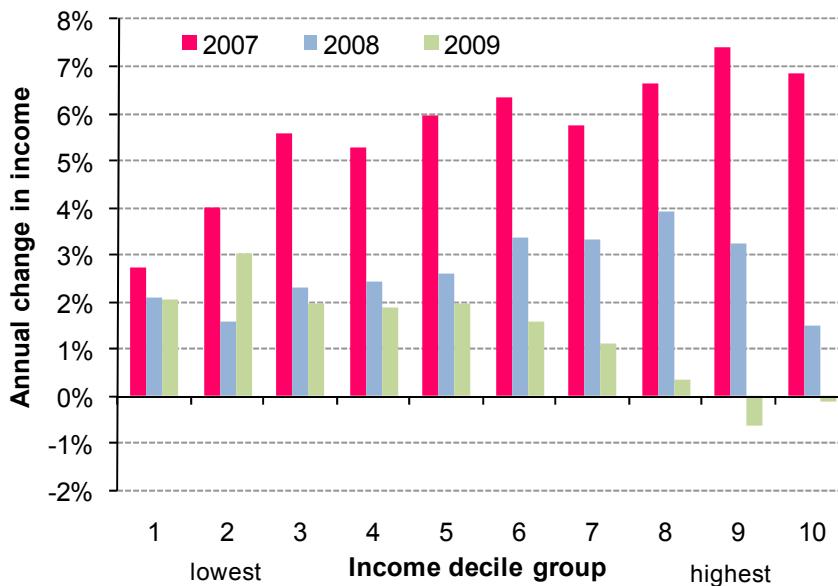
Chart 3.1 below shows the median income levels for each income decile group for 2008 and 2009, as recorded in the EHS. Although the survey is not designed as a dedicated survey of incomes, it is interesting to analyse as it is the source of data used when measuring fuel poverty. The chart shows actual household income, as defined for use in the fuel poverty modelling, and is not deflated by growth or inflation, nor equalised for the size and composition of the households.

**Chart 3.1 – Median annual household income by income decile group from EHS 2008 and 2009**



Incomes rose for all but the highest two income decile groups between 2008 and 2009, although at a slower rate than in recent years. For the highest two groups, reported incomes fell slightly between 2008 and 2009. The growth in median income was around 2 per cent for the lowest half of income households. Chart 3.2 shows the slowing of income growth over the last few years – unlike 2007 and 2008, lower income households have generally seen slightly higher increases in income in 2009.

**Chart 3.2 – Change in median income compared with a year earlier, by income decile, 2007 to 2009**

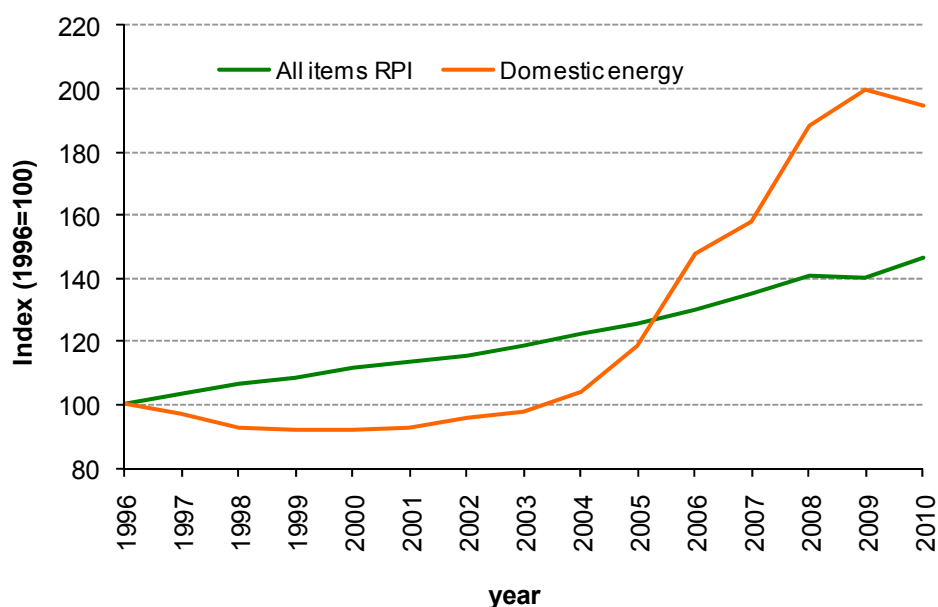


### 3.3 Prices

For several years, prices have been the most influential factor in movements in fuel poverty. Prices have risen at a rate well above that of income since 2004 and this has caused fuel poverty in England to rise from around 1.2 million households in 2004 to 4.0 million in 2009.

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 prices<sup>8</sup> and the Retail Prices Index, 1996 to 2010**

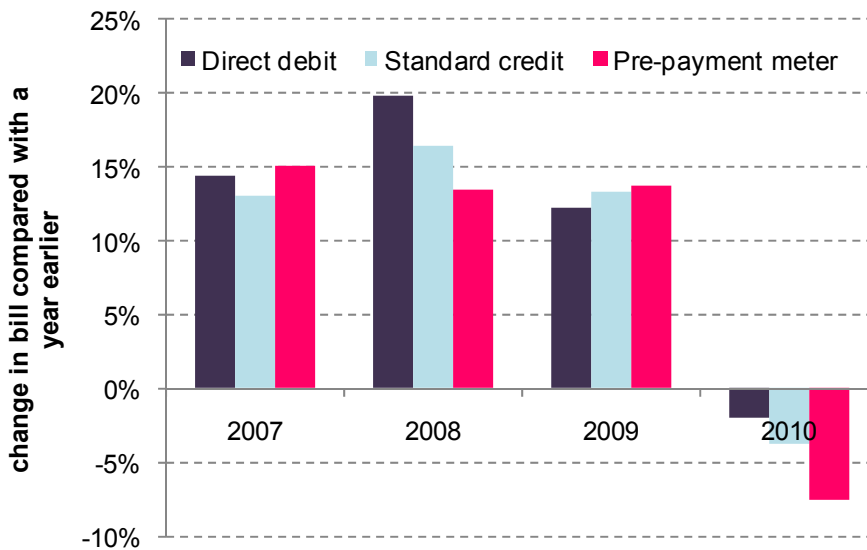


The chart shows that between 1996 and 2005, prices for domestic energy had risen more slowly than general inflation. However, in recent years, annual price increases for energy outstripped general price increases. 2010 is the first year in a decade in which average prices across the year for domestic energy have fallen compared to the previous year. In early 2011, prices rose again, and the fuel and light component of the RPI rose by around 5 per cent between the fourth quarter of 2010 and the first quarter of 2011. At the time of writing, announcements had been made for further price increases, to be implemented later in 2011.

Charts 3.4 and 3.5 illustrate the annual changes in actual bills (based on a standard and constant level of consumption) for both gas and electricity, by the three most common methods of payment. These charts are useful to consider as they are from the same source used to compile the gas and electricity components of modelled bills in fuel poverty.

<sup>8</sup> 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 Wales<sup>9</sup>**



**Chart 3.5 – Change in standard electricity bill, relative to a year earlier, England and Wales<sup>10</sup>**

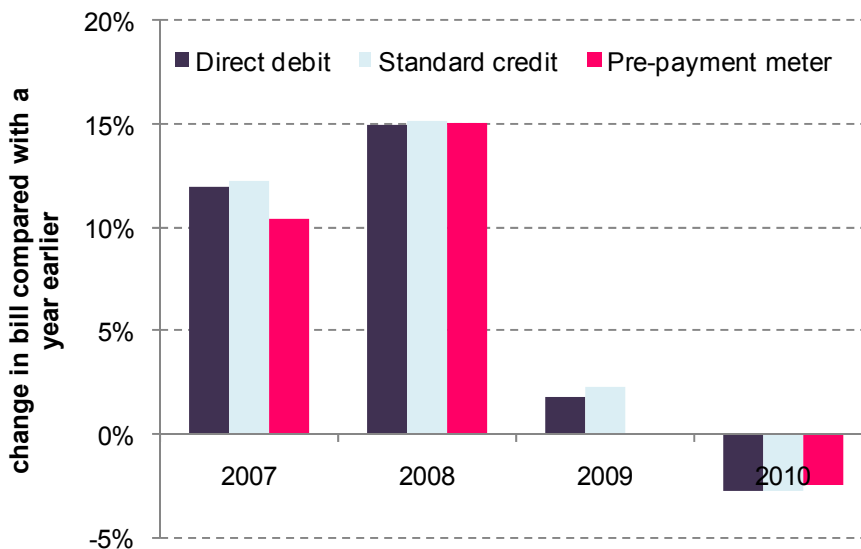
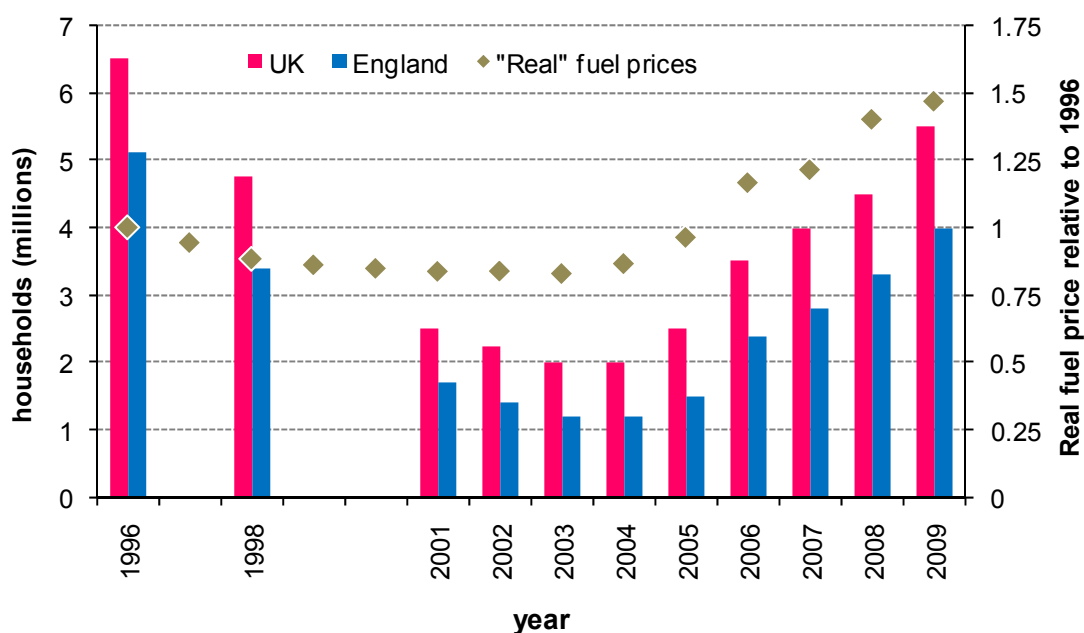


Chart 3.6 illustrates the impact that rising prices have on fuel poverty. It compares fuel poverty levels for 1996 to 2009 with real (i.e. deflated by growth) domestic fuel prices over the same period and shows that as prices have risen, so has the level of fuel poverty.

<sup>9</sup> Source: Quarterly Energy Prices, Table 2.3.2, DECC

<sup>10</sup> Source: Quarterly Energy Prices, Table 2.2.2, DECC [see [http://www.decc.gov.uk/en/content/cms/statistics/energy\\_stats/prices/prices.aspx](http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/prices/prices.aspx)]

Chart 3.6 – Fuel poverty and real fuel prices<sup>11</sup>, 1996 to 2009

While there is a visible correlation between prices and fuel poverty, the nature of the fuel poverty calculation (where two consecutive years are combined to produce the fuel poverty statistics for any year) means that the large price rises in 2008 have had a slightly staggered effect. As a result, fuel poverty rose at a slower rate in 2008 and a faster rate in 2009 than annual bills. For this reason, 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 similarly income and energy efficiency changes in each of the last two years).

### 3.4 Energy efficiency

The average energy efficiency of households<sup>12</sup>, as measured by the Standard Assessment Procedure<sup>13</sup> (SAP05), increased again in 2009, rising to 53.2 from 51.6 in 2008. The number of households with SAP ratings above 50 increased further (by around 1.2 million between 2008 and 2009), and nearly two thirds of occupied homes in England are now in this group, as shown in Chart 3.7 below.

<sup>11</sup> See <http://www.decc.gov.uk/en/content/cms/statistics/publications/prices/prices.aspx>

<sup>12</sup> Note this figure excludes vacant homes, and therefore differs from the change in SAP of all homes recorded in the EHS annual report

<sup>13</sup> Low values indicate poor levels of energy efficiency, whilst higher numbers indicate more energy efficient properties. For more information on SAP ratings, see: <http://projects.bre.co.uk/sap2005/>

**Chart 3.7 – Percentage of dwellings by SAP bands, 2006 to 2009**

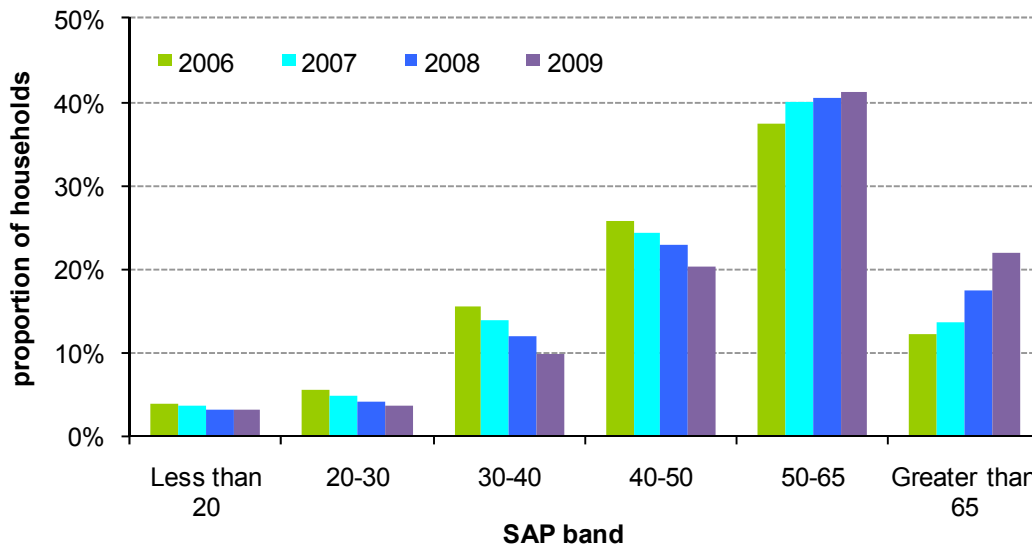


Table 3.1 below looks at the breakdown of average SAP ratings by tenure, specifically comparing private and social housing. It illustrates that, while social housing is generally more energy efficient, improvements are being made across both social and private dwellings, with private homes increasing at a slightly faster rate (albeit from a lower base) over the last four years.

**Table 3.1 – Average SAP05 ratings for dwellings by tenure, 2005 to 2009**

Tenure	2005	2006	2007	2008	2009
Private	46.2	46.9	48.2	49.9	51.6
Social	57.0	57.5	57.9	59.4	61.2

In any one year, energy efficiency measures only have an impact on those households whose dwelling receives such measures. Therefore, the changes in energy efficiency, as measured by SAP ratings, are aggregate across the housing stock, and reflect that many dwellings do not experience any change in efficiency measures in the year.

### 3.5 Contributions to the change in fuel poverty between 1996 and 2009

Between 1996 and 2009, the fuel poverty level in England fell from 5.1 million households to 4.0 million, a reduction of around 1.1 million households. With the rise in the number of households in the country, this equated to a reduction in the proportion of households in fuel poverty of between a third and a quarter (see Table 3.2).

**Table 3.2 – Fuel poverty in 1996 and 2009**

Year	No. households fuel poor	% of households fuel poor
1996	5.1	26.0
2009	4.0	18.4

It is difficult to describe the relative effect of each component (income, fuel prices and energy efficiency) in terms of the number of households moved into or out of fuel poverty over this period, due to the increase in the number of households since 1996 and other demographic changes. Instead, this analysis considers the impacts as a relative factor over this period, expressed as a fraction of the total change. If the total change in fuel poverty (i.e. a 1.14 million drop between 1996 and 2009) is thought of as -1, then the sum of the factors attributed to each of the three 'components' will add up to -1 (alternatively, think of -1 as being -100% of the change in fuel poverty). As last year, the methodology for calculating these factors attempts to standardise methodology over the period 1996 to 2009, therefore ensuring that results are due to actual measured changes wherever possible, rather than improvements in the modelling.

This gives rise to the following relative effects over 1996 to 2009:

- Income rose (see Section 3.2), affecting the percentage of households in fuel poverty by a factor of -2.35 (i.e. removing households from fuel poverty).
- Fuel prices rose (see Section 3.3), affecting the percentage of households in fuel poverty by a factor of +1.96 (i.e. pushing households into fuel poverty).
- Energy consumption (largely reflecting aggregate improvements in energy efficiency) fell affecting the percentage of households in fuel poverty by a factor of -0.61.

Overall these changes sum to -1, which represents a drop of 1.1 million households in fuel poverty, or a reduction of 7.6 percentage points, over the period.

This analysis always presents challenges in interpretation as there are difficulties in comparing the uncoupled effects of each of the three measures across time. Naturally, the three factors are not wholly independent of each other and so the relative effects are best used as a guide.

A further complexity is the role of growth and inflation. Both incomes and fuel prices are subject to natural inflationary forces, and so it is interesting to consider the relative effects when stripping out inflation (as measured by the Retail Prices Index<sup>14</sup>). This provides a slightly different picture, in "real" terms – again treating the fall in fuel poverty as -1:

<sup>14</sup> The RPI has been used for this analysis, but equally, the Consumer Prices Index could be used for such a comparison.

- Income reduced fuel poverty by a factor of -1.13;
- Energy consumption reduced fuel poverty by a factor of -0.63;
- Prices increased fuel poverty by a factor of +0.76

One of the benefits of considering the effects in “real” terms is that it better illustrates the role of improvements in energy efficiency, largely represented by the energy consumption component.

### 3.6 Change in fuel poverty between 2008 and 2009

Between 2008 and 2009, fuel poverty in England rose by around 0.6 million households. Analysis was undertaken to apply 2009 prices to the 2008 fuel poverty data, in order to provide an understanding of what impact price changes have had on fuel poverty (including separately, the role of social tariffs – see Section 6.1), and what the level of fuel poverty would have been if incomes and energy efficiency had remained unchanged over the period. The same was repeated using 2009 incomes and holding prices fixed, giving an indication of the role of incomes. Finally, by applying 2009 prices and incomes and looking at the residual between the updated 2009 fuel poverty level (based on the 2008 housing survey data) and the actual 2009 fuel poverty data, an estimate of the role of energy efficiency improvements between the two years can be made, as measured by changes in energy consumption (which reflects modelled energy consumption and efficiency).

Table 3.3 below sets out the picture, starting with a position of 3.3 million fuel poor households in 2008.

**Table 3.3 – Change in fuel poverty, 2008 to 2009**

	Fuel poor	Change in % Fuel poor (percentage points)	Change in fuel poverty (households)
<b>2008</b>	<b>3.3m</b>	<b>15.6</b>	-
Prices		<b>+ 4.4</b>	<b>+ 0.98m</b>
Social tariffs		<b>- 0.1</b>	<b>- 0.02m</b>
Income		<b>- 0.9</b>	<b>- 0.18m</b>
Energy consumption		<b>- 0.6</b>	<b>- 0.13m</b>
<b>2009</b>	<b>4.0m</b>	<b>18.4</b>	<b>+0.63m</b>

The largest contribution to the change in fuel poverty between 2008 and 2009 came from rising prices. Without the counter effects of rising incomes and falling energy consumption, prices alone may have shifted a little under 1 million households into fuel poverty. Rising incomes helped to keep just under 0.2 million of those out of fuel poverty. Using the methodology employed here, an estimated reduction in fuel poverty of around 130,000 households can be attributed to lower energy consumption, largely representing energy efficiency improvements.

These figures show some differences from those presented alongside the 2008 data. Firstly, the impact of prices is higher this year than in the 2010 report. This is partly due to there being slightly more households 'close' to the fuel poverty threshold in 2008 (compared with 2007). But more importantly, the average modelled bill increased by around 12 per cent between 2008 and 2009, almost double the rate of increase between 2007 and 2008. The main reason for this increase is the large price rises of 2008, which would only have featured in half of the fuel poverty dataset for 2008 (since it is a combined 2007 and 2008 set of data) but which impact on all households in the 2009 dataset (see Section 3.3).

The impact of rising incomes is lower than in the 2008 data – this is mainly due to the lower income increases shown in Chart 3.2. The effect of reduced energy consumption, reflecting improvements in the energy efficiency of dwellings, is higher than last year – this is likely to be a combination of two factors. Firstly, there has been a continued rise in the energy efficiency of homes, with more cavity walls and lofts being insulated (amongst other measures). This has led to further rises in SAP ratings for those homes receiving such measures (see Section 3.4). In addition, the rise in fuel poverty has meant there are more households that are now marginally fuel poor. Other things being equal, as efficiency improvements are made across the whole housing stock, it becomes more likely that marginally fuel poor households also receive such measures, and therefore experience reduced bills and may become non fuel poor again.

As with any attempt to disentangle three non independent factors, interpreting these results can be difficult. Rising energy prices impact on nearly all households and rising (or at least changing) incomes will also affect 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 be dependent largely on the fuel poverty ratio of those households receiving 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.

One way to consider this further is to look at the average fuel poverty ratio<sup>15</sup> of all households. Between 2008 and 2009, this rose from 6.78 per cent to 7.31 per cent, an increase of 0.53 percentage points.

- Increasing fuel prices alone over the period would have led to an increase in the fuel poverty ratio of around **0.83** percentage points.
- This is reduced by the favourable impact of rising incomes (**-0.12** percentage points) and reduced consumption largely due to energy efficiency improvements (**-0.16** percentage points).

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<sup>15</sup> Defined as the modelled required fuel bill divided by income.

While this analysis is very crude, it does provide another way of considering the impact of the three main drivers of fuel poverty, incorporating all households, rather than just those that are fuel poor.

We are always interested to hear how users view the analysis included in this chapter (and throughout the report generally), and welcome comments to help develop the content in the future. Please email all comments to:  
[fuelpoverty@decc.gsi.gov.uk](mailto:fuelpoverty@decc.gsi.gov.uk)

## 4. Detailed analysis of fuel poverty in 2009

### 4.1 Drivers of fuel poverty in 2009

In England in 2009, 4.0 million households were in fuel poverty. The Venn diagram shown in Chart 4.1 attempts to quantify the reasons why these households were in fuel poverty in terms of high fuel bills, low income, 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. They are also consistent with the thresholds used in the publication of the 2008 fuel poverty statistics. The thresholds are defined as follows:

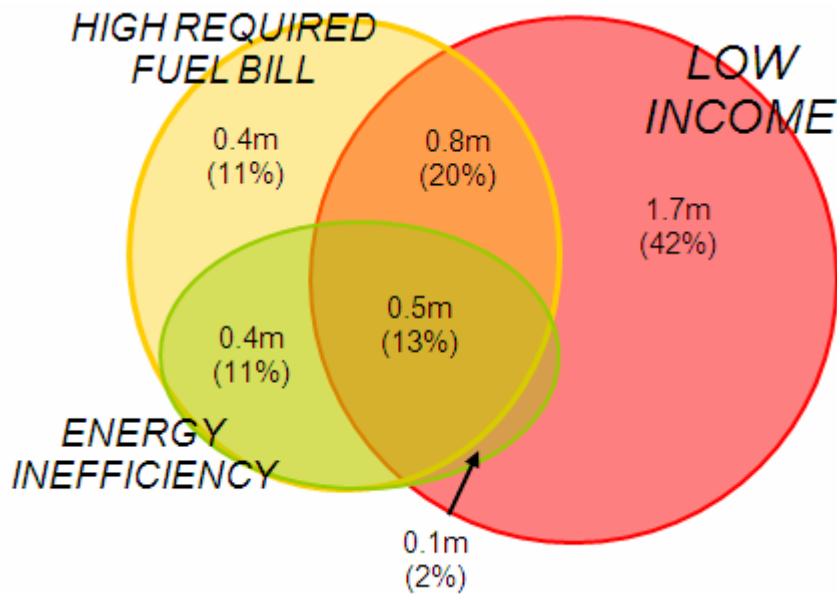
- **High required energy bill:** Households with a modelled annual fuel bill greater than the mean of all modelled fuel bills, which was approximately £1,340 in 2009. Around 41 per cent of all households in England in 2009 fell into this category.
- **Low income:** Households with an income level below ten times the average modelled fuel bill (as above)<sup>16</sup>. Approximately 23 per cent of all households in England in 2009 fell into this category.
- **Energy inefficient dwelling:** Households that have a SAP rating below 35. Approximately 10 per cent of all households in England in 2009 fell into this category.

Chart 4.1 shows the number and proportion of fuel poor households only that fall into each category or combination of categories.

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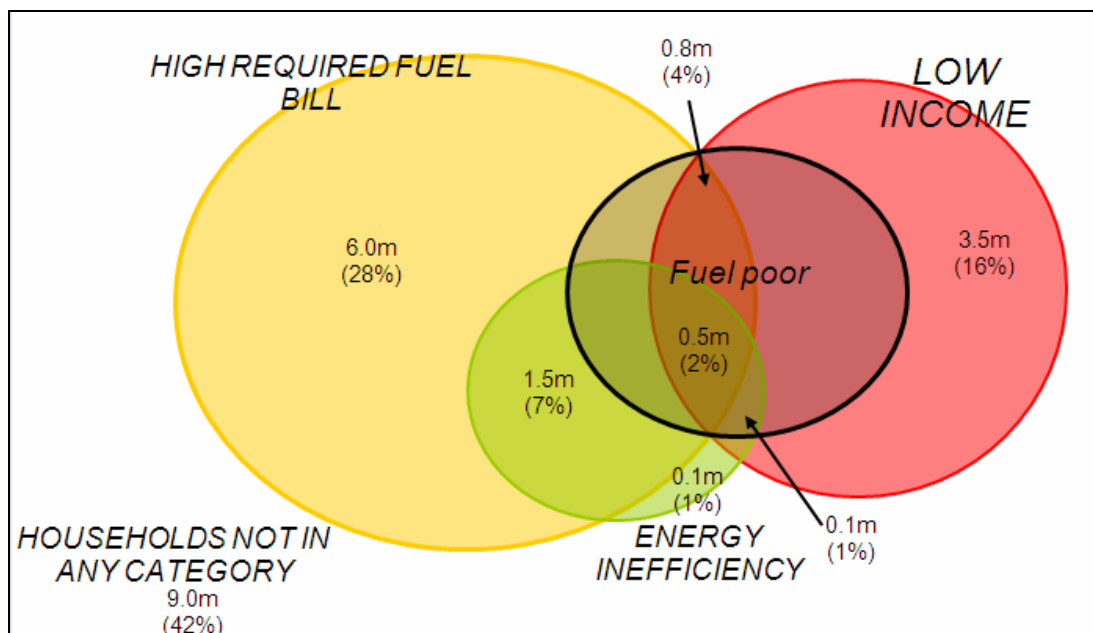
<sup>16</sup> The low income threshold was chosen to ensure that all fuel poor households were categorised in the Venn diagram in Chart 4.1. The income threshold broadly translates to the lowest two income decile groups.

Chart 4.1 – Number and proportion of fuel poor households by category<sup>17</sup>



Over half of all fuel poor households have a high required spend on energy, around three-quarters have a low income and around a quarter have an energy inefficient dwelling. Approximately 13 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 SAP ratings are naturally not independent of one another and therefore the large overlap between these two categories is not unexpected. However, even if a household faces one or more of these problems, it is not necessarily fuel poor. Chart 2 below showing the position with respect to the three categories of all households in England.

Chart 4.2 – Number and proportion of all households by category



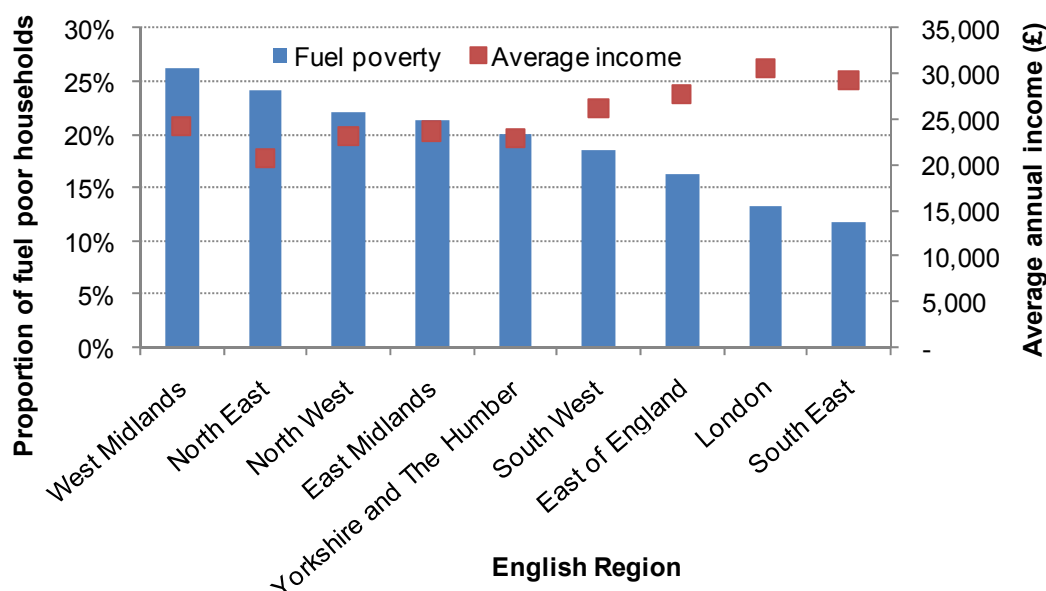
<sup>17</sup> Venn Diagrams are not exactly to scale.

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. Over 60 per cent of households with an income below £13,400 are fuel poor, around a quarter of households with a high required energy bill are fuel poor and just under half of all households with SAP rating below 35 are fuel poor.

## 4.2 Regional fuel poverty in 2009

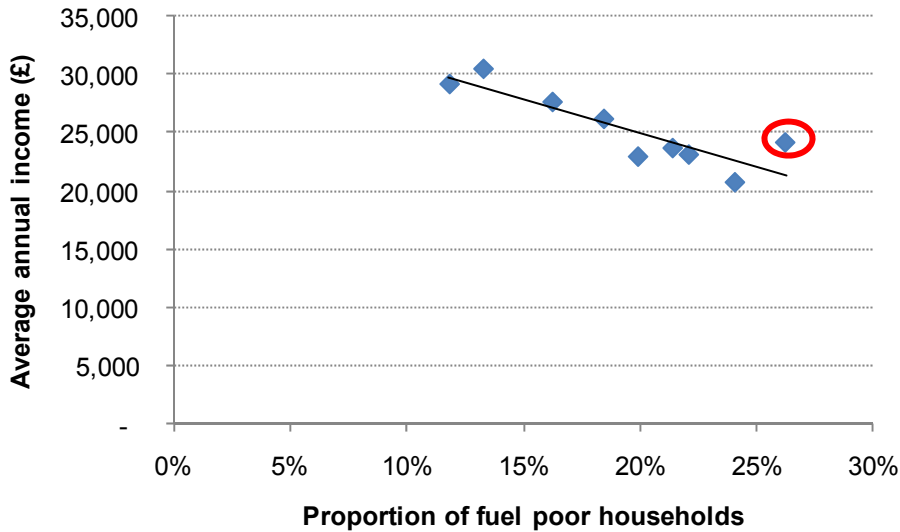
The rate of fuel poverty differs across the country, as seen in Chart 4.3 below. In 2009, the West Midlands had the highest rate of fuel poverty with around 26 per cent of households requiring to spend more than 10 per cent of their income on fuel to maintain the adequate level of warmth. The South East had the lowest fuel poverty rate at 12 per cent.

Chart 4.3 – Fuel poverty rates and average income by English region, 2009



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. Chart 4.4 below is a scatter diagram showing the linear relationship between these two variables, 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, 2009**



The R-squared value associated with the relationship seen in Chart 4.4 (i.e. the straight line) is 0.77. An R-squared value of 1 would imply that the value of one of the variables could be predicted perfectly if the value of the other is known. With the removal of the data point circled in red, which represents the West Midlands, the R-squared value increases to 0.92. This suggests that the West Midlands region is an outlier, i.e. it does not follow the same pattern as the other regions. Although this region has a moderately high average annual income, it has the highest rate of fuel poverty.

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, 2009**

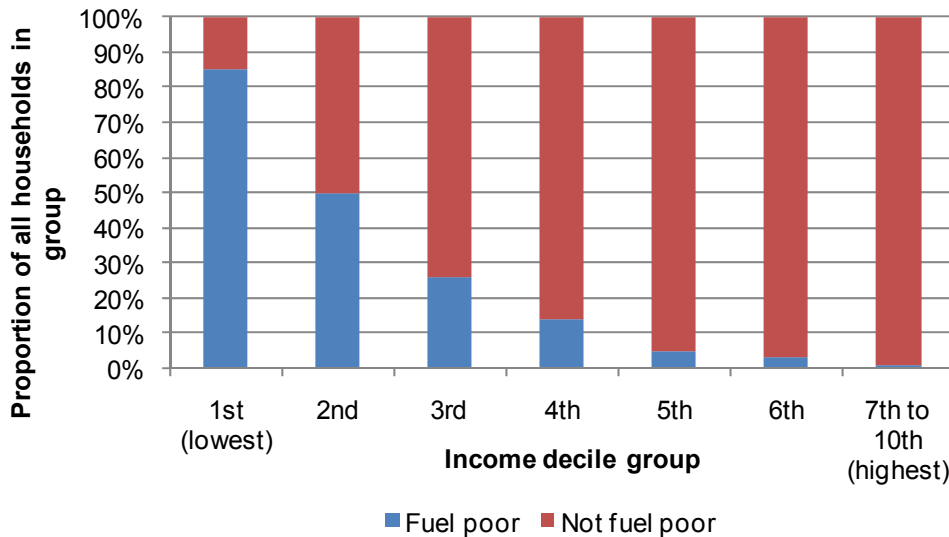
English Region	Average annual income (£)	Average Fuel Poverty ratio	Average SAP rating
East Midlands	23,700	0.08	50.6
South West	26,200	0.07	51.3
West Midlands	24,200	0.09	51.4
East of England	27,700	0.07	52.7
South East	29,200	0.06	53.3
North West	23,100	0.08	53.9
Yorkshire and The Humber	23,000	0.08	54.2
London	30,500	0.06	55.1
North East	20,800	0.08	56.8

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.

### 4.3 Household income and associated variables

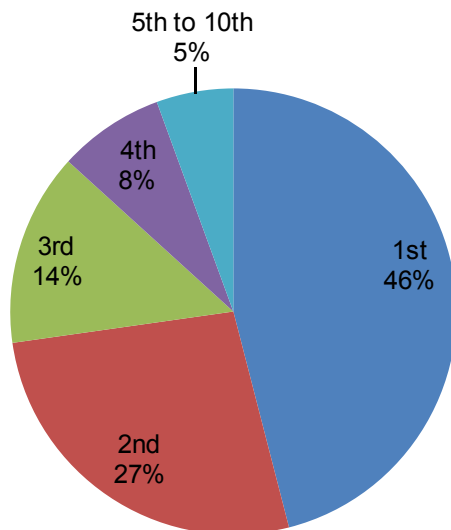
Chart 4.5 below shows the proportion of households in each income decile group that are in fuel poverty and the proportion that are not. Perhaps predictably, households in the lowest income decile group have the highest rate of fuel poverty, with around 85 per cent of households in fuel poverty. Naturally, the rate of fuel poverty decreases with the higher income groups.

**Chart 4.5 – Proportion of households in fuel poverty by income decile group, 2009**



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, 2009**



In around 70 per cent of households in the lowest income decile group, the household reference person<sup>18</sup> is classified as economically inactive, with a further 18 per cent classified as unemployed. This compares to 37 per cent economically inactive and 3 per cent unemployed across all households. Chart 4.7 below shows the proportion of fuel households in each of the three employment status groups. The highest fuel poverty rate is amongst the unemployed where over 50 per cent of households (approximately 378 thousand households) are in fuel poverty.

**Chart 4.7 – Proportion of households in fuel poverty by employment status, 2009**

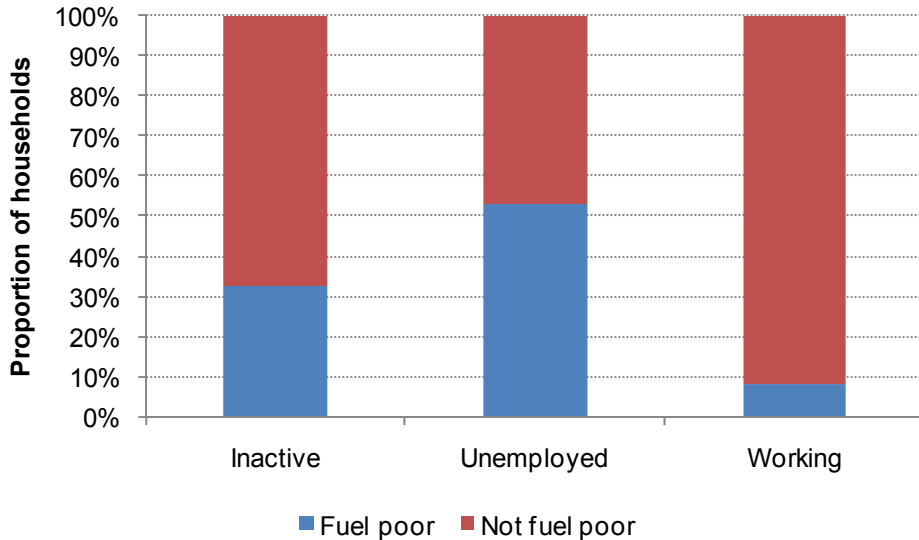


Chart 4.8 shows the distribution of full annual income for both the fuel poor households and the non-fuel poor households. As expected, the mean annual income of the fuel poor households is lower at £10,800 than the mean annual income of the non-fuel poor households at £31,700. In addition, the distribution of incomes in the fuel poor group is much less dispersed than that of the non-fuel poor group. The 5<sup>th</sup> and 95<sup>th</sup> percentile of the fuel poor group are £4,000 and £19,500 respectively, whereas the 5<sup>th</sup> and 95<sup>th</sup> percentile of the non-fuel poor group are £8,000 and £68,000 respectively.

<sup>18</sup> 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.

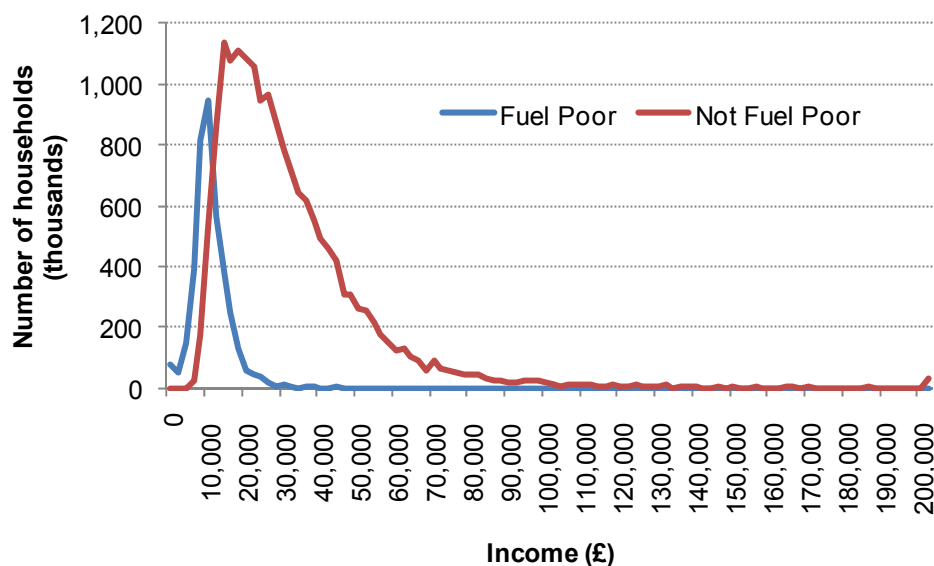
**Chart 4.8 – Distribution of annual income in fuel poor and non-fuel poor households, 2009**

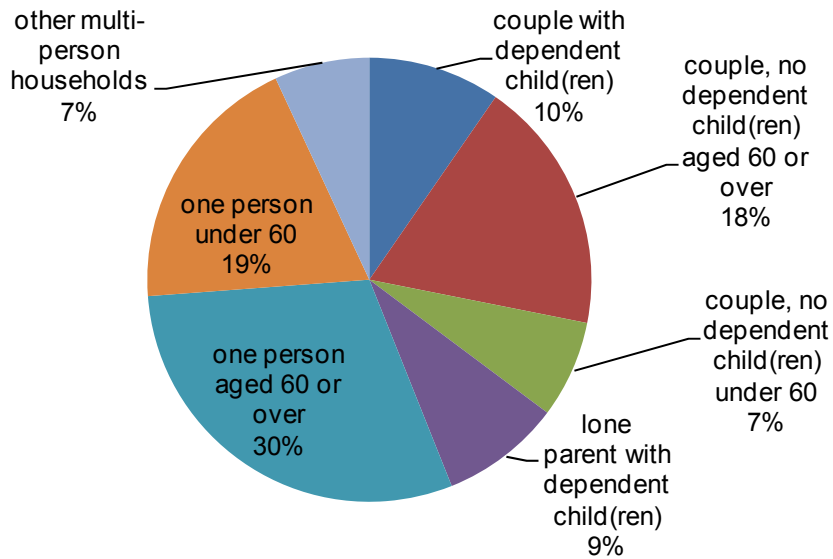
Chart 4.8 also illustrates that there are non-fuel poor households that have a low annual income (in the range of the density of the fuel poverty group) but are not in fuel poverty. Many of these households will occupy small and efficient dwellings, therefore protecting them from the costs of heating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

#### 4.4 Household characteristics

Chart 4.9 shows that over half (58 per cent) of fuel poor households consist of a single adult, which is perhaps unsurprising given that the household would only be receiving a single income. This is reflected in Table 4.2, which shows the average annual income<sup>19</sup> (rounded to the nearest £100) for each of the household composition groups. On average, working age couples receive around double the level of income of single adult working age households.

<sup>19</sup> Income is expressed net of any income tax and national insurance contributions, which most householders will pay at source. This income is also unequivalised.

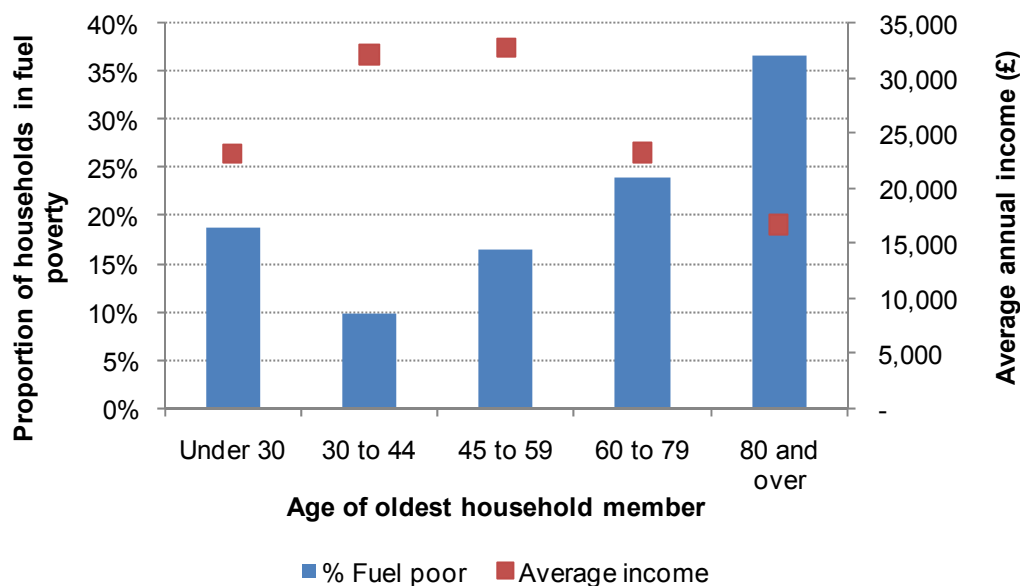
**Chart 4.9 – Proportion of all fuel poor households by household composition, 2009**



**Table 4.2 – Average annual income by household composition, 2009**

Household composition group	Average annual income (£)	Proportion of group that are fuel poor
Couple with dependent child(ren)	38,200	8.1%
Couple, no dependent child(ren), aged 60 or over	26,200	20.3%
Couple, no dependent child(ren), under 60	38,400	7.1%
Lone parent with dependent child(ren)	19,100	20.5%
One person aged 60 or over	14,100	38.5%
One person under 60	18,100	25.9%
Other multi-person households	28,400	18.0%
All households	27,900	18.4%

Chart 4.9 also indicates that around half of all fuel poor households contain someone aged 60 or over. Again, Table 4.2 indicates that these households have below average annual income. 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, 2009**

With the exception of households where the oldest member is under 30, the fuel poverty rate increases as the age of the oldest householder increases. In those households where the oldest person is aged between 60 and 79, almost a quarter are in fuel poverty. Over a third of households where the oldest person is aged 80 or over are fuel poor. There is also strong link between the proportion of fuel poor households in an age group and the average annual income of the age group.

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 people in each employment status group by age of the oldest household member, 2009**

Age of oldest household member	Employment status of HRP		
	Inactive	Unemployed	Working
Under 30	26%	7%	68%
30 to 44	11%	5%	84%
45 to 59	15%	5%	81%
60 to 79	71%	1%	28%
80 and over	95%	0%	5%
All households	37%	3%	60%

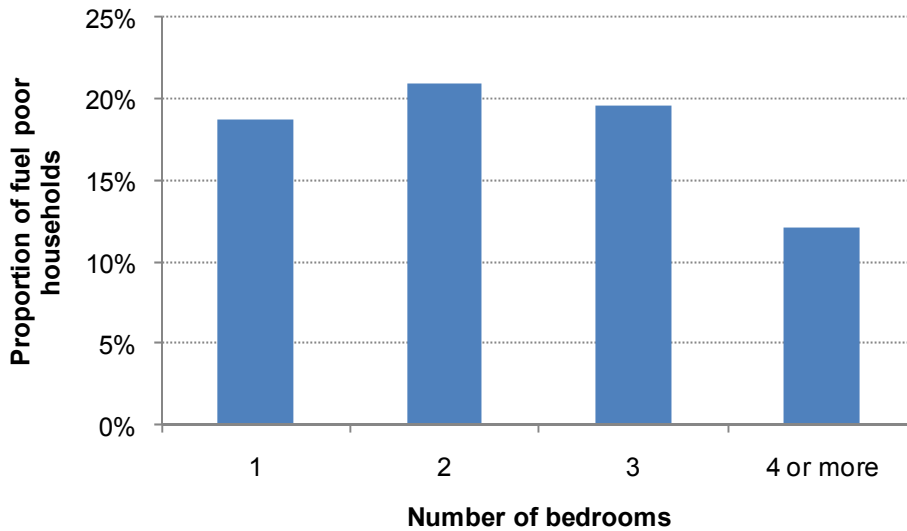
In households where the oldest person is aged 60 or over, the vast majority have a household reference person who is economically inactive. In other words, these are households containing retired people and, as such, are likely to have a reduced income (i.e. their main income is from a pension). Interestingly, although over two-thirds of the 'Under 30' category (i.e.

households where the oldest person is under 30) are in employment, over a quarter are classed as economically inactive. These households often contain students who typically have low incomes (and perhaps live in less energy efficient accommodation), which perhaps helps to explain why 19 per cent of ‘under 30’ 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 19 to 21 per cent, whereas in households with four or more bedrooms the fuel poverty rate is lower at around 12 per cent. This is due to the fact that households living in properties with four or more bedrooms tend to have a greater household income than those households living in smaller properties, as shown in Table 4.4.

**Chart 4.11 – Proportion of households in fuel poverty by number of bedrooms, 2009**



**Table 4.4 – Average annual income<sup>20</sup> by number of bedrooms, 2009**

Number of bedrooms	Average annual income (£)
1	17,000
2	21,900
3	26,700
4 or more	44,200
All households	27,900

<sup>20</sup> Rounded to the nearest £100.

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 there<sup>21</sup>. In 2009, 26 per cent of under occupying households were in fuel poverty compared to 15 per cent of non-under occupying households. Almost half of all under occupied properties contain a single occupant.

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

**Chart 4.12 – Proportion of households in fuel poverty by SAP rating bands, 2009**

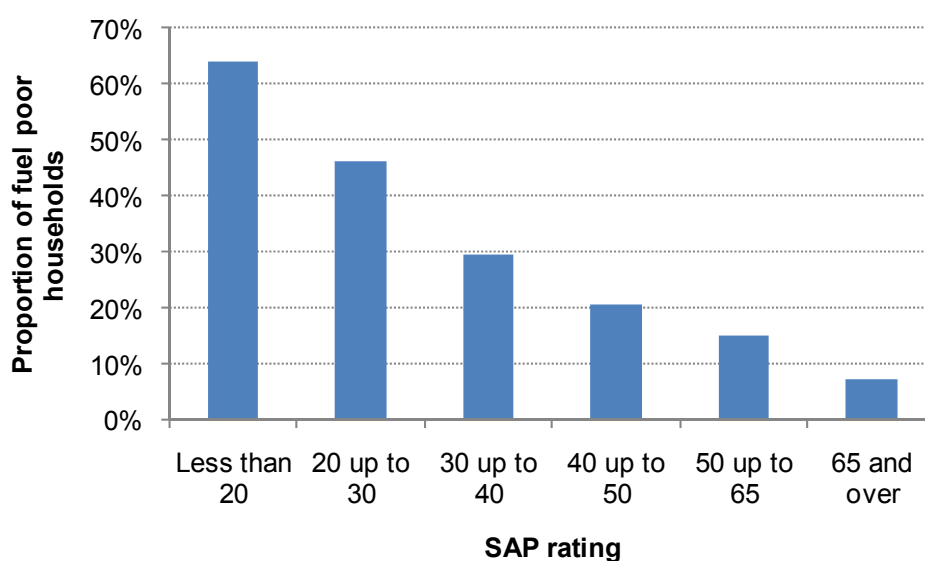
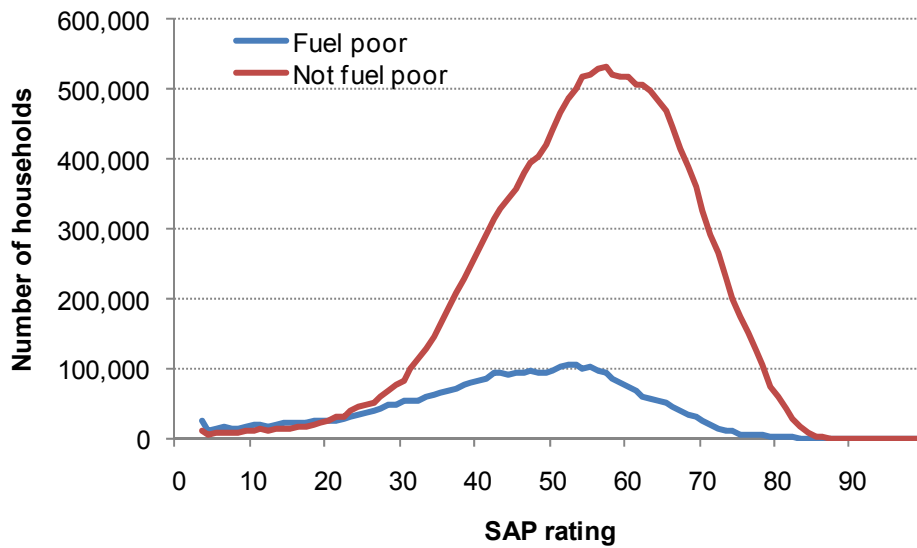


Chart 4.13 below shows the distribution of SAP ratings for both the fuel poor households and the non-fuel poor households<sup>22</sup>. The average SAP rating amongst fuel poor households in 2009 was 43.9, lower than the average SAP rating of 55.3 amongst non-fuel poor households. However, the distribution of SAP ratings in the fuel poor group is more spread than that of the non-fuel poor group. The 5<sup>th</sup> and 95<sup>th</sup> percentile of the fuel poor group are 8.7 and 67.8 respectively, whereas the 5<sup>th</sup> and 95<sup>th</sup> percentile of the non-fuel poor group are 32.3 and 74.8 respectively.

<sup>21</sup> 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>

<sup>22</sup> Both of these distributions have been smoothed using a 7 point moving average.

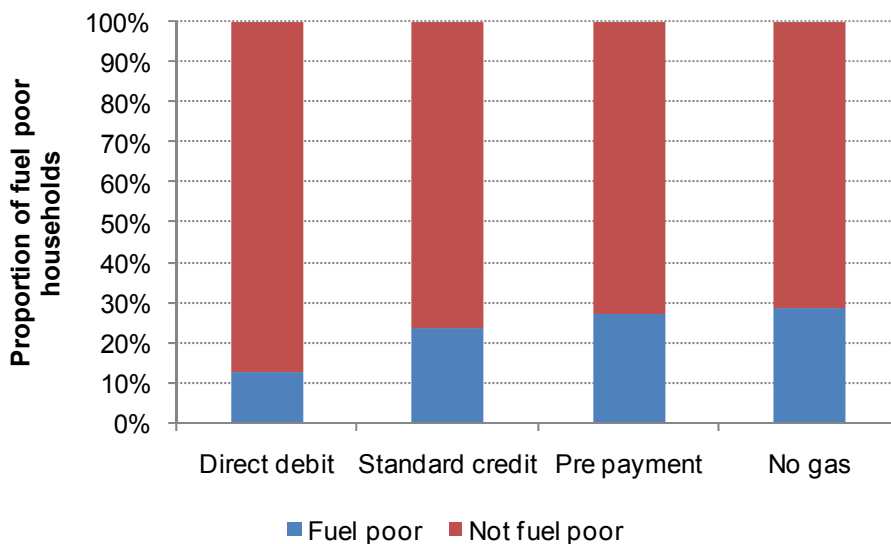
**Chart 4.13 – Distribution of the SAP ratings of fuel poor and non-fuel poor households**



## 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 proportion of fuel poverty is amongst households that pay using a pre-payment meter, at 27 per cent.

**Chart 4.14 – Proportion of households in fuel poverty by payment method, 2009**



However, although prepayment meters are often associated with the fuel poor, there are relatively few fuel poor households that 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, 2009**

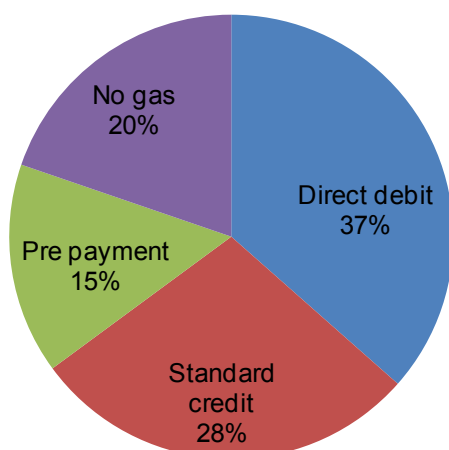
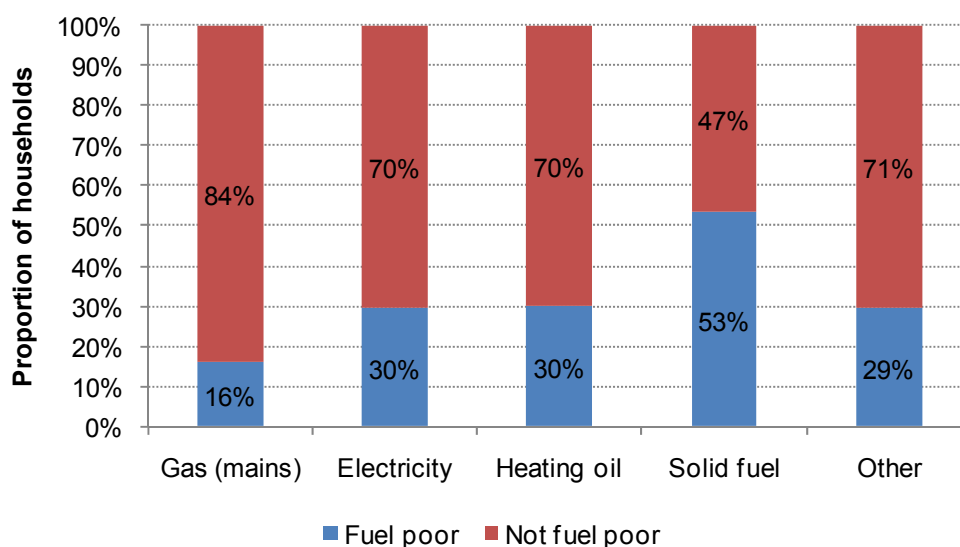


Chart 4.14 also shows that a relatively high proportion (28 per cent) of those households who do not use gas are fuel poor. This is explored further in Chart 4.16, which shows the fuel poverty rate for households by main heating fuel<sup>23</sup>.

**Chart 4.16 – Proportion of households in fuel poverty by main heating fuel, 2009**



In those households using gas as their main heating fuel, around 16 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.

<sup>23</sup> 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 2009

### 5.1 Introduction

This chapter considers some of the key changes in fuel poverty between 2003 and 2009 in England, the main drivers of which, as discussed in Chapter 3, are income, fuel prices and energy efficiency. These, together with factors such as household occupancy, occupant characteristics and geographic location are considered in more detail in the context of trends in fuel poverty over time.

Supporting the analysis within this chapter is a spreadsheet containing detailed fuel poverty analysis for England from 2003 to 2009, which is available online at:

[http://www.decc.gov.uk/en/content/cms/statistics/fuelpov\\_stats/fuelpov\\_stats.aspx](http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/fuelpov_stats.aspx).

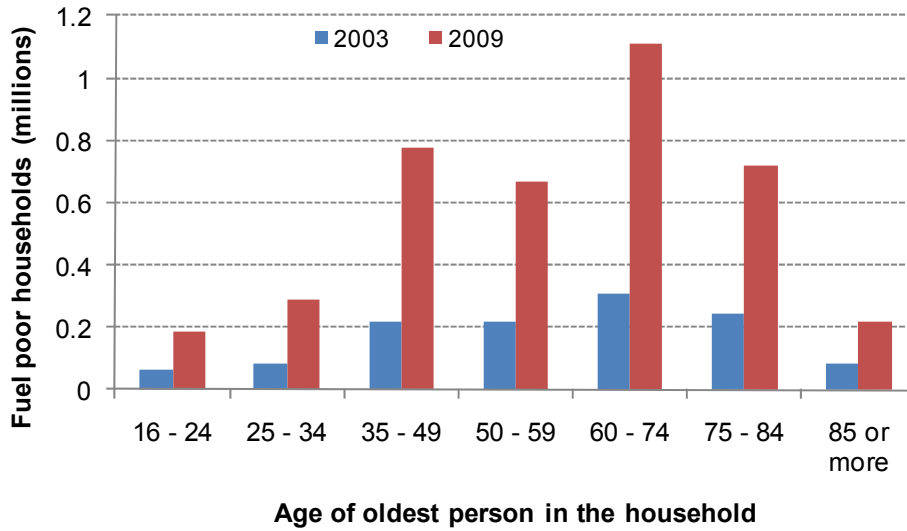
In 2003, the number of households in fuel poverty stood at 1.2 million, representing 5.9 per cent of all households in England. In 2009, this figure rose to 4.0 million, which represented 18.4 per cent of all English households. A common theme throughout the chapter is the impact of rising bills between 2003 and 2009 on fuel poverty. Using figures from the Retail Prices Index (as compiled by the Office for National Statistics), domestic electricity prices increased by almost 90 per cent between 2003 and 2009, while gas prices increased by almost 140 per cent over the same period.

### 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 who has a long term illness. In 2003, there were 1.0 million vulnerable households in fuel poverty, increasing to 3.2 million in 2009. One in fifty households with at least one dependent child were in fuel poverty in 2003, rising to one in ten by 2009.

In 2003, one in ten households with at least one person aged 60 or over were in fuel poverty but, by 2009, this had risen to one in four. However, Chart 5.1 shows that the number of fuel poor households tripled across all household age groups (illustrated by age of the oldest occupant) in England between 2003 and 2009. The largest increase was the group where the household reference person was aged 35 to 49.

**Chart 5.1 – Number of households in fuel poverty by age of oldest occupant, 2003 and 2009**



As shown in Chart 5.2, there was no real change between 2003 and 2009 in the overall proportion of fuel poverty that is accounted for by households where the oldest household occupant is aged 60 or over. In both 2003 and 2009, slightly over half of all fuel poor households had an occupant who was aged 60 or over (52 per cent in both 2003 and 2009), while around a quarter had at least one occupant aged 75 or over (27 per cent in 2003 and 24 per cent in 2009).

**Chart 5.2 – Proportion of all fuel poor households, by age range, 2003 and 2009**

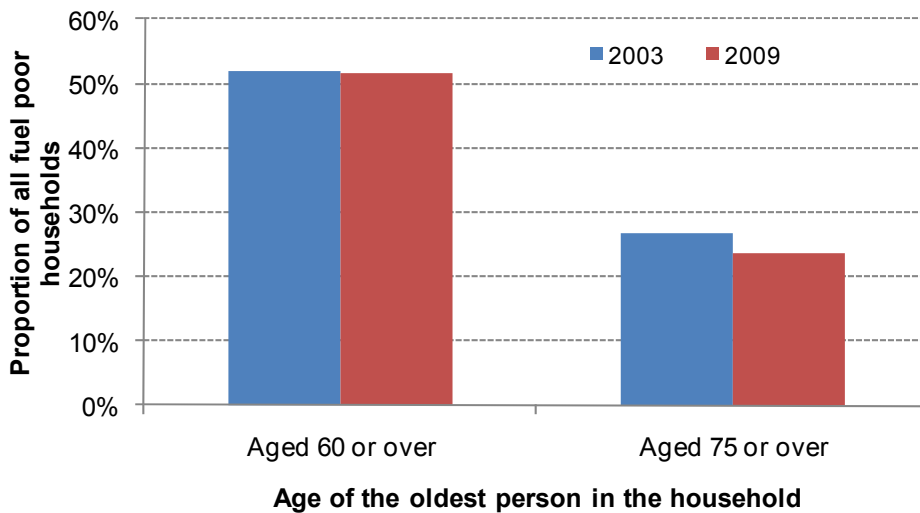
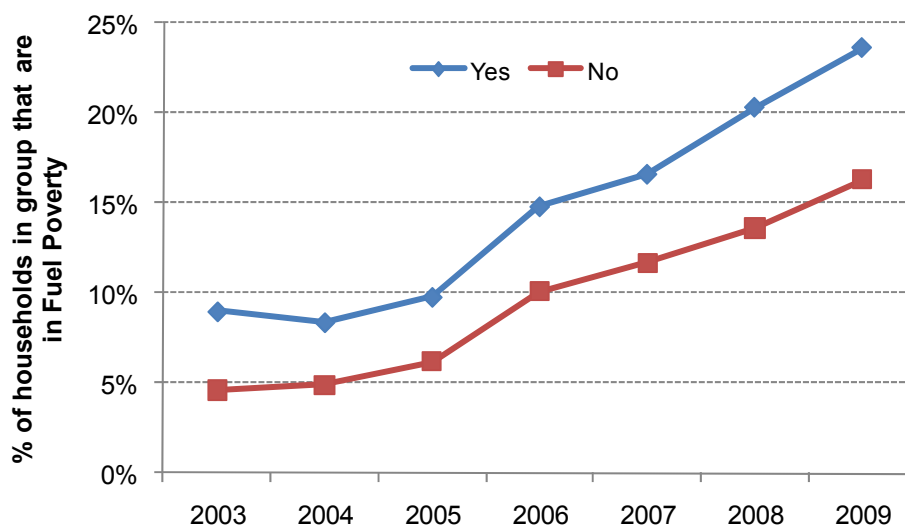


Chart 5.3 shows that, throughout the period 2003 and 2009, households containing someone with a disability or a long-term illness had a higher rate of fuel poverty than other households. Although the percentage of households in fuel poverty in this group increased between 2003 and 2009 (from 9 per cent in 2003 to 24 per cent in 2009), the rate of increase was broadly consistent with those households not containing someone with a disability or long-term illness.

**Chart 5.3 – Fuel poverty rate of households containing somebody ill or disabled, 2003 to 2009**



### 5.3 Household occupancy

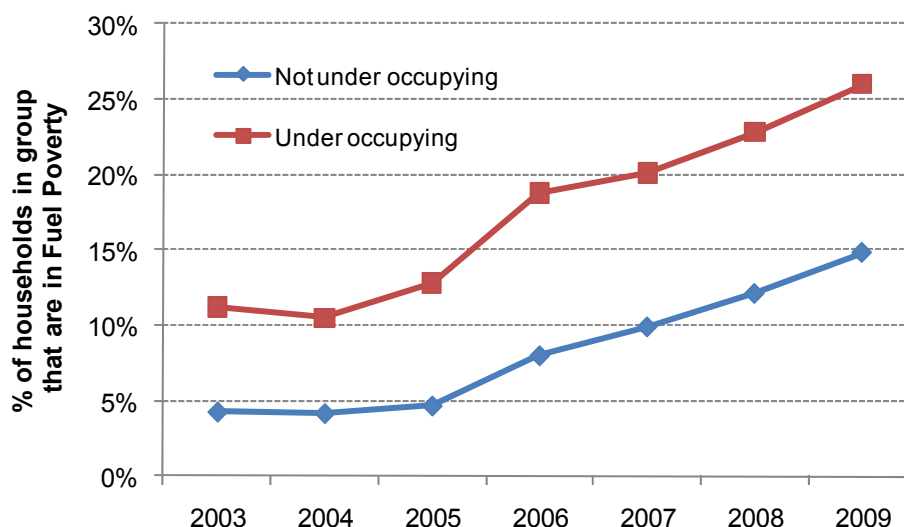
In England there was a 44 per cent increase in the number of under occupied<sup>24</sup> households between 2003 and 2009. The percentage of single person households under occupying their dwelling rose from 43 per cent in 2003 to 49 per cent in 2009, suggesting that single person households are now occupying larger dwellings. In 2009, 21 per cent of multi-person households were under-occupying their dwellings, an increase from 16 per cent in 2003.

There was a large rise in the rate of fuel poverty amongst both under-occupying households and households not under occupying between 2003 and 2009. However, the proportion of under-occupying households that are fuel poor is consistently around double the proportion of households not under-occupying that are fuel poor (see Chart 5.4).

<sup>24</sup> 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:

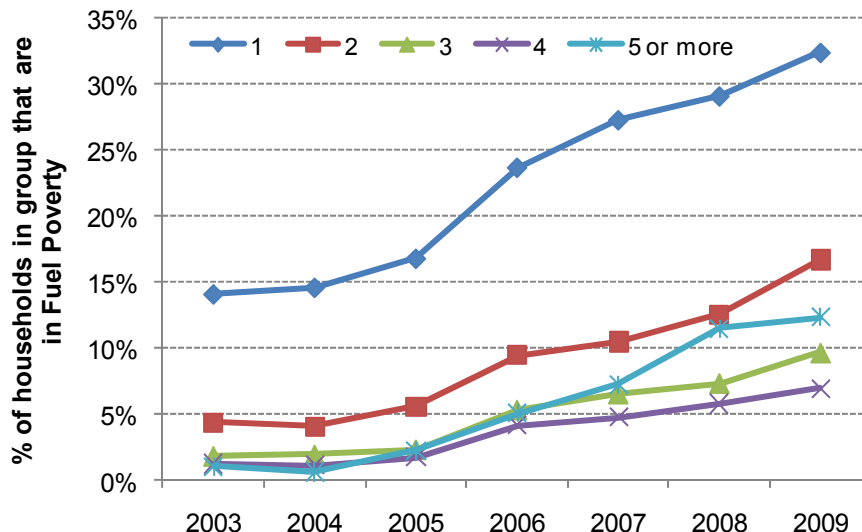
[http://www.decc.gov.uk/media/viewfile.ashx?filepath=what we do/supporting consumers/addressing fuel poverty/strategy/annual\\_report/file29694.pdf&filetype=4](http://www.decc.gov.uk/media/viewfile.ashx?filepath=what_we_do/supporting_consumers/addressing_fuel_poverty/strategy/annual_report/file29694.pdf&filetype=4)

Chart 5.4 – Fuel poverty rates by under-occupancy, 2003 to 2009



There were increases in the rate of fuel poverty for all household sizes between 2003 and 2009, indicating that no one size of household has been protected against the rise in fuel prices. However, one person households have consistently had the highest fuel poverty rate over the period (see Chart 5.5).

Chart 5.5 – Fuel poverty rate by number of people in household, 2003 to 2009



There was a notable increase in the rate of fuel poverty amongst one person households, from 14 per cent (0.8 million households) in 2003 to 32 per cent (1.9 million households) in 2009. This rise in fuel poverty amongst single person households between 2003 and 2009 is consistent with the changes in fuel poverty by household composition - see Chart 5.6 below. This chart also shows that, of the single person households, those occupied by someone aged 60 or over saw the largest increase in the number of fuel poor households between 2003 and 2009. Fuel poverty relating to those over 60 is discussed in more detail in Section 5.2.

Although one person households make up the largest proportion of fuel poor households, the largest percentage increase in fuel poverty was actually seen in households containing a couple with dependent children, albeit from a low base. In 2009, the number of households in this group that were in fuel poverty was over 7 times the number in 2003.

**Chart 5.6 – Number of households in fuel poverty by household composition, 2003 and 2009**

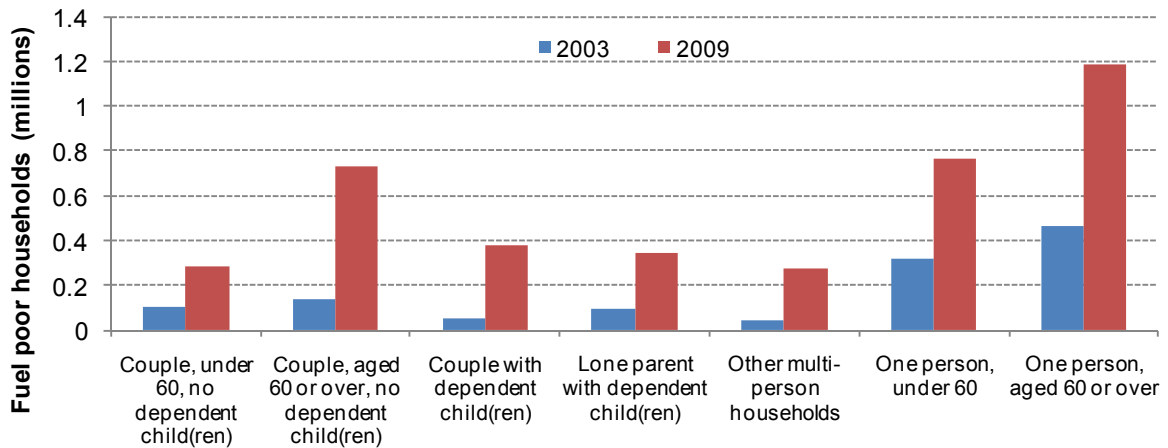
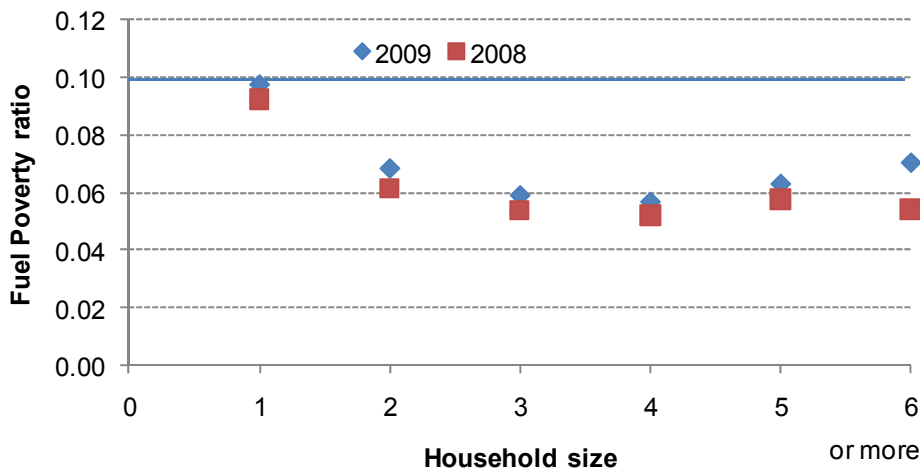


Chart 5.5 also shows that there was a rise in the rate of fuel poverty amongst households with 5 or more occupants, up from 1 per cent to 12 per cent (up from 0.02 million to 0.18 million households) between 2003 and 2009. In particular, there was a large increase between 2007 and 2008. This was caused by a large number of households containing 5 or more people being positioned close to the fuel poverty threshold compared with other household size groups in 2007 and hence more households being pushed over the threshold into marginal fuel poverty in 2008 due to rising energy bills.

Chart 5.7 shows a non-linear relationship between Fuel Poverty ratio and household size. The fact that single person households are closer to the threshold tallies with Chart 5.6 above. Generally, the average income difference between 4 person and larger households is relatively small, while fuel bills show a small but larger increase than income.

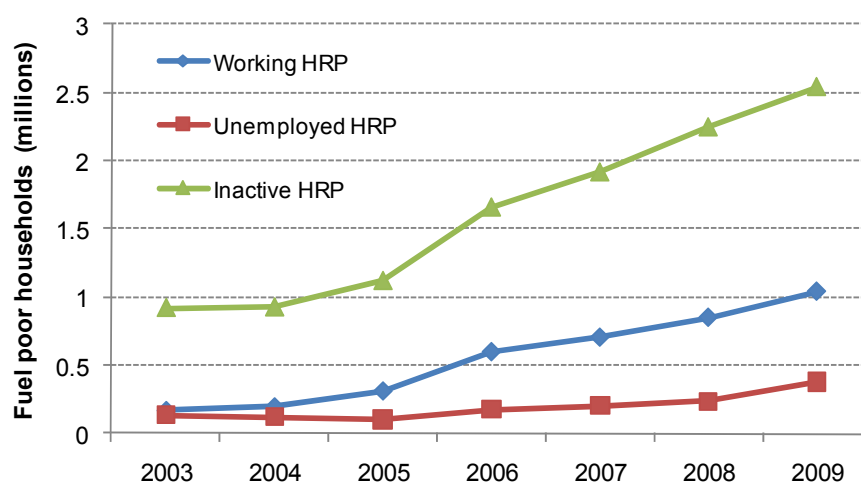
**Chart 5.7 – Fuel Poverty ratio by household size, 2008 and 2009**



## 5.4 Employment status

Employment here is defined as the employment status of the household reference person (HRP)<sup>25</sup> within the English Housing Survey. The increase in the number of fuel poor households where the HRP is inactive rose from 0.9 million to 2.5 million households between 2003 and 2009 (see Chart 5.8). This rise is consistent with the rise in fuel poverty amongst households where at least one person is aged 60 or over, since this group of people make up a large proportion of the inactive group.

**Chart 5.8 – Number of households in fuel poverty by employment status, 2003 to 2009**



**Table 5.1 – Number and proportion of households in fuel poverty by employment status, 2003 to 2009**

Year	Working		Unemployed		Inactive		Total	
	No.fuel poor households (000's)	% of all fuel poor	No.fuel poor households (000's)	% of all fuel poor	No.fuel poor households (000's)	% of all fuel poor	No.fuel poor households (000's)	% of all fuel poor
2003	167	13.7	136	11.1	919	75.2	1,222	100
2004	194	15.7	120	9.7	923	74.6	1,236	100
2005	311	20.4	101	6.6	1,117	73	1,529	100
2006	599	24.6	175	7.2	1,658	68.2	2,432	100
2007	705	25	202	7.2	1,916	67.9	2,823	100
2008	851	25.5	236	7.1	2,248	67.4	3,335	100
2009	1,042	26.3	378	9.5	2,544	64.2	3,964	100

Table 5.1 shows that working households represented over a quarter of all the fuel poor in 2009, up from around 14 per cent in 2003. This compares with

<sup>25</sup> 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.

reductions in this proportion for unemployed and inactive groups over the same period. This partly reflects the effect of the energy price rises of recent years, as more households with working incomes have been shifted into fuel poverty.

In Chart 5.8, the number of households in fuel poverty where the HRP is unemployed appears to be relatively small when compared to working and inactive fuel poor households. However, this simply reflects that there are fewer households with an unemployed HRP (in 2009 there were 0.71 million unemployed households, compared with 12.94 million working households and 7.8 million inactive households). Chart 5.9 shows the proportion of households in fuel poverty in each employment status group from 2003 to 2009. From this chart, it can be seen that the households 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 53 per cent by 2009.

**Chart 5.9 – Fuel poverty rate by employment status, 2003 to 2009**

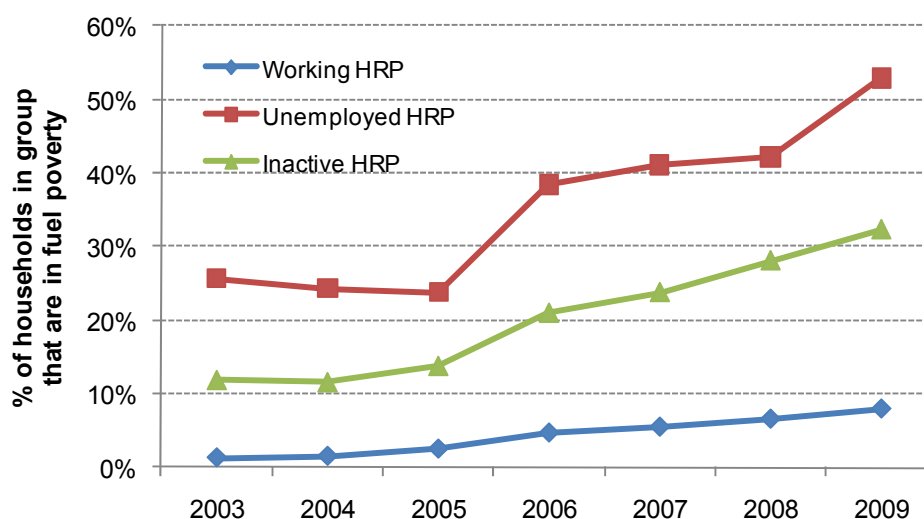
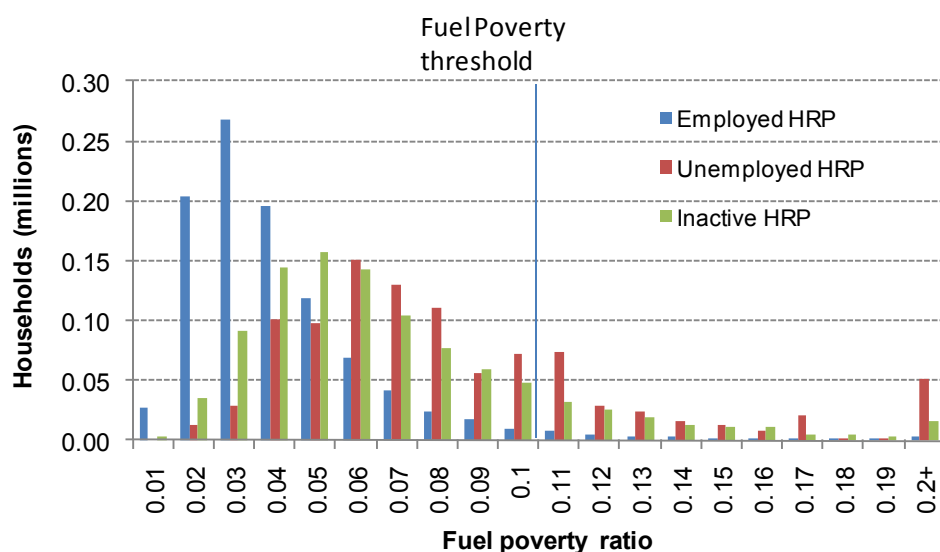


Chart 5.9 also shows that the rate of fuel poverty in households where the HRP is unemployed increased considerably between 2008 and 2009. Although electricity prices only showed a 3 per cent increase during this period, domestic gas prices increased by 12 per cent<sup>26</sup>. These energy price increases pushed many households over the fuel poverty threshold. This was particularly true of those households with an unemployed HRP as the distribution of fuel poverty ratios for this group tends to be positioned closer to the fuel poverty threshold than the other two groups. Chart 5.10 below shows this for 2005, the year before the fuel poverty rate in the unemployment group increased strongly.

<sup>26</sup> Source: Table 2.1.2 (based on the fuel components of the Retail Prices Index from the Office of National Statistics) of 'Quarterly Energy Prices' publication found at: [http://www.decc.gov.uk/en/content/cms/statistics/energy\\_stats/prices/prices.aspx](http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/prices/prices.aspx)

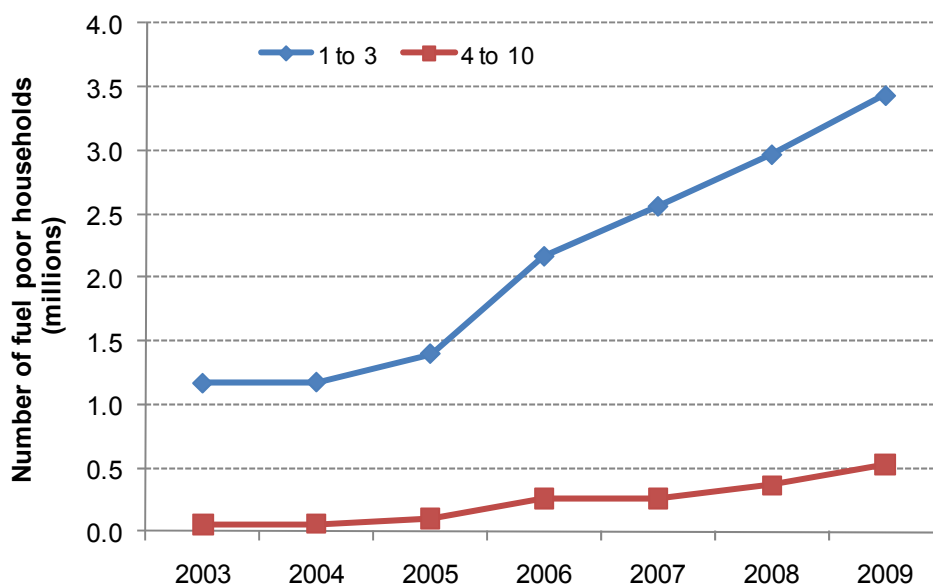
Chart 5.10 – Fuel poverty ratios, 2005



## 5.5 Income

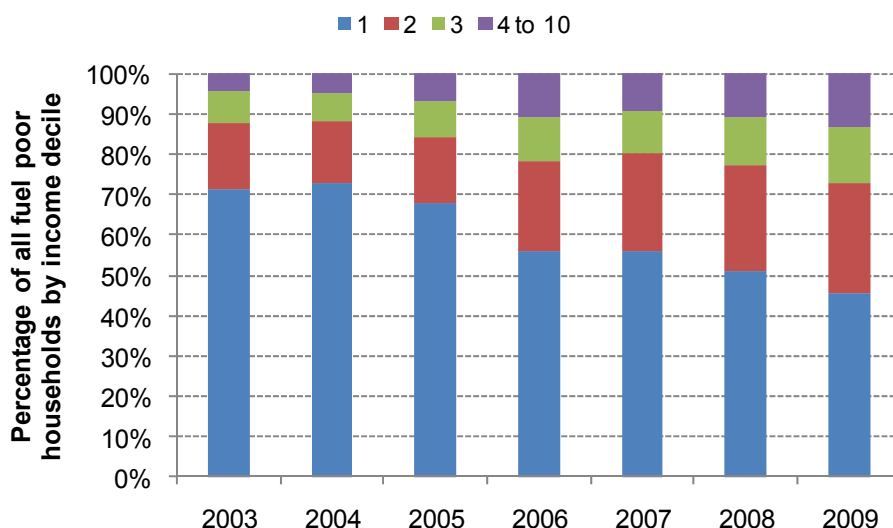
The majority of households in fuel poverty are consistently in the lowest three income decile groups. In 2003, there were 1.2 million fuel poor households in the lowest three decile groups, representing 96 per cent of all fuel poor households. In 2009, the number of fuel poor households in these groups rose to 3.4 million, representing 87 per cent of all fuel poor households. Over the same period, the number of fuel poor households in income decile groups 4 to 10 increased from 0.05 million to 0.53 million (see Chart 5.11). These statistics further emphasise the impact of prices rising faster than incomes, meaning that, increasingly, fuel poverty is experienced beyond just the lowest income households whilst being experienced more deeply in the lowest income group.

Chart 5.11 – Number of households in fuel poverty by income decile group, 2003 to 2009



The overall proportion of fuel poor households by income decile group can be seen in Chart 5.12. Although households in the lowest income decile historically make up the majority of the fuel poor, the proportion actually fell from 71 per cent in 2003, to 46 per cent in 2009 – another illustration of the pressure of rising energy costs, pushing more households with higher incomes into fuel poverty. The proportion of all fuel poor households in the second income decile group increased from 17 per cent to 27 per cent over the period, while the proportion in the third group increased from 8 per cent to 14 per cent. The proportion of all fuel poor households in the highest income decile groups (4 to 10) also saw an increase between 2003 and 2009, rising from 4 per cent to 13 per cent. This does not mean that those in the lowest income decile group experienced less fuel poverty, as the fuel poverty ratio of this group increased from 0.11 in 2005 to 0.2 in 2009. In other words, this group spends on average 20 per cent of their income on fuel costs.

**Chart 5.12 – Proportion of all fuel poor households in income deciles, 2003 to 2009**



## 5.6 Fuel expenditure

Average modelled<sup>27</sup> fuel expenditure increased from £694 to £1,342 between 2003 and 2009, an increase of over 90 per cent. Average incomes also rose over the same period, but only by around 20 per cent, meaning the average modelled fuel cost to income ratio rose from around 3 per cent in 2003 to 4.8 per cent in 2009 in England.

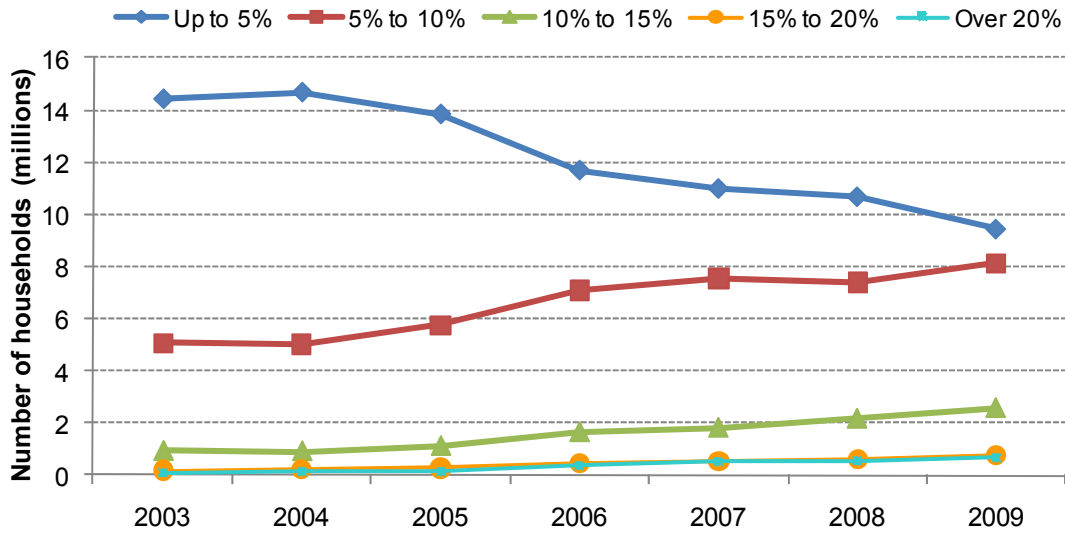
As seen in Chart 5.13, the number of households spending up to 5 per cent of their income on fuel to maintain the adequate standard of warmth decreased from 14.4 million in 2003 to 9.5 million in 2009. Conversely, the number of households needing to spend between 5 per cent and 10 per cent of their income on fuel to maintain the adequate standard of warmth increased from 5.1 million households in 2003 to 8.1 million households in 2009. Therefore,

<sup>27</sup> Consumption is modelled to ensure the adequate standard of warmth is achieved.

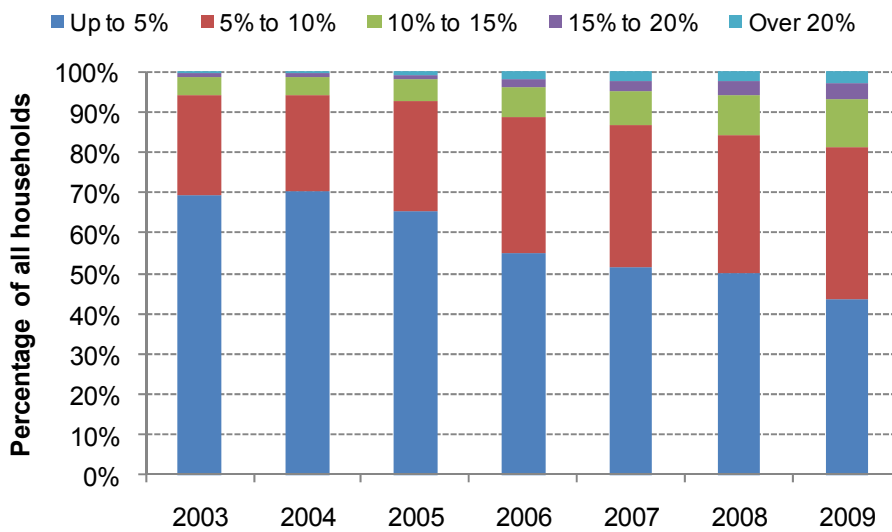
over the period 2003 to 2009, more households have tended to move closer to the fuel poverty threshold, meaning that an increase in prices will push more households into fuel poverty in 2009 than in 2003.

Fuel poverty rose substantially between 2003 and 2009. Less than half of English households had a fuel poverty ratio below 5 per cent in 2009, falling from 70 per cent in 2003, as seen in Chart 5.14.

**Chart 5.13 – Number of households by modelled expenditure on fuel as a proportion of income, 2003 and 2009**



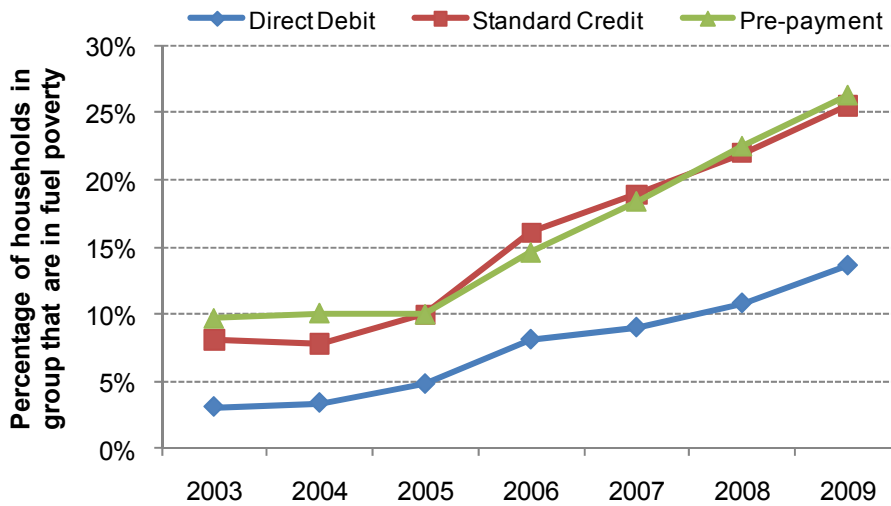
**Chart 5.14 – Percentage of households within the banded fuel poverty ratios, 2003 to 2009**



## 5.7 Payment method

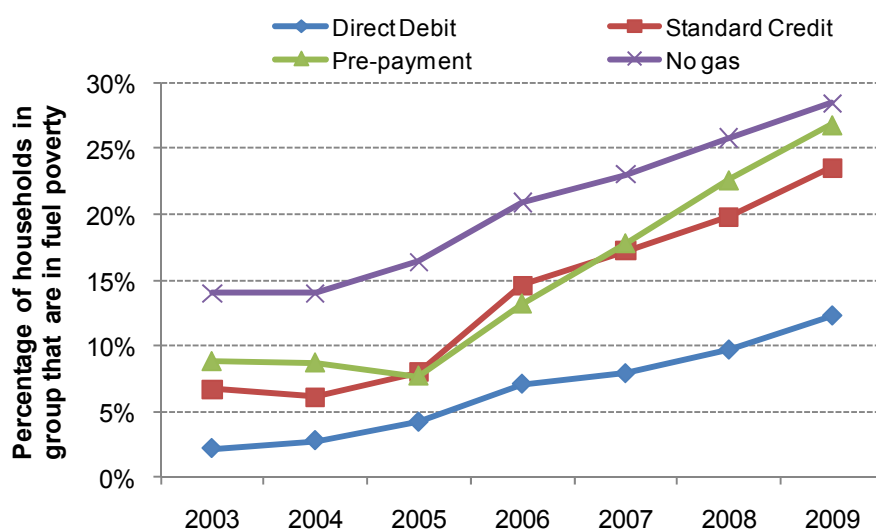
In 2003 and 2004 the rate of fuel poverty was greatest amongst those paying for their electricity and gas by pre-payment meters. However, since 2005, fuel poverty rates amongst households using pre-payment meters have been similar to those amongst households paying via standard credit for electricity (as shown in Chart 5.15). Chart 5.16 shows that this also remained the case in the period 2005 to 2007 for gas pre-payment and standard credit customers. However, in 2008 and 2009, those households on pre-payment meters again had a slightly higher rate of fuel poverty (by 3 percentage points in each year).

Chart 5.15 – Fuel poverty rate by method of payment for electricity, 2003 to 2009



Those households not on the gas network consistently had the highest fuel poverty rate over the period, increasing from 14 per cent in 2003 to 28 per cent in 2009. For both gas and electricity, households using direct debit consistently had the lowest fuel poverty rate over the period 2003 to 2009.

Chart 5.16 – Fuel poverty rate by method of payment for gas, 2003 to 2009



With the exception of those households off the gas network, pre-payment meter users had the highest fuel poverty rate in 2009. However, Table 5.2 shows that, even though these households have the lowest income on average, they also have the lowest average modelled fuel bill and the highest average SAP rating, indicating a higher level of energy efficiency, which may suggest that for these households, lower income is a key factor.

Table 5.2 – Average income, fuel bill<sup>28</sup> and SAP by payment method for gas, 2009

	Average Income (£)	Average fuel bill (£)	Average SAP
Direct debit	31,400	1,310	55
No gas	25,400	1,590	41
Pre payment meter	18,500	1,250	58
Standard Credit	24,900	1,330	55

## 5.8 Energy efficiency

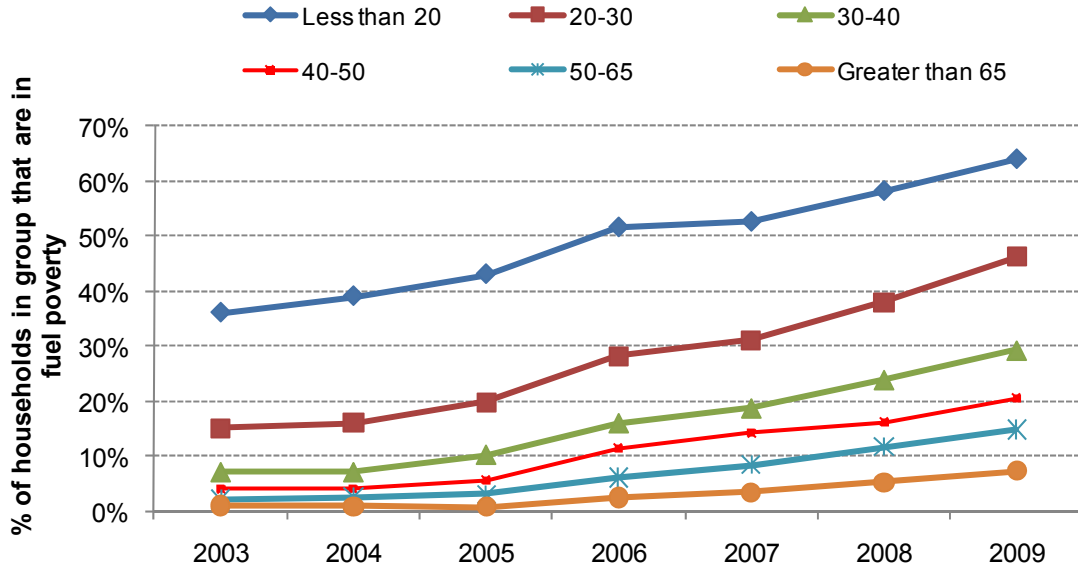
As described in Section 3.4 of this report, a SAP rating is a measure of energy efficiency within a property – low values indicate poor levels of energy efficiency whilst higher numbers indicate more energy efficient properties.

Chart 5.17 shows the fuel poverty rate between 2003 and 2009 for households within different SAP bands. Although the fuel poverty rate has increased for households within all the bands, those households with a SAP less than 20 (the least energy efficient) consistently have the highest rate, while those with a SAP greater than 65 (the most energy efficient) consistently

<sup>28</sup> Fuel costs are modelled rather than based on actual spending to ensure that the household achieves an adequate level of warmth as set out in the definition of fuel poverty. Incomes have been rounded to the nearest £100 and fuel bills to the nearest £10.

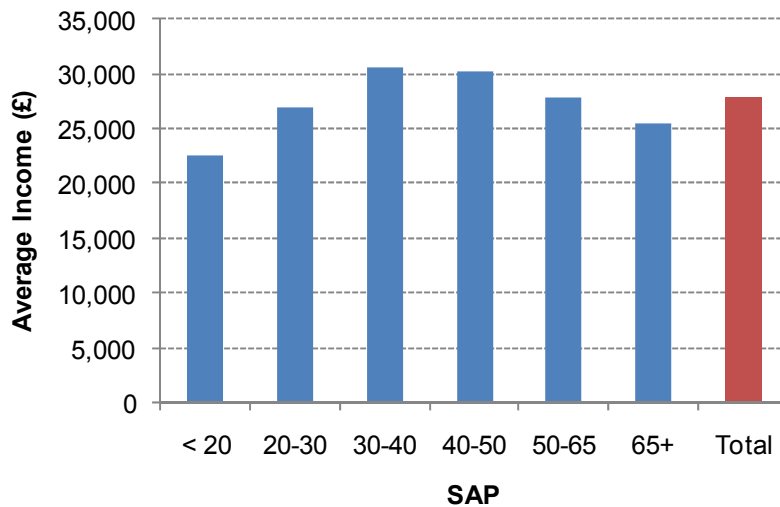
have the lowest rate highlighting the importance of energy efficiency in reducing fuel poverty.

**Chart 5.17 – Fuel poverty rate by banded SAP rating, 2003 to 2009**



For context, Chart 5.18 below details the average income of households in each of these SAP bands in 2009. Those households with an income less than the English average income tend to live in properties with a SAP rating either below 20 or above 50. This latter group are likely to live in social housing where the local authority has improved the energy efficiency of the homes. The properties with a SAP less than 20 tend to be more rural, and are more likely to be single person households or contain a person aged 60 or over.

**Chart 5.18 – Average income by banded SAP rating, 2009**



Conversely, Chart 5.19 shows the average SAP rating for households with differing fuel poverty ratios (where those with a fuel poverty ratio over 10 per cent are deemed to be in fuel poverty). From this chart it can be seen that, in both 2003 and 2009, households that need to spend more than 10 per cent of their income on fuel, have a lower SAP rating than those households that need to spend less than 10 per cent. However, in all groups, the average SAP rating increased between 2003 and 2009, particularly in the households which spend more than 10 per cent of their income on fuel. The biggest increase in average SAP rating between 2005 and 2009 was seen in the groups that need to spend more than 20 per cent of their income on fuel (although this partly reflects the change in income imputation methodology between 2003 and 2009, which means that in the group will also contain some potentially energy efficient dwellings, lived in by households reporting very low or zero incomes).

**Chart 5.19 – Average SAP rating by fuel poverty ratio, 2003 and 2009**

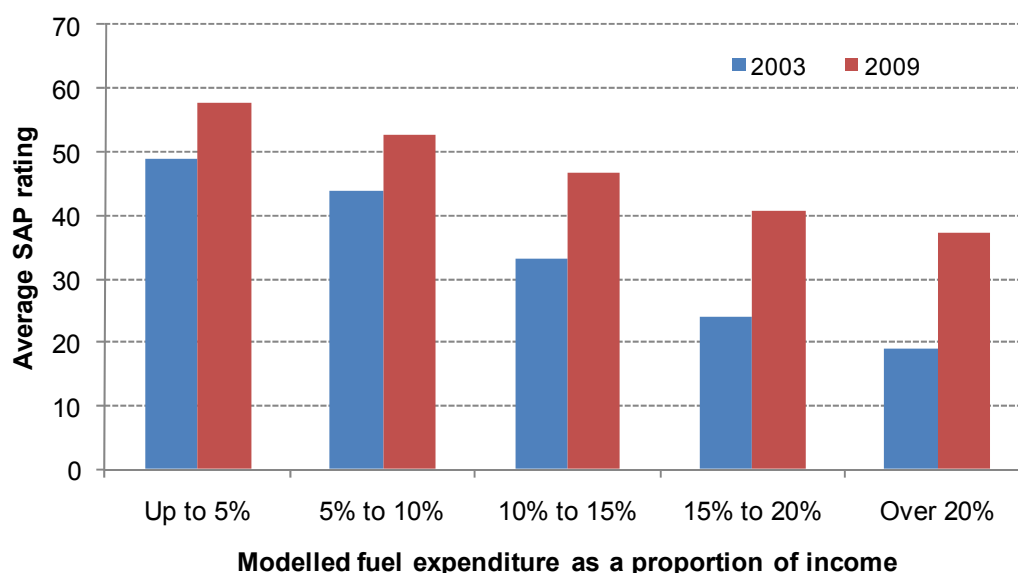


Table 5.3 shows the average fuel poverty ratio by SAP bands, all of which increased between 2003 and 2009. For those households in the 'Less than 20' and '20 – 30' bands, the average fuel poverty ratios are above the fuel poverty threshold of 0.1, which was not the case in 2003. This reflects the impact of rising energy bills during this period as even the more energy efficient households are pushed towards the fuel poverty threshold and is perhaps the cause of the rise between 2003 and 2009 in the average SAP rating of those households spending more than 20% of their income on fuel.

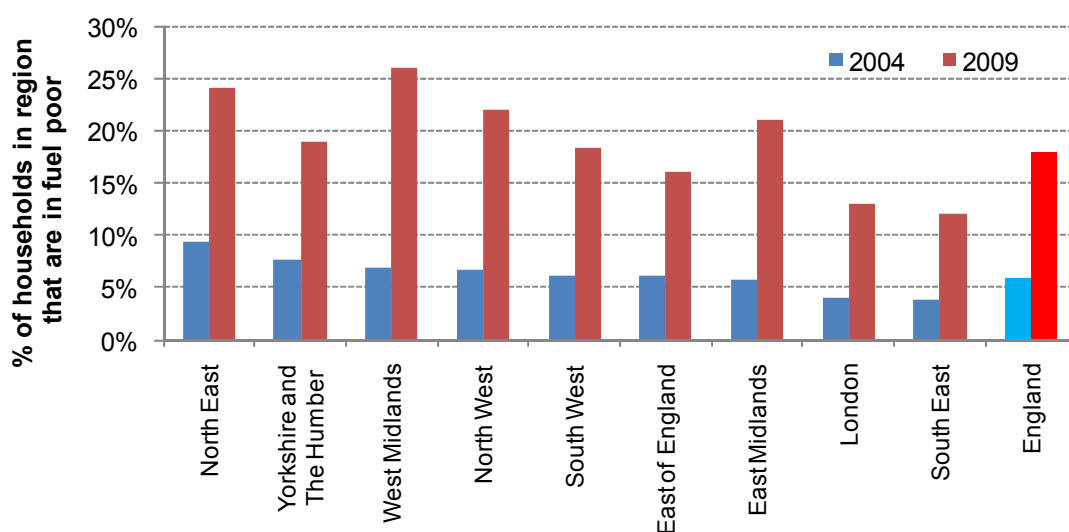
**Table 5.3 – Average fuel poverty ratio by SAP band, 2003 and 2009**

SAP	2003	2009
Less than 20	0.09	0.15
20-30	0.06	0.11
30-40	0.05	0.09
40-50	0.04	0.08
50-65	0.04	0.07
65+	0.03	0.06

## 5.9 English Regions

Chart 5.20 shows the proportion of households in each of the English regions (formerly Government Office Regions) that were in fuel poverty in 2004 and in 2009. The chart is shown with the regions in decreasing order according to the proportion of fuel poor households in 2004 – the North East having the highest percentage at 9 per cent and the South East having the lowest percentage at 4 per cent.

**Chart 5.20– Fuel poverty rate by English Region, 2004 and 2009**

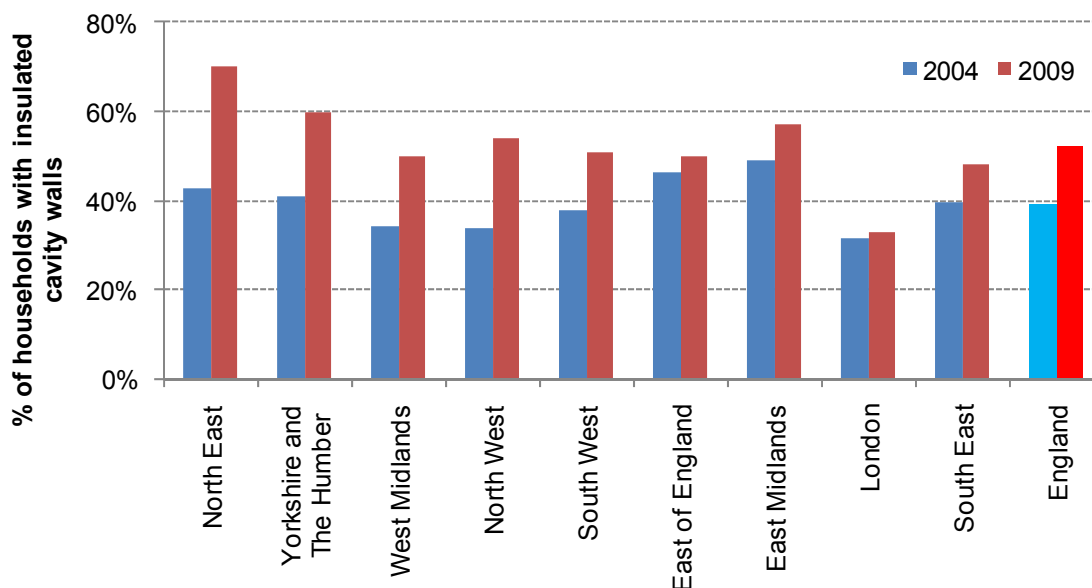


The percentage of fuel poor households increased substantially in all regions between 2004 and 2009. However, it appears that some regions have been affected disproportionately over this period. In 2004, the North East was the region with the highest rate of fuel poverty but, in 2009, the West Midlands had the highest fuel poverty rate (26 per cent) and the North East the second highest rate (24 per cent). In 2004, the East Midlands had a relatively low rate of fuel poverty (6 per cent) being higher than just London and the South East. However, in 2009, the rate of fuel poverty in the East Midlands increased to 21 per cent making it the region with the third highest fuel poverty rate.

Charts 5.21 and 5.22 show the prevalence of cavity wall and loft insulation (over 150mm thickness) in each of the regions in 2004 and 2009, 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 2009. The North East, in particular, saw a large increase in the proportion of households with cavity wall insulation, rising from 43 per cent in 2004 to 70 per cent in 2009. This may also partially help to explain why the North East is no longer the region with the largest fuel poverty rate.

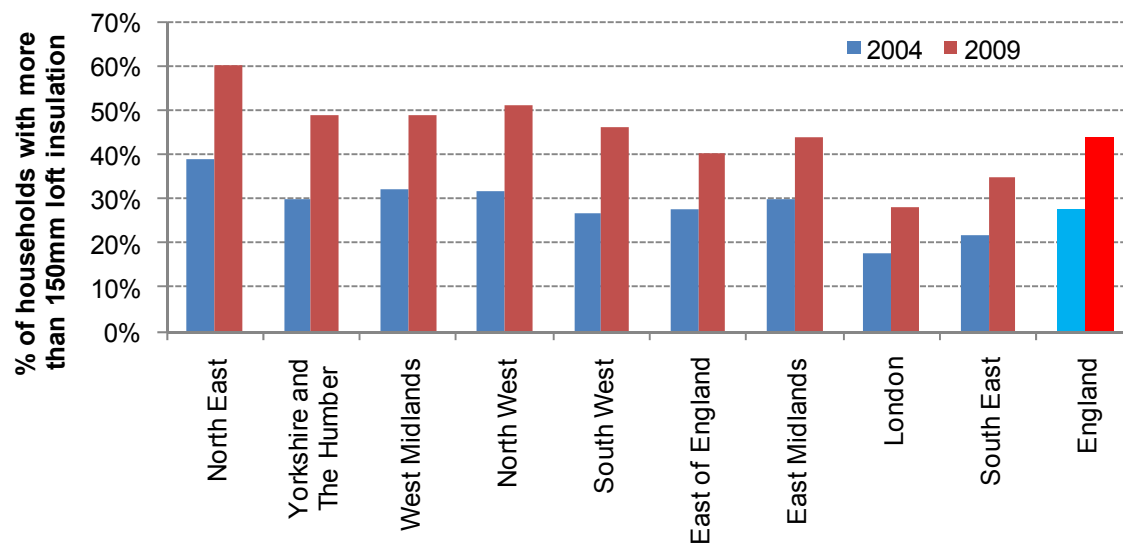
**Chart 5.21 – Percentage of households (with cavity walls) that have cavity wall insulation by English Region, 2004 and 2009**



There was little change in the proportion of cavity walls insulated in London between 2004 and 2009. This is due to differences in the housing stock and tenure in London compared with the rest of the country.

In addition, as shown in Chart 5.22, although the North East had the highest proportion of households (with lofts) having loft insulation with thickness greater than 150mm in 2004, it also saw the largest percentage point increase between 2004 and 2009. In 2004, 39 per cent of households with lofts were insulated in the North East, which rose to 60 per cent in 2009.

**Chart 5.22 – Percentage of households (with lofts) that have loft insulation thicker than 150mm by English Region, 2004 and 2009**



## 6. Additional work and developments

### 6.1 Social tariffs and their impact on fuel poverty

As explained in the 2010 annual report on fuel poverty statistics, and elsewhere in this report, the 2009 modelling of fuel poverty includes the impact of social tariffs<sup>29</sup> for the first time.

The main difficulty in measuring the impact of social tariffs on fuel poverty is that it is not possible to identify the exact tariff any individual household receives from EHS data. Therefore, it is not possible to calculate the impact of social tariffs with absolute certainty. The method chosen to estimate the impact, and agreed amongst the fuel poverty methodology group<sup>30</sup>, is based on approximating receipt of such tariffs, given the eligibility as defined by each of the energy suppliers. Using the detailed EHS data, it is possible to assign each household as broadly eligible or not for each of the social tariffs using the eligibility criteria as recorded in the OFGEM report on supplier social programmes<sup>31</sup>. The eligibility tends to be focused at households on benefits, elderly households or those containing people who are ill or disabled. More information about the eligibility of each social tariff, and the number of customers benefiting from them, is included in the OFGEM report.

Clearly there are many more households that are eligible for social tariffs than actually receive them. Choosing one group of these could have a very different impact on fuel poverty compared with choosing a different group. To overcome this, a repeated random assignment simulation process (similar to Monte-Carlo methods) was undertaken, which allowed us to identify the most likely impact on fuel poverty.

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<sup>29</sup> For the purpose of this document, and measurement within fuel poverty, the term social tariff refers to all social and discounted tariffs, not the more strict definition of social tariff as defined by OFGEM in 2008.

<sup>30</sup> For more information on this group, see Section 13.1 of the Fuel Poverty Methodology Handbook, which is available at:  
<http://www.decc.gov.uk/assets/decc/Statistics/fuelpoverty/614-fuel-poverty-methodology-handbook.pdf>

<sup>31</sup> Latest reports are available here:  
<http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=264&refer=Sustainability/SocAction/Suppliers/CSR>

### **Method for implementation**

The source EHS dataset used in compiling fuel poverty is a combined (2008 and 2009) year dataset – by convention the earlier of the two years remains unchanged from the previous years, so social tariffs have only been applied to the most recent (i.e. 2009) year in this dataset. As a result, social tariffs have been applied to around 400,000 households in the 2009 dataset, and the impact of social tariffs is roughly only half what it would be in 2010, all other things being equal.

The average tariffs used in the fuel poverty bill methodology were produced as documented in the fuel poverty methodology handbook, but excluding all social and discounted tariffs. These average tariffs were then combined with modelled consumption levels for all households to produce an interim dataset. This dataset forms the starting point for all subsequent analyses, including analysing the effect on social tariffs

Each household is assigned as being either eligible or not for a social tariff. Tariffs were randomly assigned to eligible households, subject to achieving the appropriate number of tariffs as documented by Ofgem in their social programme reports, and the selected household bills reduced in line with the social tariff. This process was repeated many times and, for each iteration, the resulting impact on the level of fuel poverty (nationally and by a number of other categories such as region, income, tenure, etc.) of that social tariff allocation was recorded. After many iterations, the average of these recorded impacts on fuel poverty will converge (i.e. the effect of each additional iteration only changes the mean impact of all iterations by a negligible amount) and this average, or modal value, becomes the expected impact on fuel poverty.

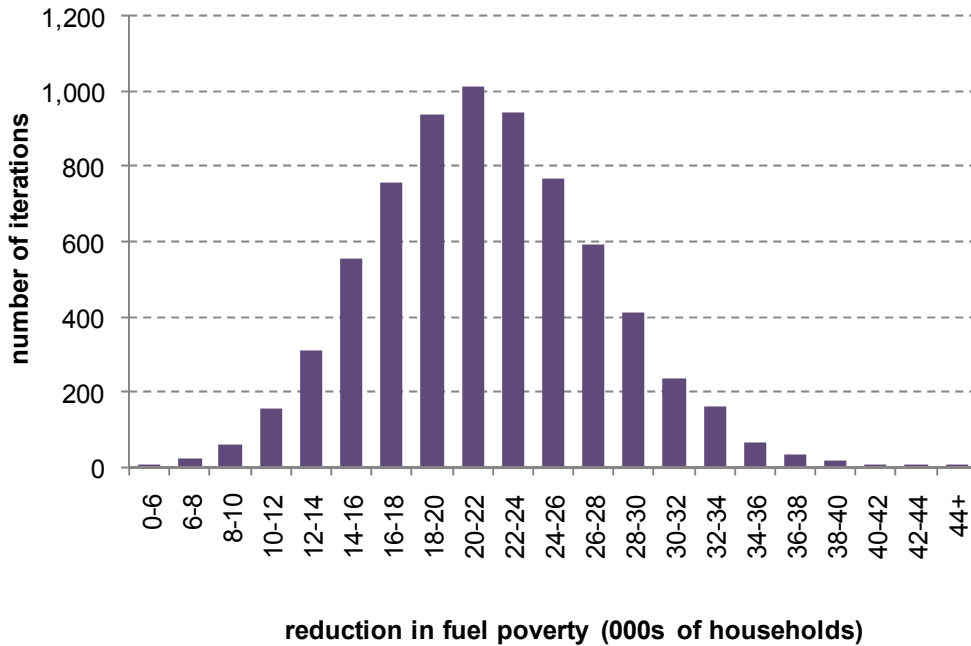
As noted above, it is not possible to identify which households actually receive social tariffs, but this process will at least indicate which households are most likely to receive them. To ensure the public access dataset remains consistent with the fuel poverty headline figures, we have fixed on a “modal” (or representative) assignment of social tariffs, based on the observed distributions during the repeated iterations. This chosen assignment produces a similar impact on fuel poverty to the expected (or average) value produced by the repeated simulations. In addition, the impact on the detailed data (i.e. split by region, tenure, income) is broadly in line with the average from the repeated simulations. The modal assignment was then applied to the interim dataset, bills are adjusted accordingly and the final fuel poverty dataset for 2009 is achieved.

### **Results**

The simulations converged after relatively few iterations of the process at the national level. To ensure the choice for the modal tariff was as large as possible, over 7,000 iterations of tariff assignment were simulated and their outputs recorded.

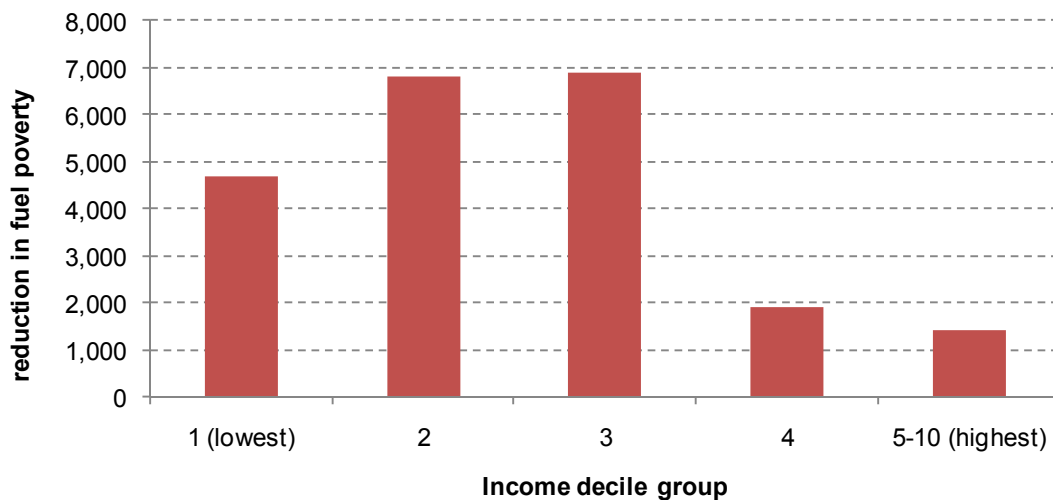
Chart 6.1 below shows the results of the simulations in the form of a histogram. On the horizontal axis is the impact on the number of households in fuel poverty (measured as a reduction), and the vertical axis shows the number of times that the impact was observed in the simulations. The chart shows a “normal” distribution, with a mean value between 20,000 and 22,000 households.

**Chart 6.1 – Histogram showing the simulated impact of social tariffs on fuel poverty**



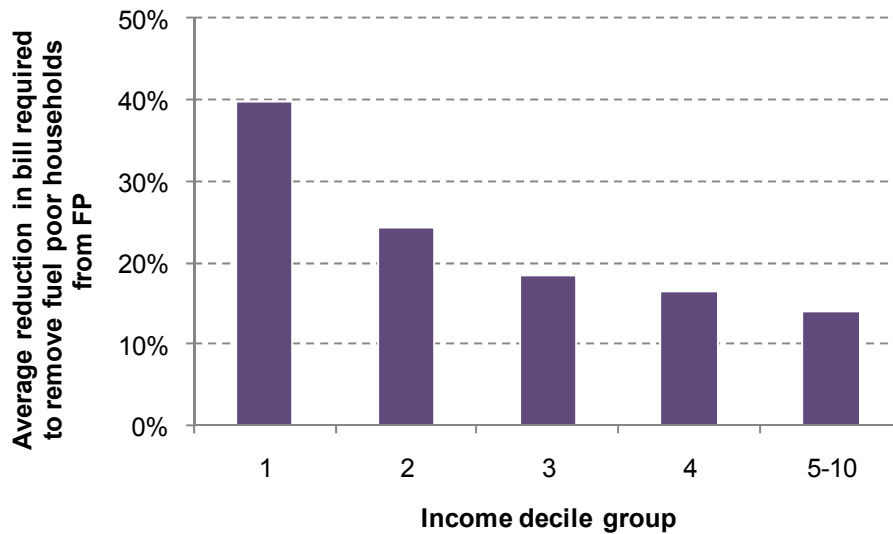
The impact was also analysed by a variety of demographic measures. Chart 6.2 shows the impact across income groups (averaged across all simulations) and it can be seen that the largest impacts are in the second and third lowest income decile groups.

**Chart 6.2 – Impact of social tariffs on fuel poverty by income group**



At this stage, it is important to understand that a household being removed from fuel poverty due to the saving made from receiving a social tariff is a factor of two things – firstly, the bill saving a household receives, and secondly, how much money the household needs to save to be removed from fuel poverty. Generally, fuel poor households in the lowest income decile group require a larger bill saving to be removed from fuel poverty than those in the second lowest income group. Those households in the second lowest group require a lower saving than those in the third lowest and so on. Chart 6.3 below illustrates this.

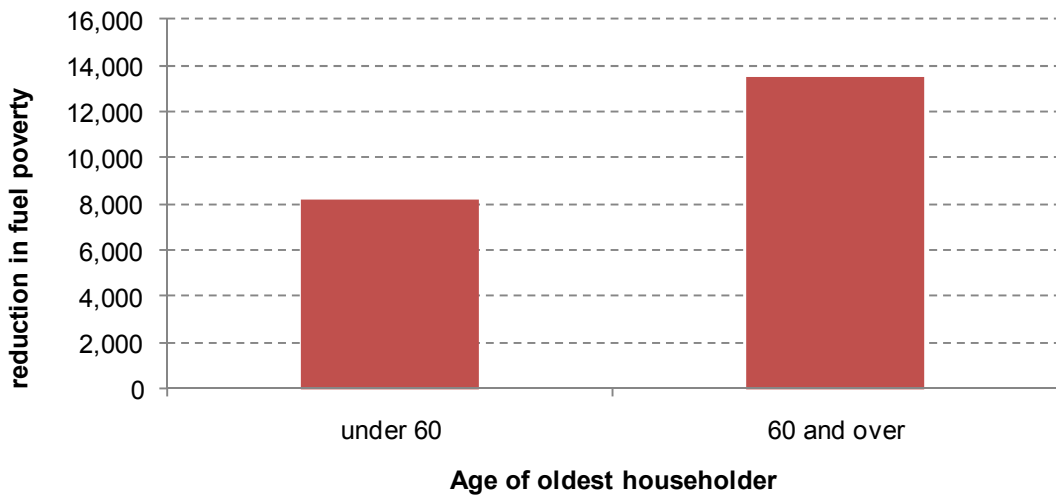
**Chart 6.3 – Average proportional reduction in fuel bill required to remove households from fuel poverty by income decile group**



To an extent, this masks the fact that more households in the lowest income decile group are eligible for social tariffs than in other groups and that the modelling simulates more households in the lowest income decile group to receive such tariffs. In fact, the modelling simulates a little more than a fifth of social tariffs go to the lowest income decile group, diminishing to around 17 per cent in decile group 2. The six highest income decile groups are modelled to receive only around 7 per cent of the total social tariffs allocated. The combination of these effects gives rise to the distribution of households being removed from fuel poverty by income decile group. As more social tariffs are offered to households, and the modelling is adopted for both years in the data, this pattern should develop and we will continue to monitor it in future years.

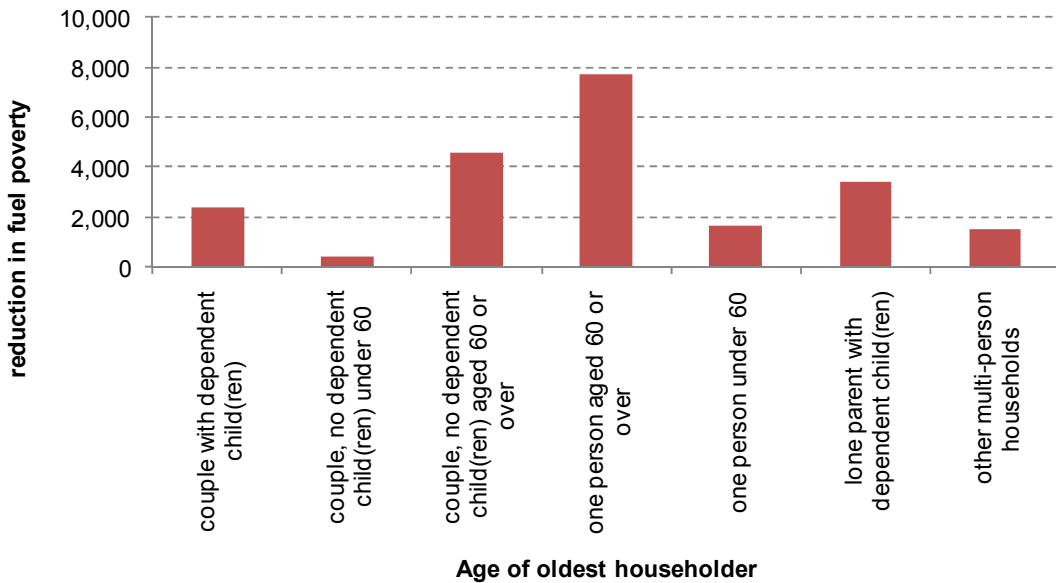
Chart 6.4 shows the reduction in fuel poverty broken down by the age of the oldest person in the household.

**Chart 6.4 – Impact of social tariffs on fuel poverty by age group of oldest householder**



The modelling suggests that nearly twice as many elderly households are removed from fuel poverty compared with those that do not contain anybody over the age of 60 – this is not surprising, since many available social tariffs are targeted specifically at pensioners. Chart 6.5 shows a more detailed breakdown of the impact on fuel poverty by household composition.

**Chart 6.5 – Impact of social tariffs on fuel poverty by household composition**



This chart emphasises that the majority of the households removed from fuel poverty, once social tariffs are accounted for, contain somebody over the age of 60.

### **Future developments**

From the 2010 fuel poverty figures onwards, the full impact of social tariffs will be included within the modelling. It is likely that this will increase the number of households removed from fuel poverty due to social tariffs, and to also potentially increase the amount of analysis that can be achieved, since sample sizes will be larger.

The survey form that is sent to suppliers to gather information on social tariffs has also been improved in 2011 and now requests suppliers to provide details of the number of tariffs at a regional (rather than national) level. This will allow the modelling to be more precise in future years.

DECC are aware that, even with these improvements, the modelling will not be perfect as it is still not possible to identify exactly which households will be receiving social tariffs. However, the method chosen is pragmatic and ensures that an important policy initiative can be analysed statistically. We will continue to monitor potential developments that will allow us to further improve the methodology.

## **6.2 Sub-regional fuel poverty in 2008**

Following the publication of 2006 sub-regional fuel poverty data in October 2009, DECC launched a consultation of key users, including those from Local Authorities, in March 2010. The aim of the consultation was to better understand the needs of users and the developments that they would like to see in these statistics. DECC's response to the consultation is available at: <http://www.decc.gov.uk/assets/decc/Statistics/fuelpoverty/933-response-la-conssubregional-fuelpov-stats.pdf>

One of the key findings of the consultation was that there was clear demand for these data and that users would like the statistics to be updated on an annual basis. In February 2011, DECC published sub-regional fuel poverty statistics for 2008 and are hopeful of producing these annually in the future.

### **Sub-regional fuel poverty data**

Sub-regional fuel poverty estimates for 2008 are now available on the DECC website at:

[http://www.decc.gov.uk/en/content/cms/statistics/fuelpov\\_stats/regional/regional.aspx](http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/regional/regional.aspx)

Data is available for the following geographical regions in England:

- English region (Formerly Government Office Region)
- County
- Parliamentary Constituency
- Local Authority
- Former Local Authority
- Lower layer Super Output Area (LSOA)

In addition, Census Output Area level fuel poverty estimates for 2008 are also available on request by emailing [fuelpoverty@decc.gsi.gov.uk](mailto:fuelpoverty@decc.gsi.gov.uk).

A full description of the statistics and the methodology used to derive them is available at:

<http://www.decc.gov.uk/assets/decc/statistics/fuelpoverty/2008-fuel-poverty-models-documentation.pdf>

### **Mapping fuel poverty**

DECC have recently acquired software that allows geographical statistics to be visually mapped. Chart 6.6 is a map of England showing the fuel poverty rate in every English LSOA, that is the proportion of households in the LSOA that are fuel poor. The darker the colour, the greater the proportion of fuel poor households in the LSOA.

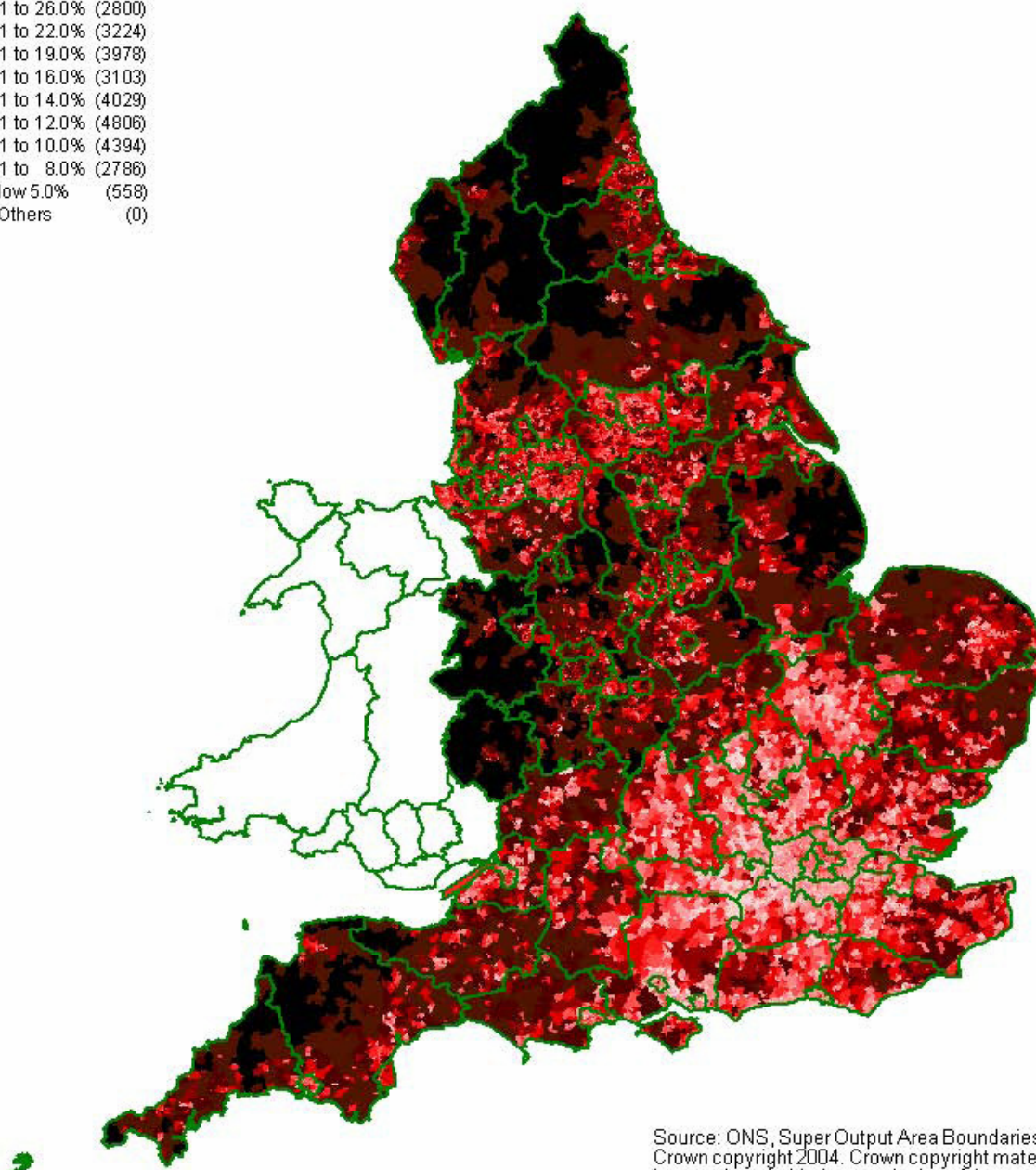
The map shows that there is a high proportion of households in some parts of Northern England that are fuel poor, this includes parts of Northumberland, Cumbria, Durham and North Yorkshire. Parts of Lincolnshire, the West Midlands, Devon and Cornwall also have a high fuel poverty rate. This mapping also illustrates findings covered elsewhere in this report of the strong link between fuel poverty and being off the gas grid.

Chart 6.6 – Map of proportion of households in fuel poverty at LSOA level, 2008

### Fuel Poverty Ratios, 2008

Percentage of households in fuel poverty by LSOA

■ Above 35.0%	(534)
■ 26.1 to 35.0%	(2270)
■ 22.1 to 26.0%	(2800)
■ 19.1 to 22.0%	(3224)
■ 16.1 to 19.0%	(3978)
■ 14.1 to 16.0%	(3103)
■ 12.1 to 14.0%	(4029)
■ 10.1 to 12.0%	(4806)
■ 8.1 to 10.0%	(4394)
■ 5.1 to 8.0%	(2786)
■ Below 5.0%	(558)
■ All Others	(0)



Source: ONS, Super Output Area Boundaries.  
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### 6.3 Analysis of the uncertainty in fuel poverty statistics 2008

The objective of this analysis was to calculate the level of uncertainty associated with the 2008 national fuel poverty figures. In 2008, there were 3.335 million fuel poor households in England. As discussed in Chapter 1, the fuel poverty estimates for England are based on data from a number of different sources. These sources include the English Housing Survey (EHS), administered by DCLG, and DECC's quarterly Domestic Fuels Inquiry (DFI)<sup>32</sup>. Each of these inputs is subject to a degree of uncertainty and estimation and so, by estimating the uncertainty in each of the inputs into the fuel poverty calculation, we can approximate a corresponding level of uncertainty associated with the final national fuel poverty figures. The analysis described here looks solely at uncertainty resulting from the income data and the fuel prices data.

#### **Methodology**

The number of fuel poor households is determined by calculating the fuel poverty ratio for each household<sup>33</sup> in the EHS survey, using data particular to that household combined with energy price information from the DFI and other sources. In order to consider the effect of uncertainty, we need to recalculate the number of fuel poor households incorporating an amount of variability. We do this using a 'Monte Carlo' model, which is a multiple, repeated sampling technique.

This approach to the measurement of uncertainty makes use of the existing fuel poverty calculation procedure but, for each household, the input data are modified by the random addition or subtraction of small amounts which are representative of the level of uncertainty in the data. Each run of the Monte Carlo model produces an estimate of the number of households in fuel poverty, which differs slightly from the estimate of the previous run and the official level of fuel poverty. If the model is run many (typically thousands of) times, and on each occasion different adjustments to the input data are made, a distribution of the estimates of fuel poverty is generated. As long as the adjustments to the individual input data mimic correctly the unknown uncertainty associated with each value, this distribution represents the overall uncertainty in the fuel poverty estimate or the possible range of variation about a central 'best estimate'.

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<sup>32</sup> The DFI is used to collect data on pricing structure and customer numbers directly from energy suppliers at the tariff level and captures around 99% of domestic energy consumers in the UK. Bill data and methodology information are available at:

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

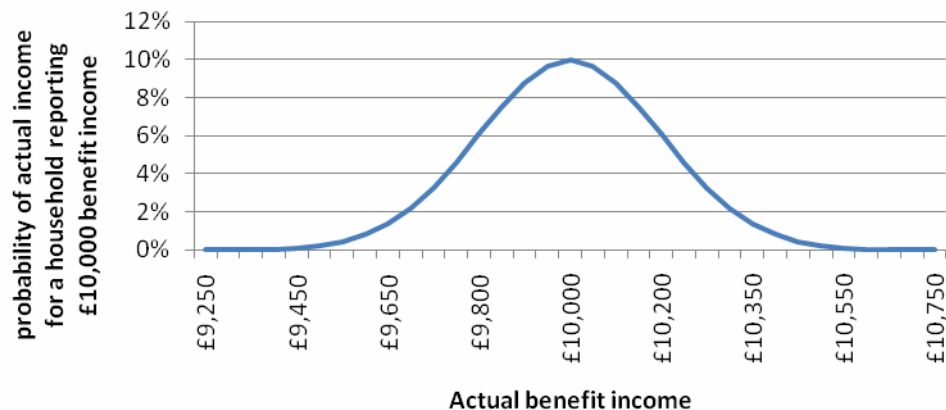
<sup>33</sup> Each household in the EHS is assigned a weighting which indicates how many households in England that particular household represents. The survey sample can then be aggregated to produce a representation of the country as a whole.

### **Uncertainty in Incomes**

With regard to income, this analysis considered the effect of random uncertainty only<sup>34</sup>. In the EHS, survey respondents are asked about their income (and those of the other household members) from different sources including earnings, benefits and savings. Uncertainty in the incomes reported can arise for many reasons. For example, a respondent may not be fully aware of the income of other people in the household and report incorrect information. Uncertainty also arises if the data are collected in banded amounts (in order to maximise response rates), as is the case for earned income and savings.

To allow us to incorporate this income uncertainty, a coefficient of variation for each element of income (calculated using data from a study of the uncertainty in the Family Expenditure Survey) was used to construct error distributions for each household and these distributions were sampled from randomly as part of the Monte Carlo method. An example of one of these distributions is shown in Chart 6.7.

**Chart 6.7 – Probability distribution of actual benefit income, based on a reported benefit income of £10,000**



### **Uncertainty in Fuel prices**

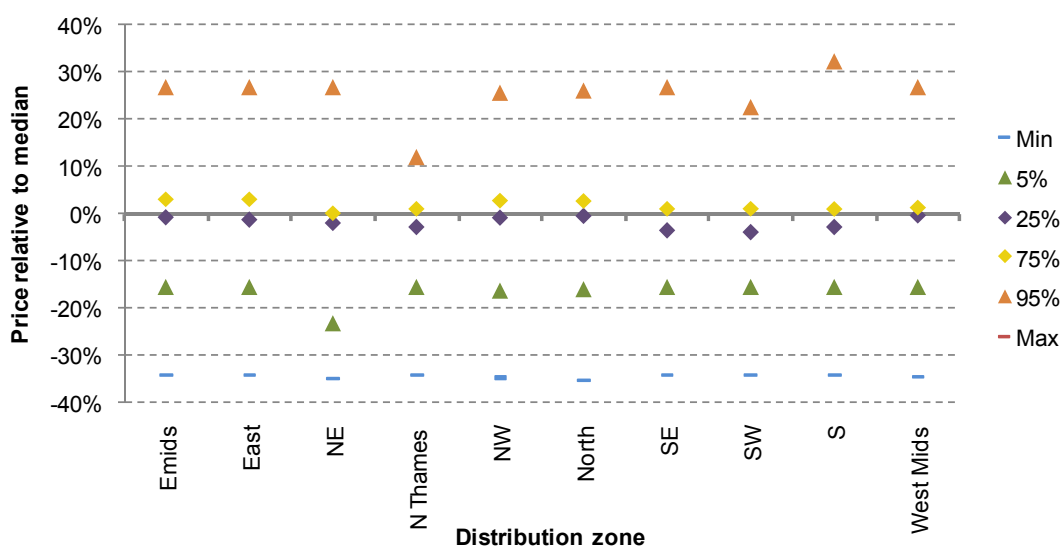
Gas and electricity prices are applied within the fuel poverty calculation using a mean fuel price for each English region and method of payment. This is a simplification of the real situation where actual fuel prices vary by both supplier and tariff within each particular region.

To investigate the effect of this uncertainty we were able to use supplementary data from the DFI on the spread of fuel prices paid by households across the country. This data provides details on the shape of the fuel price distribution for all regions and methods of payment for gas and electricity and can be used to approximate a simple error distribution. Table 6.1 and Chart 6.8 give examples of the additional data provided, which were used to constrain the frequency distributions.

<sup>34</sup> Specific reporting biases, for example under reporting of benefit income, are not included as they are inherent in most surveys of income, and not specific to fuel poverty modelling.

**Table 6.1 - Example of distribution of average annual electricity bills (for three regions and one payment method only), 2008**

PES area <sup>35</sup>	Method of payment	5th percentile	25th percentile	Median	75th percentile	95th percentile
East Midlands	Credit	£343	£383	£396	£414	£417
London	Credit	£362	£379	£402	£402	£403
Yorkshire	Credit	£356	£395	£443	£448	£448

**Chart 6.8 – Price distributions for gas bills, direct debit customers, by local distribution zone<sup>36</sup>, 2008**

For each model run, by combining the adjusted fuel costs with the adjusted full income, a new fuel poverty ratio for each household is calculated. Then the number of households with a fuel poverty ratio<sup>37</sup> below 0.1 are counted in order to calculate the new estimates of fuel poverty.

### Results

The distribution of possible values when incorporating the uncertainty in both income and fuel prices is shown in Chart 6.9. The mean value for the level of fuel poverty is approximately 3.343 million households following the addition of uncertainty, with a 95% confidence interval of between 3.299 and 3.388 million households (a range of approximately 88,000 households).

<sup>35</sup> Public Electricity Supply (PES) areas refer to the supply regions of the 14 companies created when the electricity market was privatised in 1998.

<sup>36</sup> Local Distribution Zone (LDZ) refers to the initial 12 regions allocated to each gas company to operate in when the gas market opened up to competition in 1998.

<sup>37</sup> The fuel poverty ratio is the amount spent on fuel to maintain an adequate standard of warmth as a proportion of total household income. More information is available in Chapter 1.

**Chart 6.9 - Distribution of possible values following uncertainty in fuel prices and income.**

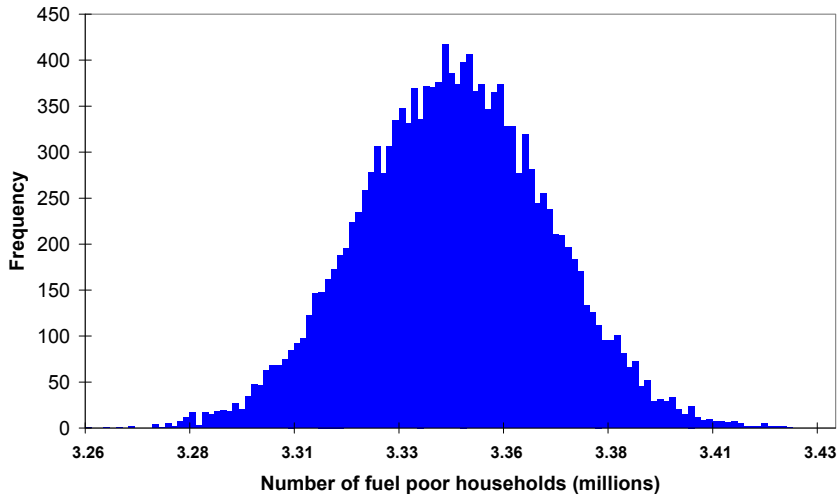


Table 6.2 also shows estimates of the effect of combined income and fuel price uncertainty on a variety of demographic and dwelling characteristics.

**Table 6.2 - Effect of uncertainty in both fuel prices and incomes**

	<i>Thousands</i>						<i>percentage</i>
	<i>Total number of households</i>	<i>Estimated number of fuel poor before uncertainty</i>	<i>Most likely value after addition of uncertainty</i>	<i>Bottom of 95% confidence interval</i>	<i>Top of 95% confidence interval</i>	<i>Width of 95% confidence interval</i>	<i>Width of interval as percentage of total number households</i>
All households	21,407	3,335	3,343	3,299	3,388	88	0.4%
Vulnerable households	15,130	2,650	2,665	2,625	2,705	80	0.5%
Lowest 30% of income	6,502	2,971	2,968	2,929	3,007	77	1.2%
Highest 70% of income	14,906	364	375	354	397	43	0.3%

In addition, estimates of the individual effects of uncertainty in income and fuel prices were also produced separately. Fuel price uncertainty alone results in a confidence interval with a range of around 81,000 households, compared to range of around 61,000 households for income uncertainty alone.

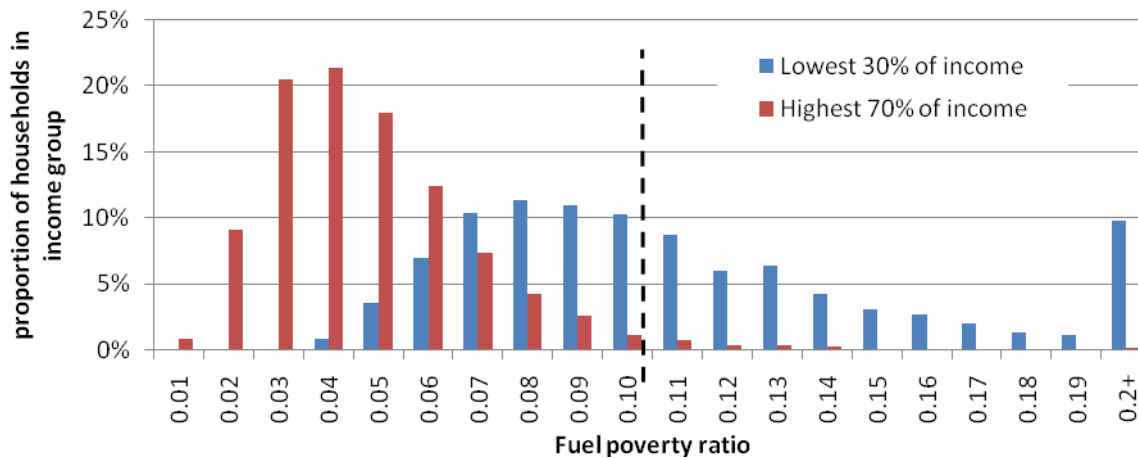
**Interpretation**

The analysis suggests that the number of fuel poor households has a most likely value of approximately 3.343 million households when uncertainty is taken into consideration. This is higher than the published estimate of 3.335 million households. We can interpret this difference in the context of the proportion of fuel poor households on each side of the fuel poverty 10 per cent line. Consider those households close to the fuel poverty 10 per cent threshold (as these cases are more likely to be shifted in or out of fuel poverty

by the effects of uncertainty). As there are more of these households to the left of the fuel poverty line (i.e. not fuel poor) than to the right of the line (the fuel poor), the addition of uncertainty is more likely to push more households into fuel poverty. Given the skewed distribution and the closeness of the fuel poverty level including modelled uncertainty to the published estimate (both can be rounded to 3.34 million households), there can be confidence in the headline measure.

Table 6.2 above shows how uncertainty affects different groups of households. The final column of the table gives an idea of how sensitive households in each group are to the effects of uncertainty. The higher the percentage, the wider the confidence interval (relative to the size of the group), and the more likely the introduction of uncertainty is to move households into or out of fuel poverty. For example, amongst households in the 'highest 70% of income', the width of the confidence interval is only 43,000 households. For those households in the 'lowest 30% of income' group, the interval is 77,000 households. The narrower range for higher income households is because these households are less likely to be close to the fuel poverty threshold, and so are more robust to the effects of uncertainty. This is illustrated in Chart 6.10 below.

**Chart 6.10 - Distribution of fuel poverty ratios by income, England 2008**



For more information on this analysis, the full report is available on the DECC website at:

<http://www.decc.gov.uk/assets/decc/Statistics/fuelpoverty/1609-2008-fuel-poverty-uncertainty.pdf>

## 7. Other data relating to drivers of fuel poverty

### 7.1 Introduction

This chapter considers data associated with the main drivers of fuel poverty. This includes consideration of actual expenditure on fuel rather than modelled expenditure as 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](http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/fuelpov_stats.aspx)

### 7.2 Expenditure on fuel

While the fuel poverty methodology models the level of consumption of each household so that an adequate standard warmth<sup>38</sup> is achieved, it is also of interest to consider the actual spend on energy of different types of households.

The Living Costs and Food Survey (LCFS) is a survey of around 6,000 households in the UK. Householders taking part in the survey are asked to record their expenditure in a “diary” over a two week period. The survey is carried out across the year with different households recording expenditure during different two week slots. While the diary is useful for understanding regular spending (e.g. food), information about semi-regular purchases (e.g. utilities) is obtained from a household interview along with retrospective information on certain large, infrequent items of expenditure (e.g. repairs). The methods of collection for each of these three types of spending allow the annual expenditure to be calculated.

The second column of Table 7.1 shows 2009 data<sup>39</sup> from the LCFS on the average yearly expenditure on fuel, which includes electricity, gas, coal, oil and other fuels (but excludes use of petrol and diesel for transport purposes). The last column in Table 7.1 shows the modelled annual fuel bill (derived using EHS data) required to maintain the adequate standard of warmth as per the fuel poverty definition.

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<sup>38</sup> See Chapter 1 for more information.

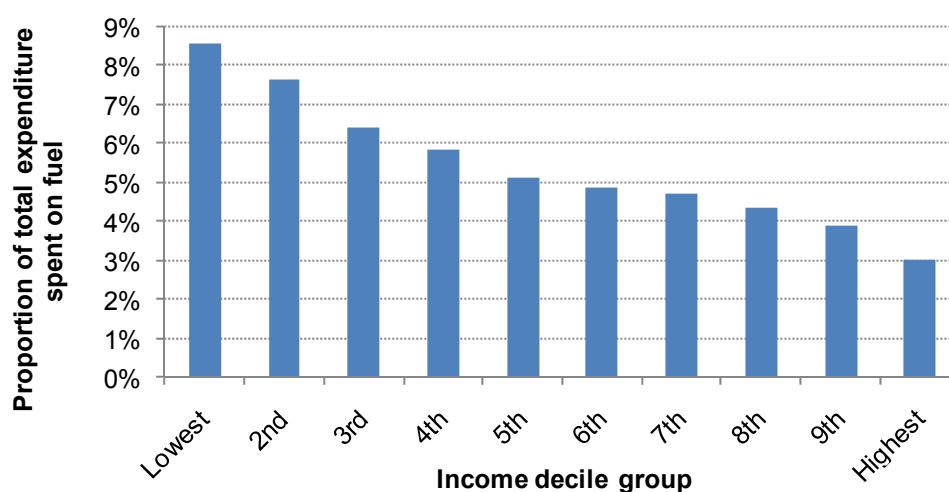
<sup>39</sup> In the LCFS, data is published as average weekly spend, therefore these figures were multiplied by 52 in order to calculate the yearly averages shown in Table 7.1.

**Table 7.1 – Actual and modelled annual spend on fuel, 2009**

Income decile group <sup>40</sup>	Average actual annual expenditure on fuel (£)	Modelled average annual spend on fuel (£)
1st (lowest)	723	1,166
2nd	848	1,197
3rd	931	1,216
4th	1,014	1,270
5th	1,024	1,276
6th	1,097	1,349
7th	1,217	1,375
8th	1,310	1,410
9th	1,336	1,485
10th (highest)	1,544	1,676
All households	1,108	1,342

Unsurprisingly, those households with higher incomes tend to have a higher actual spend on fuel than those with low incomes. As seen in Table 7.1, 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 affluence of the higher income households and also their larger dwellings, which require more heat and light than smaller dwellings. Although the modelled spend is larger than the actual spend for all income decile groups, the difference is clearly greater amongst the lower income households. For example, in the lowest income decile group, households only spent around 62 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, they spend a greater proportion of their overall expenditure on fuel than high income households. Around 8.5 per cent of the expenditure in the lowest income decile group is on household fuels, compared to just 3 per cent in the highest income decile group.

**Chart 7.1 – Proportion of total expenditure spent on fuel by income decile group, 2009**

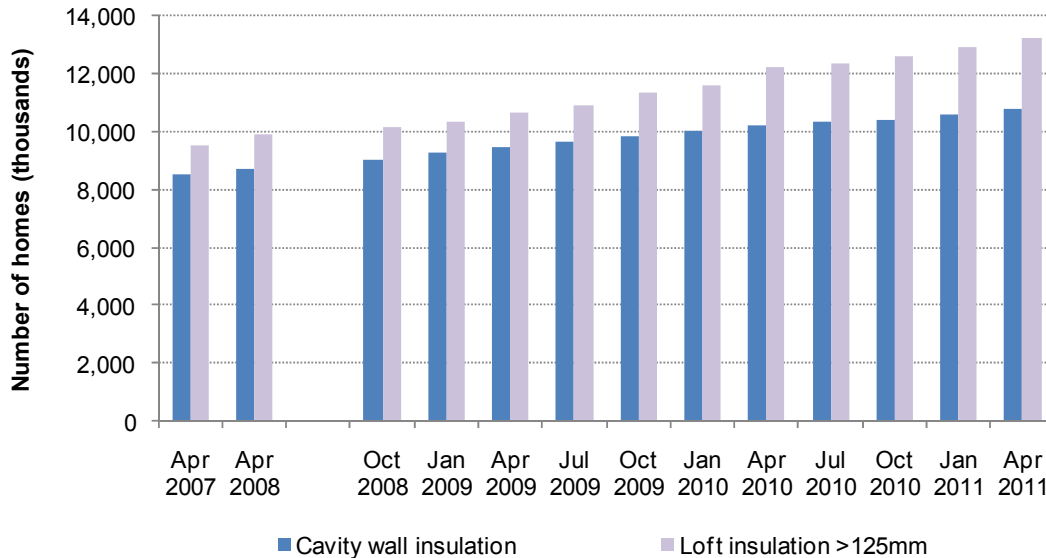
<sup>40</sup> Bandings from LCFS relate to equivalised income decile groups, whereas EHS data shows unequivalised income decile groups.

More information on the Living Costs and Food Survey is available on the ONS website at: <http://www.statistics.gov.uk/statbase/product.asp?vInk=361>

### 7.3 Energy efficiency measures

One way to remove households from fuel poverty is by improving the energy efficiency of the housing stock generally, and especially those dwellings lived in by the fuel poor. On 17<sup>th</sup> June 2011, DECC published estimates of home insulation levels in Great Britain including, for the first time, estimates of the number of homes with solid wall insulation. These statistics are published on a quarterly basis. Chart 7.2 below shows the number of homes with cavity wall insulation and loft insulation (greater than 125mm in thickness).

**Chart 7.2 – Number of homes with cavity wall insulation and loft insulation in Great Britain, April 2007 to April 2011<sup>41</sup>**

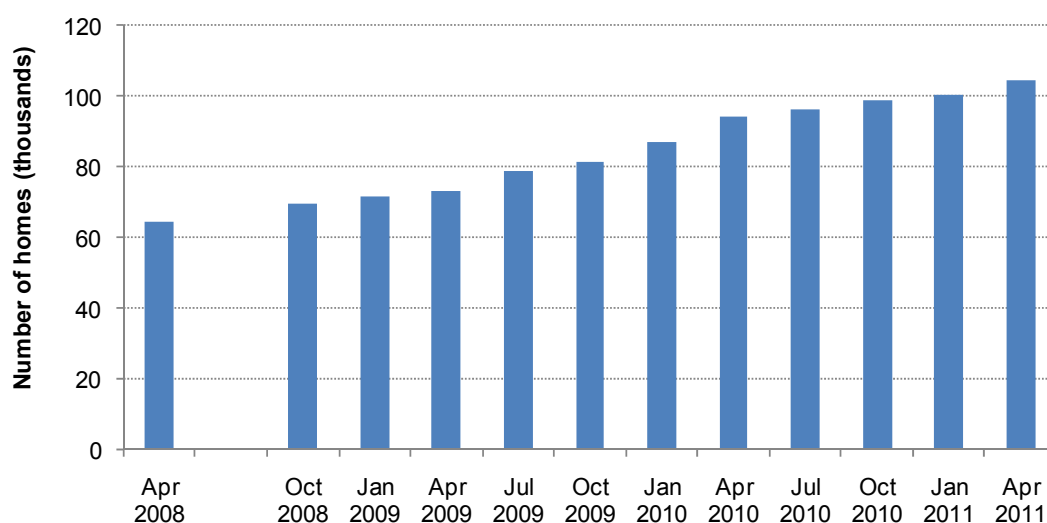


In April 2011, there were a total of 26.6 million homes in Great Britain, of which 23.3 million have lofts. Between April 2007 and April 2011, the number of homes with loft insulation with thickness greater than 125mm increased from 9.5 million to 13.2 million, a rise of 39 per cent. Therefore, in April 2011, around 57 per cent of homes with lofts had loft insulation thicker than 125mm.

Over the same period, the number of homes with cavity wall insulation increased from around 8.5 million to around 10.8 million, a rise of 27 per cent. In April 2011, there were around 18.7 million homes with cavity walls, therefore around 58 per cent of homes with wall cavities had cavity wall insulation.

Chart 7.3 below shows the number of homes with solid wall insulation.

<sup>41</sup> Note that this series was annual until quarter 4 of 2008.

**Chart 7.3 – Number of homes with solid wall insulation in Great Britain, April 2008 to April 2011**

In the three years between April 2008 and April 2011, the number of homes with solid wall insulation has increased from 65 thousand to 104 thousand, representing an increase of 61 per cent. In April 2011, there were 7.9 million homes with solid walls, of which around 1.3 per cent had solid wall insulation<sup>42</sup>.

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

## 7.4 Household income distribution

The statistics presented in this section are all sourced directly from the Department of Work and Pensions (DWP) publication 'Households below average income – An analysis of the income distribution 1994/95 to 2009/10', also known as HBAI. DWP use the data from this publication to analyse the level of income poverty.

Table 7.2 below shows the proportion of total household income that can be attributed to various income sources. The data is presented for each of the five quintile groups, where the bottom quintile group represents those households in the bottom 20% of the income distribution. In this group, over

<sup>42</sup> 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). In addition, in April 2008, about 900 thousand homes are known to have other forms of non-cavity wall insulation that fall outside this definition of solid wall insulation.

half of the gross household income came from state support (i.e. benefits and tax credits), while 32 per cent are from earnings. In the top quintile group, just 3 per cent of gross household income came from state support, while 84 per cent came from earnings.

**Table 7.2 - Income sources as a proportion of gross household income (before housing costs) by quintile group, UK, 2009/10**

	<b>Bottom quintile group</b>	<b>Second quintile group</b>	<b>Third quintile group</b>	<b>Fourth quintile group</b>	<b>Top quintile group</b>	<b>All</b>
<b>Earnings</b>	32	47	64	77	84	72
<b>Investments</b>	3	2	3	3	7	4
<b>Occupational pensions</b>	5	7	8	8	6	6
<b>Miscellaneous</b>	4	3	2	2	1	2
<b>State support received</b>	56	41	23	11	3	15

Source: FRS 2009/10

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

Table 7.3 shows the average income per week (equivalised and before housing costs) for each of the different family types. On average, on an equivalised basis, a household containing a couple with no children has more than double the income of a household containing a single adult with children.

**Table 7.3 - Mean equivalised income per week (before housing costs) for family type, UK, 2007/08 to 2009/10<sup>43</sup>**

<b>Family type</b>	<b>Mean equivalised income (£ per week)</b>
Single with children	329
Single female pensioner	366
Single male pensioner	408
Pensioner couple	472
Single female without children	479
Single male without children	505
Couple with children	518
Couple without children	667
All individuals	510

<sup>43</sup> As these results can be volatile, DWP present them as three-year averages.

One of the ways in which DWP define low income households are those where the income is less than 60 per cent of median household income (Before Housing Costs) in the UK. Table 7.4 below shows the percentage and number of children and pensioners that live in households where the total income is below 60% of the median income. In 2009/10, 20 per cent of children and 18 per cent of pensioners lived in households where the income was below 60% of the median income.

**Table 7.4 – Percentage and number of children and pensioners in households falling below 60% of the median income (before housing costs), 2009/10**

<b>Households containing group</b>	<b>Income below 60% of the median income</b>	
	<b>Percentage</b>	<b>Number (million)</b>
Children	20	2.6
Pensioners	18	2.1

More information is available on these statistics on DWP's website at:  
<http://statistics.dwp.gov.uk/asd/hbai/hbai2010/index.php?page=contents>

## 8. Projections

### 8.1 Introduction

The 2010 Annual Report on Fuel Poverty Statistics documented improvements made to the methods used for projecting the level of fuel poverty and presented projected levels of fuel poverty in England for both 2009 and 2010. It projected a level of fuel poverty in 2009 of 4.1 million households, noting that there was a range of uncertainties that could affect this figure, including the impact of social tariffs and energy efficiency installations made to the housing stock.

As this report sets out, the actual level of fuel poverty is around 0.1 million lower than the projection. Although this difference is well within reasonable error bounds for such a projection, the first section of this chapter explains why the projected figure was higher than the actual figure. This chapter also presents an updated projection for 2010 and a new projection for 2011.

### 8.2 Comparison of the projected level of fuel poverty with the actual level in 2009

As documented last year, significant improvements were made to the method of projection. This led to a projection of fuel poverty in 2009 that differed by only 0.1 million households from the actual level. Although this difference is small, it is interesting to analyse the change between 2008 and 2009 against the three drivers of fuel poverty.

- Overall, average bills were projected within 0.1 per cent of the actual average bills faced in 2009. There were some small differences by types of fuel, but overall, this is a much smaller discrepancy than might be expected, even in the light of the significant improvements made to the projections last year.
- Incomes were also projected accurately on average. However, changes in incomes for lower income households were under projected by around 2 per cent and over projected for higher income households by around 1 per cent. Again, these are both well within the expected bounds of uncertainty.
- The impact of energy efficiency improvements was slightly under estimated in the projections.

Finally, the role of social tariffs was not incorporated into the projections and, as Section 6.1 identifies, this led to a reduction in fuel poverty of around 20,000 households in 2009.

### 8.3 Projected levels of fuel poverty in England for 2010 and 2011

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

1. Changes in incomes have generally come from HM Treasury budget report<sup>44</sup> estimates of the changes in income from one year to the next.
2. Components of the Retail Prices Index (RPI)<sup>45</sup> (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 the last few months of 2011 as, at the time of publishing, there was some uncertainty over the level of prices during this period. One consequence of an earlier publication of this report is that six months of 2011 prices are unknown.
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” 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 instead. This was then applied to the projected level of fuel poverty arising from the result of income and fuel price projections. The source for these projections has been updated this year, and we now use latest information on energy efficiency installations<sup>46</sup> which DECC publish on a quarterly basis.

Chart 8.1 shows the new projections for fuel poverty in 2010 and 2011. It shows fuel poverty is projected to remain at around 4.0 million households in England in 2010 and rise slightly to 4.1m in 2011, as the 2011 price changes begin to impact on households.

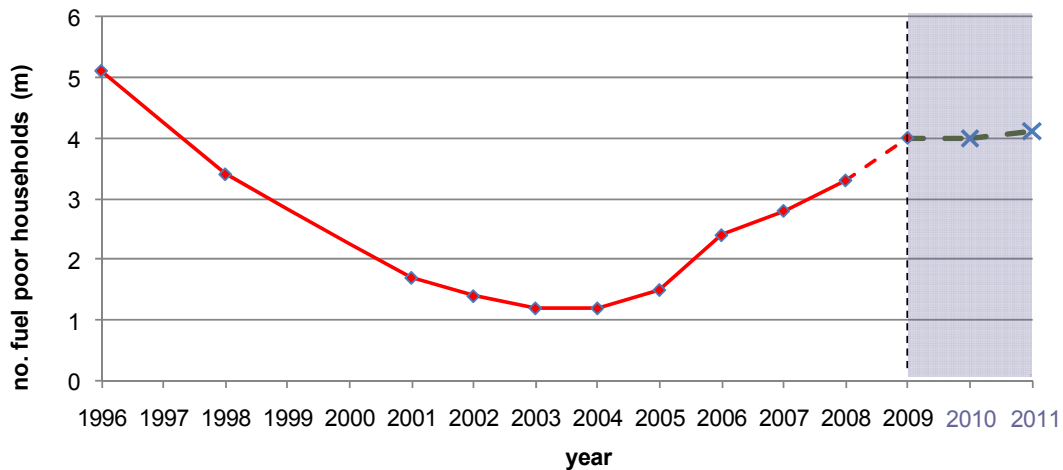
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<sup>44</sup> Budget reports can be found here: [http://www.hm-treasury.gov.uk/2010\\_june\\_budget.htm](http://www.hm-treasury.gov.uk/2010_june_budget.htm). Historically an annex to the report has presented projections of growth, income and inflation.

<sup>45</sup> More information on Consumer Price Indices can be found here: <http://www.statistics.gov.uk/CCI/nugget.asp?ID=19>.

<sup>46</sup> For more information, see: [http://www.decc.gov.uk/en/content/cms/statistics/energy\\_stats/en\\_effic\\_stats/en\\_effic\\_stats.a\\_spx](http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/en_effic_stats/en_effic_stats.a_spx)

**Chart 8.1 – Fuel poverty 1996-2009, projections 2010, 2011; England**

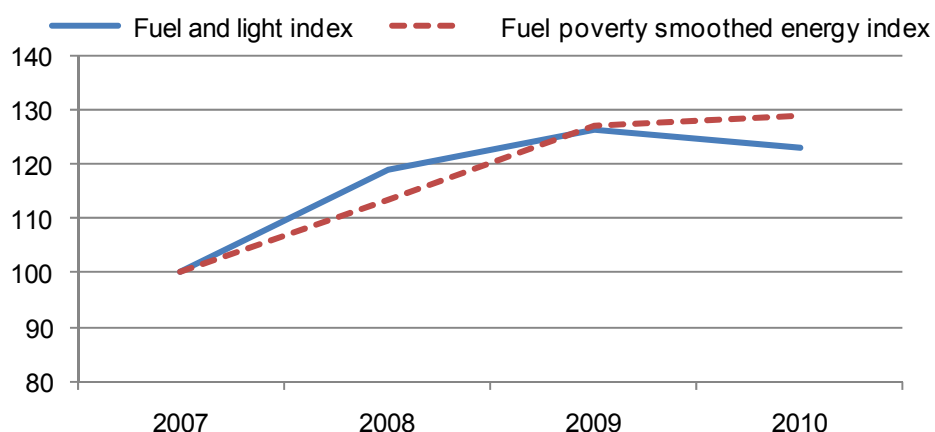


The pattern of projections for 2010 and 2011 is influenced by changes in prices, incomes and the efficiency of the housing stock. A number of points around domestic energy prices should be considered alongside these projections.

For the first time this year, DECC is publishing a projection (for 2011) that will depend on prices that are, as yet, unknown. While some price changes have already been announced for implementation later in 2011, there remains uncertainty about the overall picture, and this will have an impact on the accuracy of the projection. For the purpose of these projections, we have assumed that average prices will rise for both electricity and gas later in summer 2011. 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 from prices alone of around +/- 0.1 million households. This is because price changes announced later in 2011 will have a relatively small impact on the two year (combined) 2011 data (i.e. since we already know price levels for the first three quarters of the period). It will be 2012 before the majority of the impact of the 2011 prices are visible in the data.

The way fuel poverty is modelled, by combining consecutive years of the EHS, will also have an impact. For example, in 2010, prices fell, as illustrated in Section 3.3 of this report. However, fuel poverty in 2010 will be influenced by price levels in both 2009 and 2010 in the same way that fuel poverty in 2009 was influenced by prices in both 2008 and 2009. To illustrate this more clearly, Chart 8.2 below shows the pattern of domestic fuel prices (from the RPI fuel and light index) in each year, alongside the “smoothed” series that is reflective of prices in the combined year fuel poverty data set (both rebased to 2007=100).

Chart 8.2 – Domestic energy price indices, 2007 to 2010



The chart shows how the impact of energy price changes in any one year need to be combined with prices from the previous year when considering fuel poverty impacts. So the rises in 2008 affecting the second half of the 2008 data set were partly dampened by the lower prices in 2007, which would have been applied to the first half of the data set. Similarly, the 2010 data set will be made up from half of households experiencing 2009 prices and half experiencing 2010 prices. Therefore, the impact of the price falls in 2010 are only felt by one half of the data set. Of course the chart above is an extreme simplification in that the fuel poverty model applies prices to each household that are applicable for the year of the survey.

The projections include a conservative 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 and DIY type improvements (such as loft insulation). The projections also make a conservative estimate of the impact of social and discounted tariffs<sup>47</sup>, which will reduce bills for those households on such tariffs.

The extent to which the actual fuel poverty levels for 2010 and 2011 will differ from the above projections will depend on a number of important and uncertain factors. These include:

- Any further price changes that apply for the remainder of the period (up to the end of 2011);
- 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.

<sup>47</sup> See Section 6.1 for more details

## 9. Future developments

### 9.1 Introduction

This section details some of the planned developments for the period up to the publication of the 2010 figures in 2012. As noted in Section 1.4, all follow up work to gain National Statistics accreditation has now been completed, and this was confirmed in a letter from the Director General for Assessment and Monitoring at the UK Statistics Authority. The letter is available at:

<http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/confirmation-of-designation-letters/letter-of-confirmation-as-national-statistics---assessment-report-53.pdf>

We are committed to publishing 2010 data by mid July again next year, and this will be confirmed on the DECC publication schedule webpage:

<http://www.decc.gov.uk/Media/viewfile.ashx?FilePath=Statistics/publications/37-decc12monthstatscalendar.pdf&filetype=4&minwidth=true>

### 9.2 Modelling contract

The existing contract for providing energy modelling expertise expired in March 2011 and we have re-tendered the contract through a full competitive process. At the time of publication, we are in the final stages of awarding the contract. The new contract looks to build on the previous one, improving the level of analyses possible from the modelled data, increasing the transparency and providing better value for money. As such, the contract cost has been reduced by around a quarter, with the contractor responsible for modelling and DECC responsible for all analyses. The new contract will continue to ensure that the modelling employed in producing fuel poverty statistics uses the most up to date assumptions and evidence. Full details of the contract award and a redacted version of the new contract will be published on the contracts finder website at:

<http://www.contractsfinder.businesslink.gov.uk/>.

As part of the new contract, we are committed to publishing additional variables in future years. These will provide increased transparency and can benefit experienced users of fuel poverty and EHS data. This is likely to be achieved through publishing an additional dataset, separate from the main fuel poverty data, containing some additional variables. We will continue to develop these variables in the coming months and they should include eligibility for certain Government schemes and additional detail behind modelled fuel bills and income. We will continue to address issues of disclosure to ensure the additional variables do not compromise any confidentiality, either in the EHS itself, or in the prices used in compiling fuel poverty. In anticipation for this, we will make some further breakdowns of the 2009 modelled bills available on request via the DECC fuel poverty statistics webpage in late July 2011 and will monitor the usage of these.

### 9.3 Publication of prices

For the first time, we have published the actual gas and electricity prices used in the compilation of fuel poverty statistics. These show both the fixed and variable tariff costs by region and are available in Table 2.2.4 (electricity) and Table 2.3.4 (gas) at the following link:

[http://www.decc.gov.uk/en/content/cms/statistics/energy\\_stats/prices/prices.aspx](http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/prices/prices.aspx)

These are experimental statistics and the caveats published alongside the data should be considered before using this data.

### 9.4 Sub-regional fuel poverty, 2009

Sub-regional estimated levels of fuel poverty for 2008 were published in the Spring of 2010, building on the 2006 publication by including additional geographical breakdowns of the data. The data on sub-regional statistics continue to prove popular amongst local authorities, local Government and Parliament in particular.

A consultation undertaken with users was highlighted in the 2010 annual report on fuel poverty statistics, but the consultation findings had not been published at that stage. This has now been done, and the report is available online at:

[http://www.decc.gov.uk/media/viewfile.ashx?filetype=4&filepath=Statistics/fuel\\_poverty/933-response-la-conssubregional-fuelpov-stats.pdf&minwidth=true](http://www.decc.gov.uk/media/viewfile.ashx?filetype=4&filepath=Statistics/fuel_poverty/933-response-la-conssubregional-fuelpov-stats.pdf&minwidth=true)

One of the key findings was that users would like the figures to be updated annually. We are taking this forward and will aim to publish the 2009 sub-regional statistics in the autumn of 2011. We remain committed to producing sub-regional data annually, and aim to publish 2010 sub-regional fuel poverty at the same time as the 2010 National Statistics.

## 9.5 Rebate scheme

In 2010, as a forerunner for the Warm Home Discount policy, an energy rebate scheme ran. This data from the Department of Work and Pensions (DWP) on pension credit recipients with electricity company records to provide bill rebates for some of the most vulnerable, elderly households. For more information see the following webpage:

[http://www.direct.gov.uk/en/Pensionsandretirementplanning/Benefits/BenefitsInRetirement/DG\\_185940](http://www.direct.gov.uk/en/Pensionsandretirementplanning/Benefits/BenefitsInRetirement/DG_185940)

The outcome of the scheme is detailed here:

<http://www.dwp.gov.uk/docs/outcome-energy-rebate-scheme.pdf>

The scheme provided a direct saving of £80 to over 200,000 households and this will be reflected in the 2010 fuel poverty statistics. Although it will not be possible to identify exactly which households received the rebate, it is likely that a process similar to that employed for social tariffs will be used.

## 9.6 Hills Review of Fuel Poverty

In 2010, the Government announced an independent review to take a fresh look at the fuel poverty target and definition, to be led by Professor John Hills. More information is available on the DECC website at:

[http://www.decc.gov.uk/en/content/cms/funding/fuel\\_poverty/hills\\_review/hills\\_review.aspx](http://www.decc.gov.uk/en/content/cms/funding/fuel_poverty/hills_review/hills_review.aspx)

The review is due to report interim findings in October 2011, before the final report is published in early 2012. It is too early to say what will happen as a result of the review, but DECC will continue to monitor progress with interest.

## Annex A: Related data

Aside from the headline statistical report on the 2009 fuel poverty data, a range of additional analyses, annexes and data are available that directly link to this report.

- **Detailed tables:** These tables present the 2009 figures on fuel poverty and households numbers split by a range of dwelling characteristics and demographics.
- **Long term detailed tables:** These tables, which are available to download as a spreadsheet, present trends in fuel poverty between 2003 and 2009. The tables are a compilation of the annual detailed tables (see above) from the last few year and therefore present fuel poverty figures split by various characteristics.
- **Monitoring Indicators:** This document presents a range of indicators linked to fuel poverty that can be used alongside this report to provide greater depth to the understanding of changes in fuel poverty. For example, indicators which look in depth at 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 information on the technical side of the modelling of fuel poverty, information on the statistics and range of data available, and 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](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. For more details, contact [fuelpoverty@decc.gsi.gov.uk](mailto:fuelpoverty@decc.gsi.gov.uk). Alternatively, the data will also be available on the UK Data Archive.
- **Sub-regional fuel poverty statistics**  
Spreadsheets containing 2008 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](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, as 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 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 in 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 prices used in producing modelled bills in fuel poverty modelling. 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>

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Printed in the UK on recycled paper containing a minimum of 75% post consumer waste.

Department of Energy and Climate Change. [www.decc.gov.uk](http://www.decc.gov.uk)

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