



A National Statistics Publication



# **ANNUAL REPORT ON FUEL POVERTY STATISTICS 2010**





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## 1. Introduction

### 1.1 What is fuel poverty?

A household is said to be in fuel poverty if it needs to spend more than 10 per cent of its income on fuel to maintain an adequate level of warmth (usually defined as 21 degrees for the main living area, and 18 degrees for other occupied rooms). Although the emphasis in the definition is on heating the home, fuel costs in the definition of fuel poverty also include spending on water heating, lights and appliance usage and cooking costs.

The Fuel Poverty Ratio is defined as:

$$\text{fuel poverty ratio} = \frac{\text{fuel costs (usage x price)}}{\text{income}}$$

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

The table below shows the number of fuel poor households in England in each year it has been measured:

**Table 1 – Fuel poverty in England and the UK<sup>1</sup>, 1996-2008**

	No. of fuel poor households (m)	
	England	UK
1996	5.1	6.5
1998	3.4	4.75
2001	1.7	2.5
2002	1.4	2.25
2003	1.2	2
2004	1.2	2
2005	1.5	2.5
2006	2.4	3.5
2007	2.8	4
2008	3.3	4.5

The formula above means that the key elements in determining whether a household is fuel poor or not are:

- Income
- Fuel prices
- Consumption (dependent on the lifestyle of the household and the dwelling)

Increasing income helps to reduce the fuel poverty ratio (and possibly remove households from fuel poverty), however reducing income has the opposite effect. Decreasing fuel prices, or improvements made to the energy efficiency of the home can also reduce the fuel poverty ratio, whilst rising prices will have the opposite

<sup>1</sup> Fuel poverty figures for England (and the UK) in 1998 and 2002 figures are estimates based on movements in energy prices, incomes and energy efficiency.

effect. It is rare for a dwelling to become “less efficient”, but an increase in consumption can be required if a change in the lifestyle of the householders means they spend longer at home, or have children etc.

In calculating the fuel poverty ratio, fuel costs are modelled, dependent on the type of people that live in the home, the fuels used, and the dwelling itself. It is necessary to model bills as 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.

More detailed information and explanation of how consumption, prices and income are measured is included in the updated comprehensive methodology document 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)

Fuel poverty data is used widely throughout Government to help develop and target policies towards those most likely to be fuel poor, or most at risk. 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 also includes comprehensive information on the 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 Measurement and data sources

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

- Fuel poverty is modelled on DECC energy prices data and, in England, the data from the **English Housing Survey (EHS)**;
- In Scotland, the **Scottish House Condition Survey (SHCS)** is used to model fuel poverty. The main differences in the Scottish definition are the more stringent interpretation of a satisfactory heating regime for pensioners, long-term sick and disabled households, meaning the adequate standard of warmth is achieved at a higher temperature for these groups, and the different approach to under-occupancy with regard to heating regimes<sup>2</sup>;
- The **Living in Wales Survey**, which uses a comparable methodology to England, is used to calculate figures for Wales;
- The **Northern Ireland House Condition Survey** and a method very similar to that used in England is used to calculate the Northern Ireland fuel poverty levels.

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<sup>2</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>

Scotland, Wales and Northern Ireland each publish reports on their national level of fuel poverty. While this report concentrates most heavily on fuel poverty and a detailed analysis of the fuel poor in England, chapter 2 presents estimated levels of fuel poverty in the UK, by combining latest estimates and projections for each country.

More details of the devolved reports can be found at the links below:

- Scotland:  
<http://www.scotland.gov.uk/Topics/Statistics/SHCS/FPinScotland/>  
<http://www.scotland.gov.uk/Topics/Statistics/SHCS>
- Wales: <http://new.wales.gov.uk/about/aboutresearch/social/ocsropage/living-wales/?lang=en>
- Northern Ireland:  
[http://www.dsdni.gov.uk/index/hsdiv-housing/fuel\\_poverty.htm](http://www.dsdni.gov.uk/index/hsdiv-housing/fuel_poverty.htm)  
[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 of Communities and Local Government (CLG). It covers all tenures 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, the people living there, and their views on housing and their neighbourhoods.

The EHS consists of a number of component surveys, the two most important for fuel poverty being a survey of the physical condition and features of the dwelling, and an interview survey with the householders living in the dwelling. From this information, a detailed picture of the energy requirement can be modelled.

The EHS was formed in 2008, merging the former English House Condition Survey (EHCS) and Survey of English Housing (SEH). The creation of the new EHS has had little impact on the measurement on fuel poverty – two key improvements of the EHS are in the sampling methodology and the representation of household types (in the weighted data). The EHS better reflects the type of households, and in particular, the size of households compared with the EHCS. As a result, the EHS methodology increases slightly the number of single person households, relative to the EHCS methodology. The impact of this on fuel poverty is to slightly increase the number of households that are fuel poor, relative to the EHCS methodology – this is because a greater proportion of single person households are fuel poor (see chart in chapter 4.2 for more details). For more details of the improvements made in the EHS, see the EHS Headline Report, or the forthcoming 2008 EHS Housing Stock Report<sup>3</sup>.

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<sup>3</sup> Link to EHS publications:

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

For more information on the EHS generally, see:

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

EHS data for 2008 will be available in November 2010 from the UK Data Archive. This reporting lag is due to the time it takes to administer, quality assure and validate the survey results.

#### 1.4 National Statistics Assessment

During the first half of 2010, the UK Statistics Authority (UKSA) assessed the fuel poverty statistics for accreditation as a National Statistic. The assessment was successful, and fuel poverty statistics were granted National Statistics status, subject to completion of three requirements that the UKSA identified. Plans to address these requirements are covered in more detail within chapter 8.

National Statistics are produced to a high standard, in compliance with a strict code of practice, meeting the eight principles and three protocols of the code. Some of the key elements of the code are that National Statistics must:

- Meet defined user needs;
- Be produced, managed and disseminated impartially and to high standards;
- Be explained well;
- Be produced without political interference; and
- Have publication dates announced in advance.

As part of the assessment process, DECC statisticians provided a range of evidence to the assessment panel and held detailed discussions with the panel, answering questions on compliance with the code of practice. The assessment panel also carried out a user consultation with over 20 key users of fuel poverty data and this helped to form some of their recommendations. DECC statisticians received anonymised feedback from this user consultation and this has helped consider future work and developments of fuel poverty statistics. Many of the recommendations and feedback has been acted upon in this report, although one of the requirements (on quality indicators) is being addressed separately and a short report will be published in late 2010/early 2011 to address this requirement.

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.

The full National Statistics assessment report can be found at:

<http://www.statisticsauthority.gov.uk/assessment/assessment-reports/assessment-report-53---fuel-poverty.pdf>

### 1.5 Other developments since last year

Analysis contained in this report builds on the first annual statistics report on fuel poverty, published in October 2009. It repeats many of the most useful pieces of analysis on 2008 data, and extends these in a number of places. In particular, the methodology used to produce projections has been improved following analyses to understand the difference compared with outturn levels of fuel poverty. More on this is included in chapter 7 of this report. Work has continued on producing a correct methodology for introducing the measurement of social tariffs into the calculation of fuel poverty and brief details of this are included in chapter 8. Use of sub-regional levels of fuel poverty has also been monitored since publishing the 2006 levels, and positive user engagement has led to work starting on updating these to 2008. 2008 sub-regional levels of fuel poverty should be published towards the end of 2010 or early in 2011 (again, see chapter 8 for more details).

### 1.6 Related data

This is the headline statistical report on the fuel poverty data for 2008. Aside from this report, a range of additional analyses, annexes and data are available that directly link to this report.

- Detailed tables – this annex to the main report presents the 2008 figures on fuel poverty and household numbers split by a range of household characteristics and demographics.
- Long term detailed tables – available to download as a spreadsheet, this annex presents trends in fuel poverty between 2003 and 2008. It acts to compile annual detailed tables, and so presents fuel poverty split by various characteristics.
- Indicators – this annex presents a range of indicators linked to fuel poverty that can be used alongside this report to provide greater depth to understanding changes in fuel poverty. For example, it looks in depth at income, fuel bills and housing. The indicators included in this document were discussed and agreed by the fuel poverty methodology group and have been continually reviewed since.
- Methodology documentation – a new and comprehensive methodology manual has been published in 2008, combining the former document with all subsequent changes in methodology. This explains both the technical side of the modelling of fuel poverty, and the statistics and range of data available.
- Data set – the full fuel poverty data will be available on request, from the end of October. For more details, contact [fuelpoverty@decc.gsi.gov.uk](mailto:fuelpoverty@decc.gsi.gov.uk). Alternatively, for users of the UK Data Archive, the data will also be lodged there for download.
- Sub-regional fuel poverty – spreadsheets of data are available to download presenting the 2006 level of fuel poverty at local authority and parliamentary constituency level. 2008 sub-regional data will be available in late 2010 or early 2011.

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

- Households Below Average Incomes (HBAI) – published by the Department for Work and Pensions (DWP), providing information on low income households.
- English Housing Survey (EHS) – as described in section 1.3, the main source of housing and household data used in compiling fuel poverty.
- Living Costs and Food Survey (LCFS – previously the Expenditure and Food Survey) – 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) – published by DECC, this publication records average quarterly and annual bills in different regions of the UK and different payment methods for both gas and electricity. QEP also contains a range of other information, presented across a number of years. The data used to compile these tables is the main source of prices used in producing modelled bills in fuel poverty modelling.
- Energy Consumption in the UK (ECUK) – also published by DECC, this presents various tables relating to energy consumption and energy efficiency, split by type of consumer and fuel type.

### 1.7 Further information

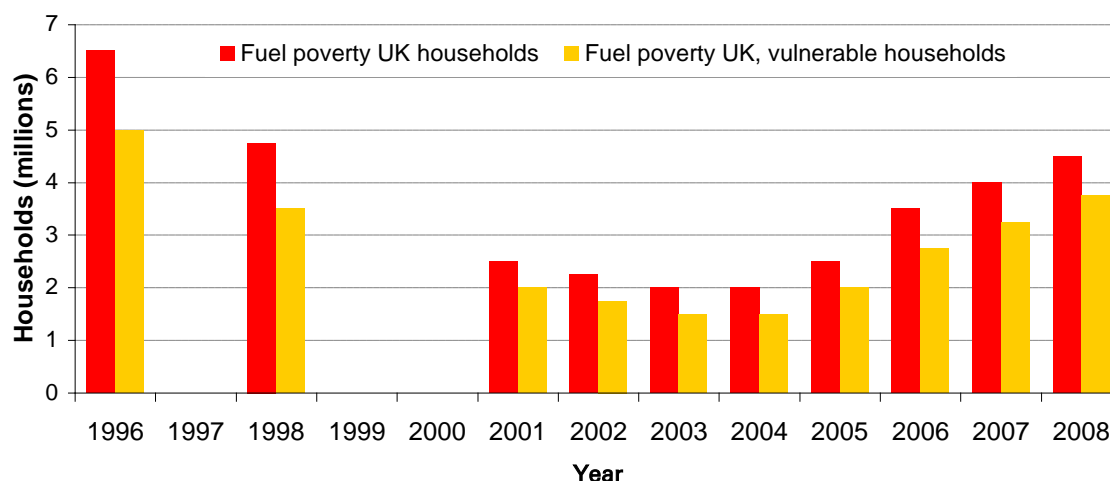
For further information on the data presented in this report, please contact [fuelpoverty@decc.gsi.gov.uk](mailto:fuelpoverty@decc.gsi.gov.uk).

## 2. Fuel poverty in the UK, 2008

### 2.1 UK

In 2008, the number of households in fuel poverty in the UK was estimated to be around 4.5 million, a rise of around 0.5 million from 2007. This represents about 18 per cent of all households. The UK figure is based on latest figures for England and Scotland, along with extrapolated estimates for Wales and Northern Ireland, which are both based on earlier figures. In 2008, around 3.75 million vulnerable households in the UK were fuel poor, an increase from around 3.25 million the previous year. A vulnerable household is one that contains the elderly, children or somebody who is disabled or long term sick. In England, over 70 per cent of households are classified as vulnerable.

Chart 1 – Fuel poverty in the UK, all households and vulnerable, 2008<sup>4</sup>

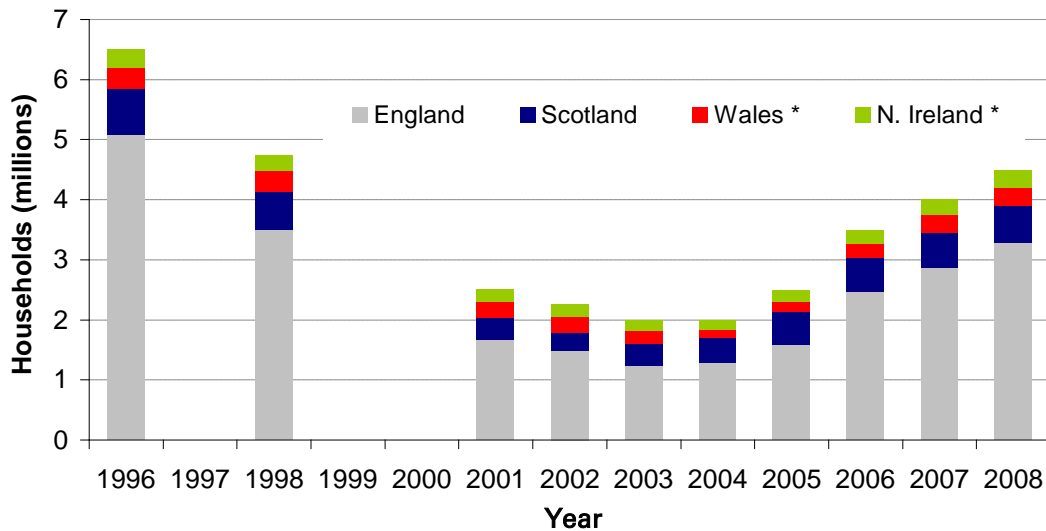


The reduction in fuel poverty between 1996 and 2003 was due to a combination of falling prices, rising incomes and the installation of energy efficiency measures in dwellings helping to reduce energy consumption and therefore bills. Since 2003, energy prices have risen, and have led to the rise in fuel poverty. For some households, these price rises have been partially offset by rising incomes and improvements in the energy efficiency of their home, therefore reducing the impact of the price rises. However, the overall effect of price rises since 2004 has far outweighed the impact of increasing incomes and energy efficiency. More details on prices are given in section 3.5 and further information on the relative effects of each component of fuel poverty, in section 3.1 of this report.

Chart 2, provides a split of fuel poverty amongst each country of the UK.

<sup>4</sup> Note: fuel poverty was not calculated in 1997, 1999 or 2000

Chart 2 – Fuel poverty in each country of the UK, 2008



\* estimated for 2007 and 2008

Generally, fuel poverty in each country has followed a similar trend over the period depicted in the chart, and has been directly affected by changing domestic energy prices. The proportion of households that are fuel poor in each country is also affected by the methodology used to measure the fuel poor, the housing stock of the country, the fuels which are prevalent in heating homes and the level of income of householders. Out of the four nations, the proportion of all households that are fuel poor is highest in Northern Ireland, followed by Scotland, then Wales and finally England. The most recent proportions of households in each country that are fuel poor are as follows (England, 2008 15.6 per cent; Scotland, 2008 26.5 per cent; Wales, 2006 projected 20 per cent; Northern Ireland, 2006 34.2 per cent). For more information about the measurement of fuel poverty in each country, see the references in chapter 1 of this report.

## 2.2 England

Chart 3 shows how many households were living in fuel poverty in England between 1996 and 2008 and the subsequent table gives detailed numbers for England and the UK:

Chart 3 – Fuel poverty in England, 1996-2008

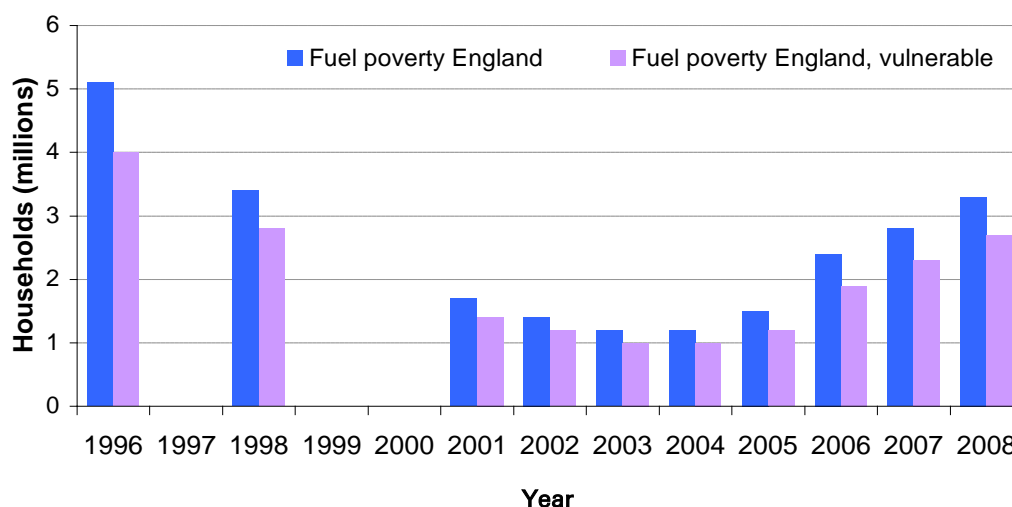


Table 2 – Fuel poverty

<i>fuel poverty (millions of households)</i>		1996	1998	2001	2002	2003	2004	2005	2006	2007	2008
England	All	5.1	3.4	1.7	1.4	1.2	1.2	1.5	2.4	2.8	3.3
	Vulnerable	4	2.8	1.4	1.2	1	1	1.2	1.9	2.3	2.7
UK	All	6.5	4.75	2.5	2.25	2	2	2.5	3.5	4	4.5
	Vulnerable	5	3.5	2	1.75	1.5	1.5	2	2.75	3.25	3.75

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

In 2008, 3.3m households in England were fuel poor, around 15.6 per cent of all households in England. This is a rise of around 0.5m since 2007. Around 2.7m of these households were vulnerable, which represents 17.5 per cent of all vulnerable households in England.

### 2.3 Fuel poverty distribution, England

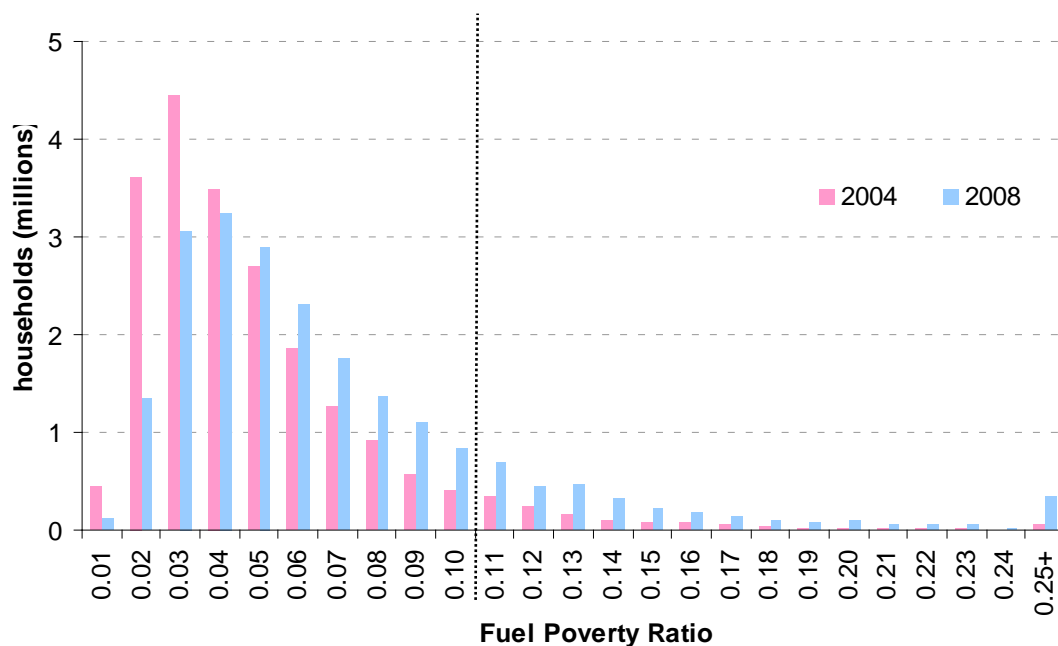
The measurement of fuel poverty uses the ratio shown below:

$$\text{fuel poverty ratio} = \frac{\text{fuel costs (usage x price)}}{\text{income}}$$

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 4, illustrates the distribution of fuel poverty ratios of English households in 2004 (at the recent “low” point of fuel poverty) and 2008.

**Chart 4 – Fuel poverty ratios – required spend on energy as a proportion of income, 2004 and 2008<sup>5</sup>**



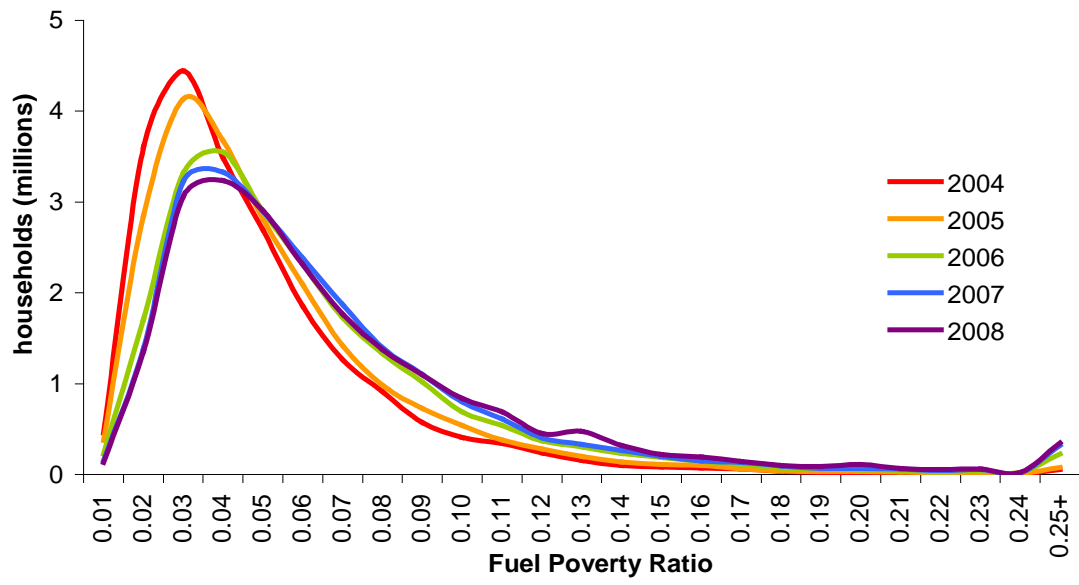
Between 2004 and 2008, rising prices have led to a shift of households towards the fuel poverty threshold (illustrated by the dotted line) and, in some cases, beyond. The modal value has shifted from 3 per cent of income in 2004 to 4 per cent in 2008, whilst the median has shifted from 3.5 per cent in 2004 to 5 per cent in 2008. There are also more households closer to the 10 per cent line in 2008 than in 2004, with almost twice 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 2008 is emphasised in chart 5, which shows the distribution of fuel poverty ratios in each year between 2004 and 2008:

<sup>5</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. This will also affect both the mode and median fuel poverty ratios as presented in the text. More information can be found at:

[http://www.decc.gov.uk/media/viewfile.ashx?filepath=what we do/supporting consumers/addressingfuelpoverty/strategy/annual\\_report/file48039.pdf&filetype=4](http://www.decc.gov.uk/media/viewfile.ashx?filepath=what_we_do/supporting_consumers/addressingfuelpoverty/strategy/annual_report/file48039.pdf&filetype=4)

Chart 5 - Fuel poverty ratios – required spend on energy as a proportion of income, 2004-2008



### 3. Contributions to the change in fuel poverty between 2007 and 2008

#### 3.1 Separation of the three effects

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

- Income;
- Fuel bill;
- Fuel consumption (which is affected specifically by lifestyle of the people living in the home, the fuels they use, their dwelling and energy efficiency)

In recent years, this section of the report has considered the change in fuel poverty and attempted to split that amongst each of the factors above. Naturally 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. However, the impact of rising incomes and improvements in the energy efficiency of housing have helped to partially offset the price changes.

The first part of this chapter considers the impact of these three factors between 1996 and 2008. As explained in the 2007 statistics report, a number of improvements have been made to the methodology used to model fuel bills for households over the 13 year period. The cumulative effect of these changes is to increase the amount of energy consumed for any given household, holding fixed their dwelling and the lifestyle and habits of the householders. For example, the thermal bridging algorithm<sup>6</sup>, introduced in 2005 led to an increase in the amount of energy required for most households to achieve the adequate standard of warmth. To accurately split the change in fuel poverty over the period into the three components, it is desirable to isolate methodological changes. Work has been undertaken since the 2007 report, to isolate as many of these changes as possible, and present the figures on a more “consistent” basis. This has shown that the average household modelled energy consumption for fuel poverty calculations has fallen by around 16 per cent between 1996 and 2008. This is largely due to improvements in the energy efficiency of housing over the period, which has meant that the adequate standard of warmth can be achieved (on average) using less energy.

Between 1996 and 2008, fuel poverty in England fell, from 5.1m households to 3.3m, a reduction of around 1.8m households. With the rise in the number of households in the country, this equated to roughly a reduction of two fifths of the percentage of households that were fuel poor.

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<sup>6</sup> The “thermal bridging algorithm” accounts for non-repeating thermal bridges, as published in the SAP 2005 specification, and was incorporated into the fuel poverty methodology from 2005, increasing fuel consumption, and so fuel poverty significantly (>100,000 households).

**Table 3 – Fuel poverty 1996 and 2008**

Year	No. households fuel poor	% of households fuel poor
1996	5.1	26.0
2008	3.3	15.6

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. Another way to look at the impacts is to describe their relative factor over this period, expressed as a fraction of the total change. If the total change in fuel poverty (i.e. a 1.78 million reduction from 1996 to 2008) 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 per cent of the change in fuel poverty).

This gives rise to the following relative effects:

- Incomes rose (see section 3.4), affecting the percentage of households in fuel poverty by a factor of -1.85 (ie. Removing households from fuel poverty)
- Fuel prices rose (see section 3.5), affecting the percentage of households in fuel poverty by a factor of +1.00 (ie. Pushing households into fuel poverty)
- Energy consumption, largely reflecting aggregate improvements in energy efficiency, fell by around 5 per cent affecting the percentage of households in fuel poverty by a factor of -0.15

Overall these changes total -1, which represents a drop of 1.78 million households in fuel poverty or a reduction of 10.4 percentage points over the period.

Although these changes are similar to those presented last year, this is due to the difficulty 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.

### 3.2 Comparing the change for different periods

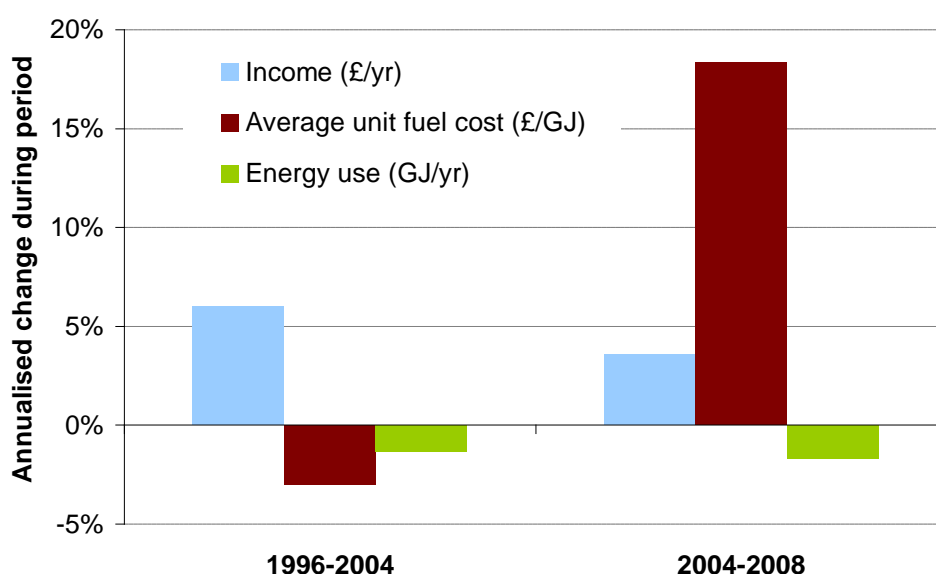
Given the rise in fuel poverty since the low point of 2003 and 2004, it is also interesting to compare what has driven the changes in fuel poverty between 1996 and 2004, and then subsequently between 2004 and 2008. Table 4 shows the average income, fuel cost (per GJ, defined as the average energy cost divided by average consumption across all households, ie. incorporating all fuels according to their use) and modelled energy consumption for households in the lowest three income deciles in 1996, 2004 and 2008. The table focuses on the lowest three deciles as this is where around 90 per cent of the fuel poor have been situated, and holds constant the methodology for the fuel poverty energy modelling over the period.

**Table 4 – Average income, fuel cost and modelled energy use 1996, 2004 and 2008 for the lowest three income deciles**

Year	Income (£/yr)	Average Unit Fuel cost (£/GJ)	Energy use (GJ/yr)
1996	£5,650	8.6	105.0
2004	£9,020	6.8	94.5
2008	£10,390	13.3	88.3

To make more sense of the figures in the table above, they can be “annualised”, that is the change between 1996-2004 and 2004-2008 can be broken down proportionally as an annual change during each period. This is shown in the chart below.

**Chart 6 – Annualised change in components 1996-2004 and 2004-08**



The chart shows that between 1996 and 2004, all three factors were working together to reduce fuel poverty – the average fuel price fell by around 3 per cent per year, income rose by around 6 per cent each year and energy use reduced, due to improvements in the housing stock, by around 1 per cent each year. Between 2004 and 2008, a different picture can be seen – incomes continued to rise, by less than during the earlier period, while improvements in energy efficiency gathered pace, such that modelled energy consumption was falling at just under 2 per cent per year. However, fuel prices rose at around 18 per cent per year, dominating both of the other factors.

### 3.3 Change in fuel poverty 2007-2008

Between 2007 and 2008, fuel poverty in England rose, by around 0.5m households. Analysis has been undertaken to apply 2007 prices to the 2008 fuel poverty data, providing an understanding of what impact price has made on fuel poverty, and what the level of fuel poverty would be had incomes and energy efficiency remained

unchanged over the period. The same was repeated using 2007 incomes and holding prices fixed, and this gives an indication of the role of incomes. Finally, by applying 2007 prices and incomes, an estimate of the role of energy efficiency improvements between the two years can be made.

Table 5 sets out the picture, starting with a position of 2.8m fuel poor households in 2007.

**Table 5 – Fuel poverty change, 2007 to 2008**

	Fuel poor (%)	Change in fuel poor (percentage points)	Change in fuel poverty
<b>2007</b>	<b>2.8m (13.2)</b>		-
Prices		<b>+ 3.8</b>	<b>+ 0.81m</b>
Income		<b>- 1.0</b>	<b>- 0.22m</b>
Energy consumption		<b>- 0.4</b>	<b>- 0.08m</b>
<b>2008</b>	<b>3.3m (15.6)</b>	<b>+ 2.4</b>	<b>+0.51m</b>

Unsurprisingly, the biggest contribution to the change in fuel poverty between 2007 and 2008 has come from rising prices. Without the counter effects of rising incomes and falling energy consumption, prices alone may have shifted around 800,000 households into fuel poverty. Rising incomes helped to keep just over 200,000 of those out of fuel poverty. An estimated reduction in fuel poverty of around 80,000 households can be attributed to energy efficiency improvements between 2007 and 2008 using the methodology employed here.

These figures are broadly in line with those presented in the 2007 statistics report. The impact of rising incomes in 2008 is slightly lower than that for 2007, as incomes rose by less in 2008 compared with 2007 (see chapter 3.4 for more detail). The impact of energy efficiency improvements in 2007 was harder to pinpoint, due to the introduction of the fourth heating regime<sup>7</sup> in the 2007 statistics and this will similarly have a small impact in the 2008 data (due to the combining of years). The fourth heating regime is estimated to have a maximum effect of reducing fuel poverty by around 50,000 households, meaning a lower bound for the impact of energy efficiency between 2007 and 2008 is around 30,000 households.

Interpreting these results can be difficult – rising energy prices impact on nearly all households; 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 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

<sup>7</sup> See methodology update note at fuel poverty statistics page: [http://www.decc.gov.uk/assets/decc/Statistics/fuelpoverty/1\\_20091020153324\\_e\\_@@\\_updatesmodificationsfuelpovertymethodology.pdf](http://www.decc.gov.uk/assets/decc/Statistics/fuelpoverty/1_20091020153324_e_@@_updatesmodificationsfuelpovertymethodology.pdf)

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>8</sup> of all households. Between 2007 and 2008, this rose from 6.52 per cent, to 6.78 per cent, an increase of 0.26 percentage points.

- Increasing fuel prices alone over the period would have led to an increase in the fuel poverty ratio of around **0.7** percentage points.
- This is reduced by the impact of rising income and reduced consumption (due to energy efficiency improvements), and these are roughly equally responsible for a combined **-0.44** percentage point drop in the ratio, leaving a net increase of **0.26** percentage points in the fuel poverty ratio.

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.

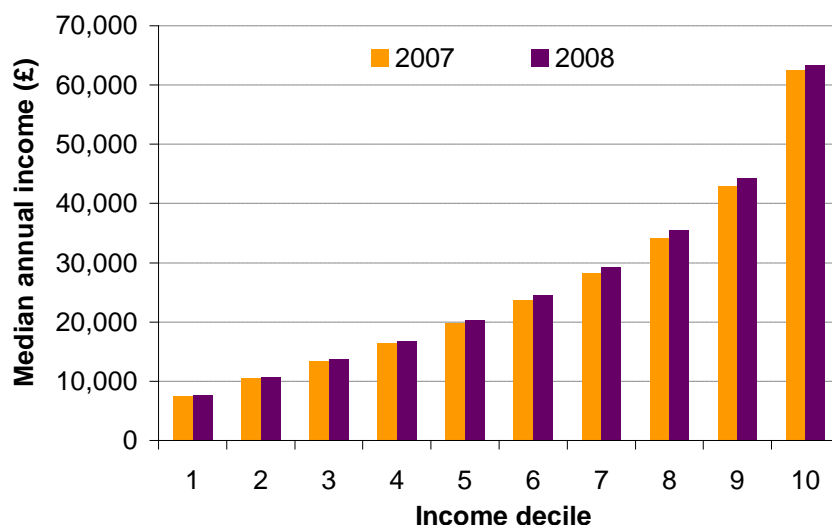
### 3.4 Income

In 2008, rising incomes continued to help households to avoid falling into fuel poverty.

Chart 7 below shows the median income levels for each income decile for 2007 and 2008, as recorded by the EHCS (2007) and EHS (2008). 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, and is not deflated by growth or inflation, nor equivalised for the size of the households.

The chart illustrates that median income for each decile has increase by between 2 and 4 per cent between 2007 and 2008.

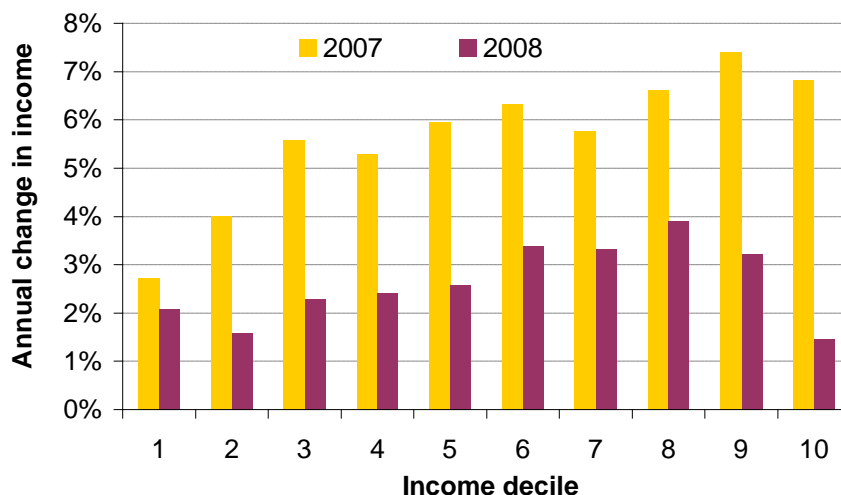
**Chart 7 – Median annual household income by income decile from EHCS/EHS 2007, 2008**



<sup>8</sup> Defined as the modelled fuel bill divided by income

Although incomes rose between 2007 and 2008, this rise was at a slower rate (chart 8) than between 2006 and 2007, possibly influenced by the economic slowdown.

**Chart 8 – Change in median income compared with a year earlier, by income decile, 2007 and 2008**

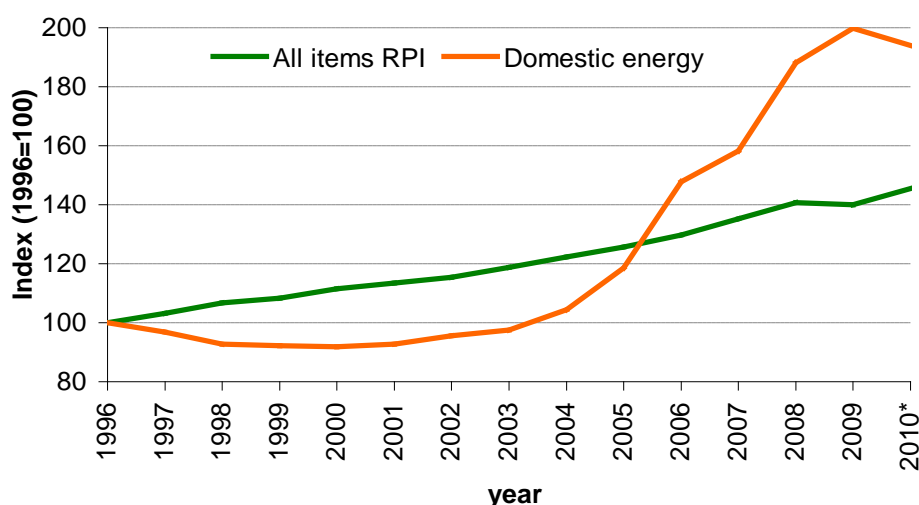


### 3.5 Prices

In recent 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 to rise from around 1.2m households in England to 3.3m in 2008.

Chart 9 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 9 – Domestic energy prices<sup>9</sup> and the Retail Prices Index, 1996-2010\***

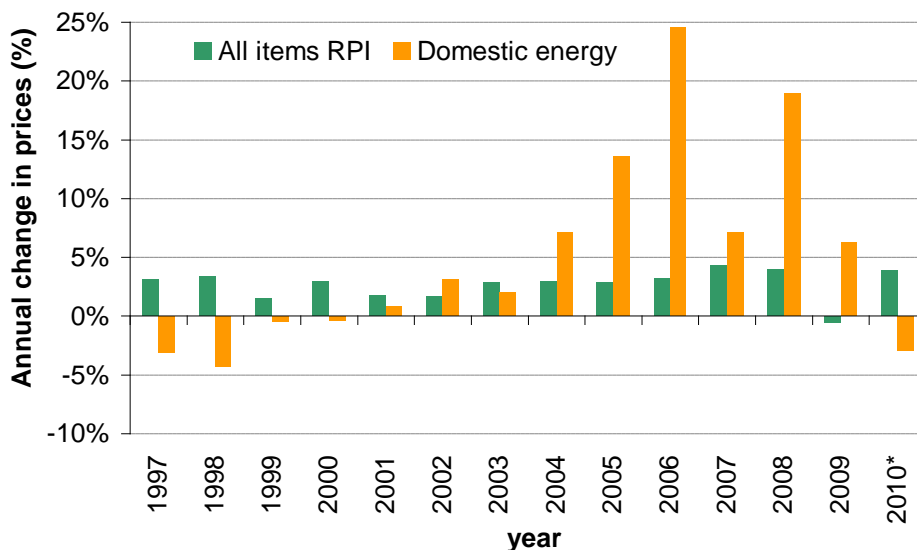


\* 2010 represents an average of January-August as figures for September to December were not available at the time of publication

<sup>9</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

The chart shows that between 1996 and 2005, prices for domestic energy had risen more slowly than general inflation. However, between 2004 and 2009, annual price increases for energy outstripped general price increases. This is further emphasised by the chart below, which shows annual rates of change over the period.

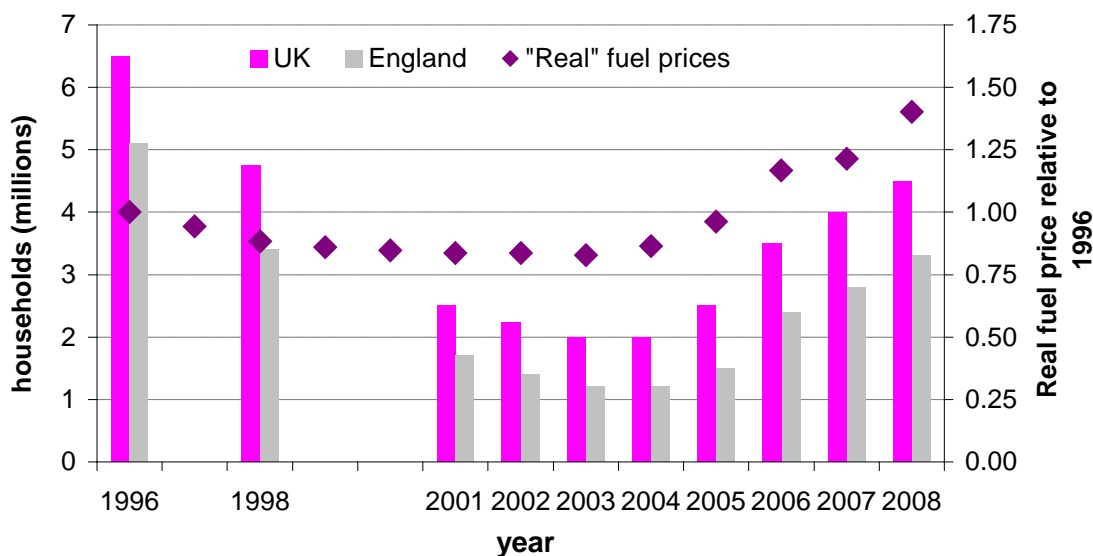
Chart 10 – Annual inflation for domestic energy prices and the Retail Prices Index, 1997-2010\*



\* 2010 represents an average of January-August as figures for September to December were not available at the time of publication

Chart 11 illustrates the impact that rising prices present for fuel poverty. It compares fuel poverty levels for 1996-2008 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.

Chart 11 – Fuel poverty and real fuel prices<sup>10</sup>, 1996-2008

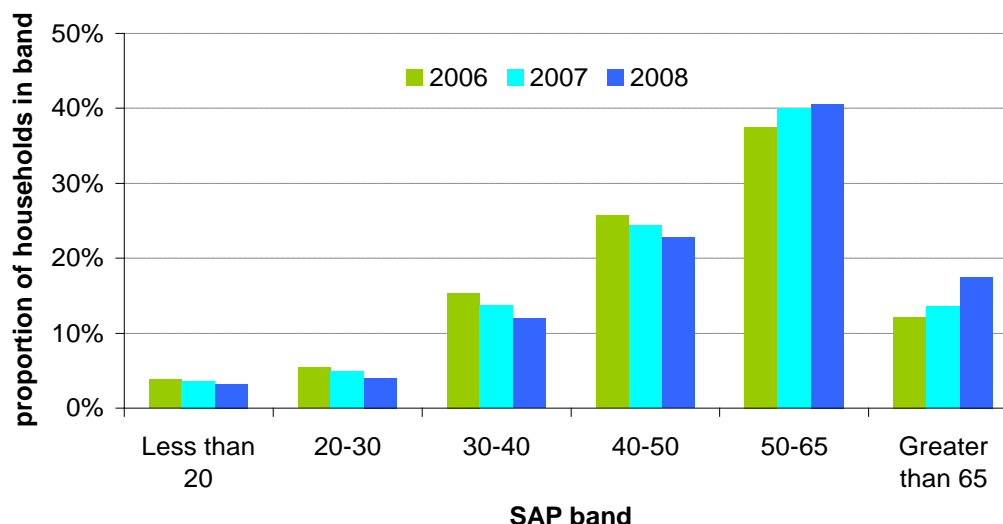


<sup>10</sup> <http://www.decc.gov.uk/en/content/cms/statistics/publications/prices/prices.aspx>

### 3.6 Energy efficiency

The average energy efficiency of homes, as measured by the Standard Assessment Procedure<sup>11</sup> (SAP05) increased again in 2008, rising from 49.9 in 2007, to 51.6 in 2008. The number of dwellings with SAP ratings above 50 increased further (by just under 1 million between 2007 and 2008), and nearly 60 per cent of occupied homes in England are now in this group.

Chart 12 – Percentage of dwellings by SAP bands, 2006-2008



The table below looks at the split 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) in the last four years.

Table 6 – Average SAP05 ratings for dwellings by tenure, 2005-2008

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

In any one year, energy efficiency measures only 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 incur any change in efficiency measures in the year.

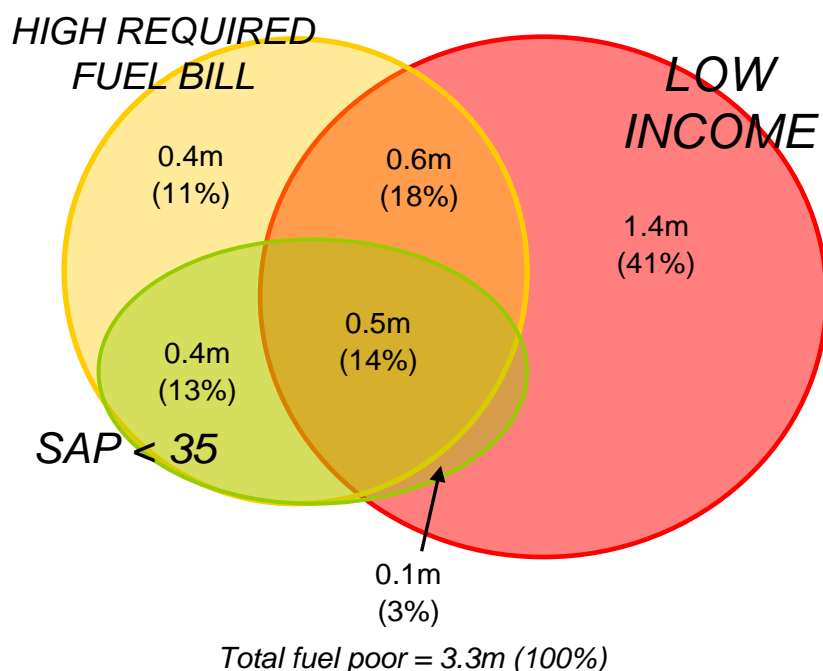
<sup>11</sup> For more information on SAP ratings, see <http://projects.bre.co.uk/sap2005/>

## 4. Detailed analysis of Fuel Poverty, 2008

The ‘Detailed Tables’ Appendix (published 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)) contains a range of detailed analyses of the headline 2008 fuel poverty data for England. Some of the breakdowns available in the detailed tables, and other analysis of the headline figures, are included in this chapter.

The Venn Diagram below attempts to quantify the reasons (split by the three main drivers) behind the level of fuel poverty in England. The thresholds used to produce this chart are subjective, but they provide a way of identifying the importance of the key determinants of fuel poverty. The chart was first produced in the 2009 annual report on fuel poverty statistics (see chart 10 of [http://www.decc.gov.uk/Media/viewfile.aspx?FilePath=Statistics/fuelpoverty\1\\_20091020153241\\_e@@\\_annualreportfuelpovertystats2009.pdf](http://www.decc.gov.uk/Media/viewfile.aspx?FilePath=Statistics/fuelpoverty\1_20091020153241_e@@_annualreportfuelpovertystats2009.pdf)) and has been repeated for the latest data. Modelled fuel bills and SAP ratings are naturally not independent of each other therefore it is not surprising to see the overlap between these two categories.

Chart 13 – Fuel poverty split amongst the key determinants, 2008



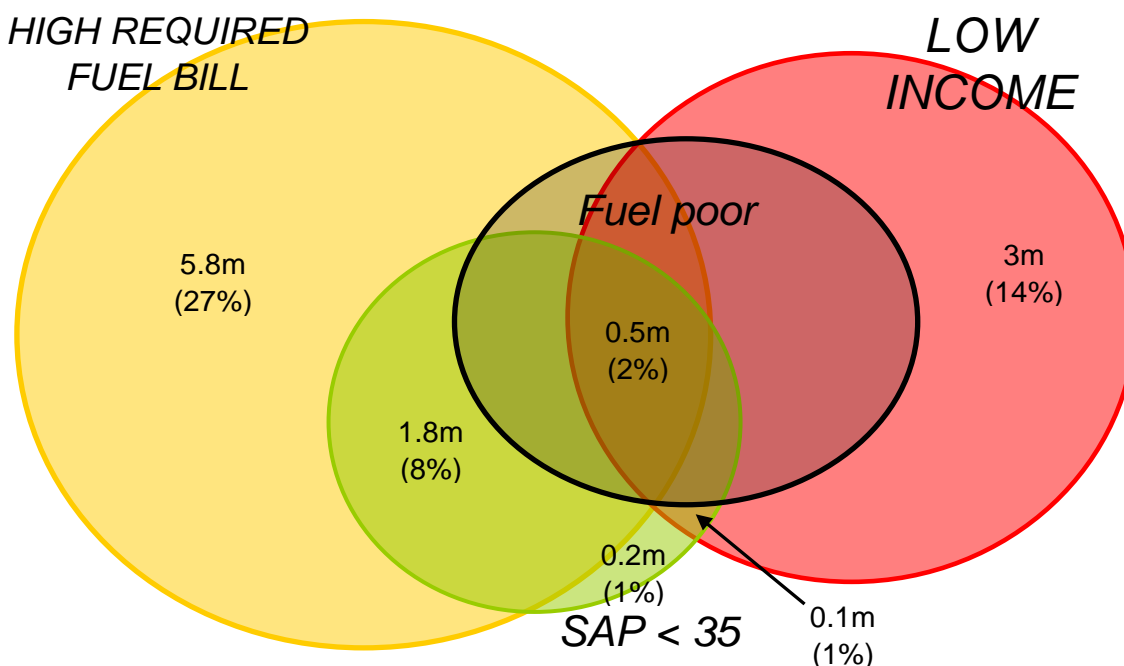
In the chart, the percentages show the proportion of the total number of fuel poor households in England falling into each group. Fuel poor households with a modelled annual fuel bill above the mean of all households (approximately £1,200) are classified in the “high required fuel bill” portion of the diagram. Fuel poor

households with an income level below ten times the average fuel bill<sup>12</sup> (roughly in line with the lowest two income deciles) are classified as being fuel poor due to income. Households with a SAP rating below 35 are classified as fuel poor due to their inefficient dwelling. In this way, fuel poor households can fall into more than one category, but all fuel poor households will fall into either the low income, or high required fuel bill category.

The diagram shows that around one in seven (0.5m) fuel poor households experience low income, high required spend and an inefficient dwelling, whilst a further third face two of the three problems. Over a quarter of the fuel poor have low SAP ratings (below 35), over a half have a high required fuel spend, and around three quarters have low incomes.

It is possible to consider the households that fall into these three categories in a wider context, looking at those that are both fuel poor and not fuel poor. This provides a slightly different picture of the three components, albeit one more complicated to view in a Venn diagram. The chart below illustrates the position for all households, that fall into one of the three categories, and shows that households with low incomes are much more likely to be fuel poor than those with modelled bills that exceed the average. Percentages in this chart are expressed as a proportion of all households in England.

Chart 14 – The fuel poor and non fuel poor by income, modelled bill and SAP, 2008



Around 9.5 million (44 per cent) households lie outside of the area covered by the Venn diagram – that is, they do not have low income, live in low rated SAP dwellings or have high modelled fuel bill, and they are not fuel poor.

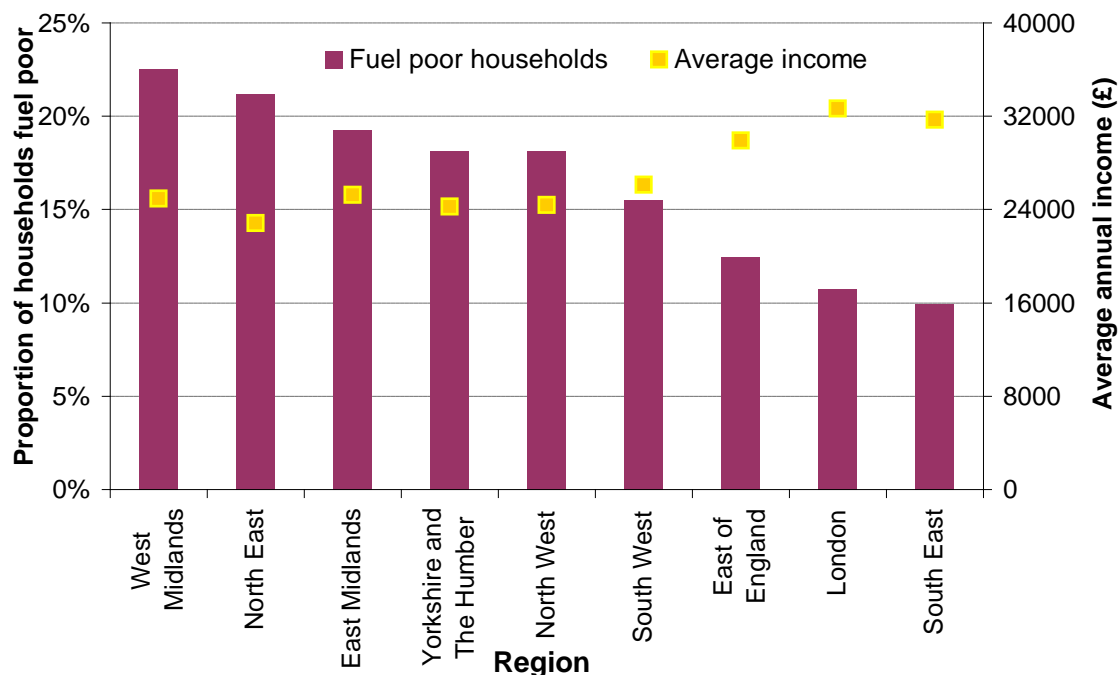
<sup>12</sup> Threshold for income chosen to ensure all fuel poor households were categorised in the Venn diagram. The income threshold roughly translates to the lowest two income deciles.

The chart shows that around 60 per cent of households with income below £12,000 per year are fuel poor, around 40 per cent of households living in homes with a SAP rating below 35 are fuel poor and that around 20 per cent of households with higher than average modelled fuel bills are fuel poor.

#### 4.1 Regional breakdown

Chart 15, below, shows fuel poverty rates by each region of England (left axis), along with average annual regional incomes (right axis).

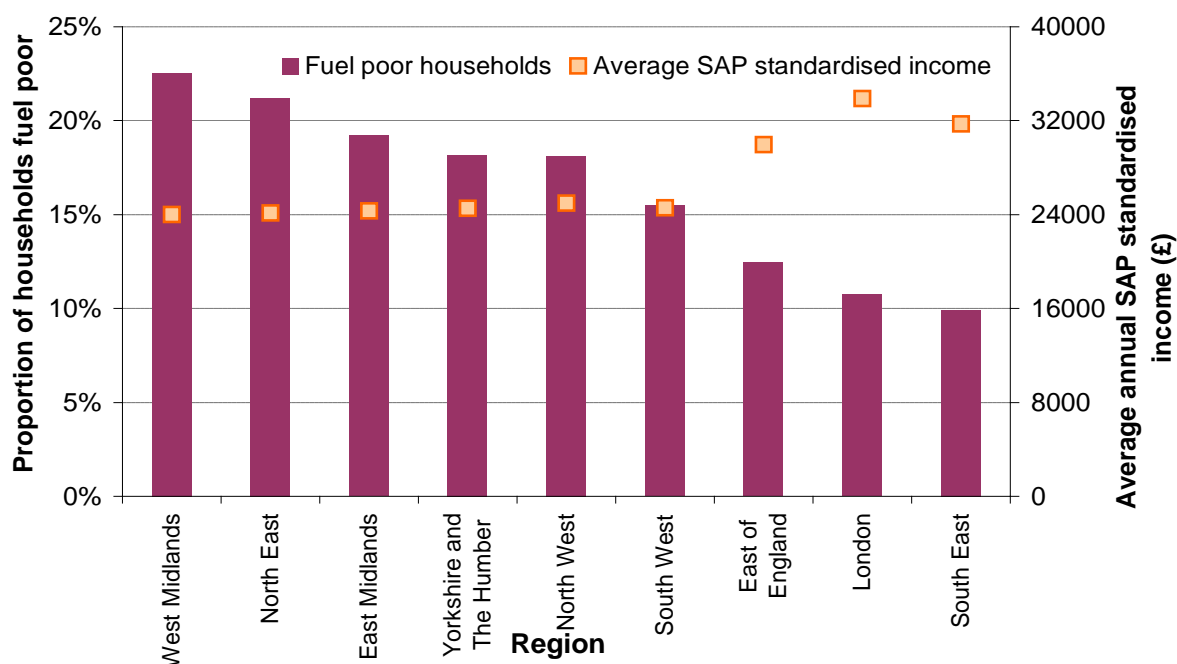
Chart 15 – Fuel poverty rates and average income by region, 2008



Historically, this chart shows a strong negative correlation between income levels and fuel poverty rates, re-emphasising the role of income in determining fuel poverty status. In 2008, while the correlation is still evident for some regions, the pattern is not as clear. To better understand this, it is also necessary to consider average SAP ratings in each region. For example, in the West Midlands, although income is higher than in the North East, the average SAP rating is 49.6, compared with 54.5 in the North East - hence fuel costs tend to be smaller. Chart 16 shows “SAP standardised income” for each region, along with fuel poverty rates – this is a bespoke measure that adjusts income to take into account the average SAP rating for each household<sup>13</sup>.

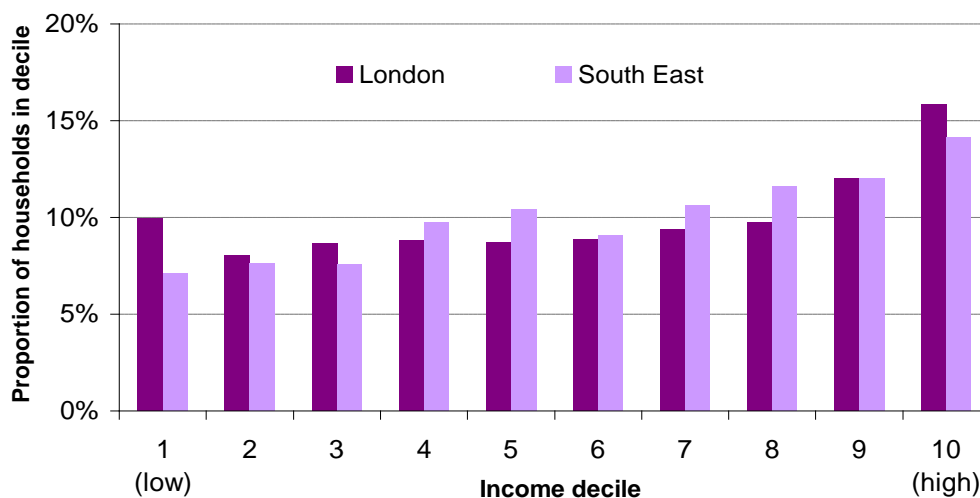
<sup>13</sup> SAP standardised income here has been defined as the average full income, multiplied by the average SAP rating for the region and divided by the average SAP rating in England.

Chart 16 – Fuel poverty rates and SAP standardised income by region



It is also interesting to compare the income and fuel poverty rates of London and the South East, the two regions where fuel poverty is least prevalent. From the charts above, fuel poverty is more common in London, but London also has higher average incomes. Chart 17 below explains why this is, as it shows the distribution of households amongst each income decile in each region, and that there are more “extreme” values in London. As an example, there are more London households in the lowest three income deciles compared with those in the South East, but also more households in the highest income decile. This diversity amongst household incomes in London leads to a high average income, but the many households with low incomes lead to a higher rate of fuel poverty than in the South East.

Chart 17 – Proportion of households in each income decile, London and South East



## 4.2 Detailed splits of fuel poverty

The chart below shows the number of fuel poor (and non fuel poor) households by household composition in England in 2008. It shows that the largest number of fuel poor households fall into the single person over the age of 60 category, with over one third of all fuel poor households in England falling into this category. Often these households have lower than average incomes (see chart 19), and so are at a higher risk of fuel poverty. Of all single person households below the age of 60, around one quarter are fuel poor, and this comprises about one fifth of all fuel poor households. The lowest rate of fuel poverty is found amongst couples under the age of 60 with no children, where around 6 per cent of households are fuel poor.

Chart 18 – Fuel poverty by household composition, 2008

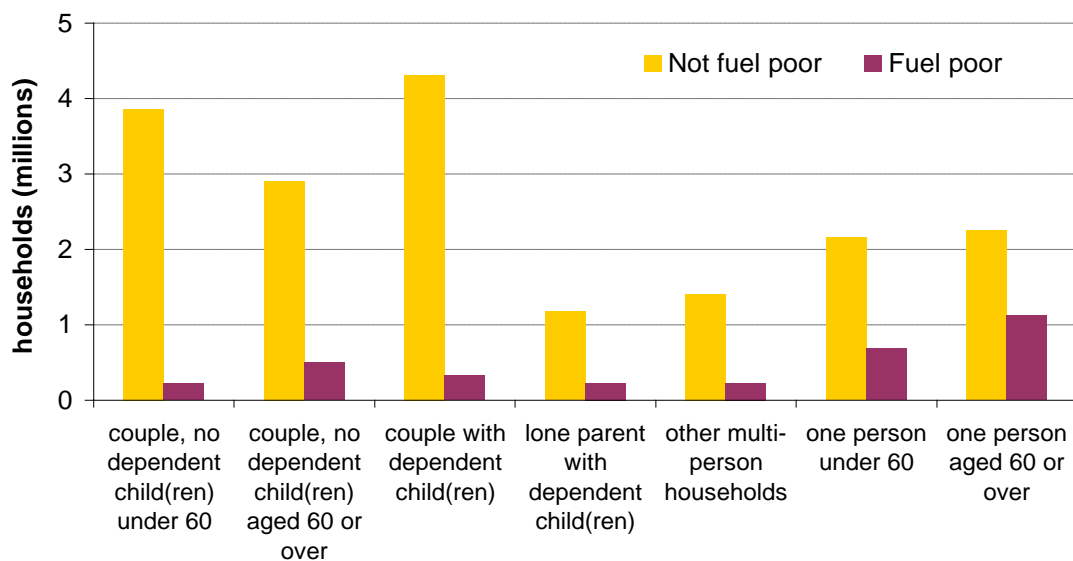
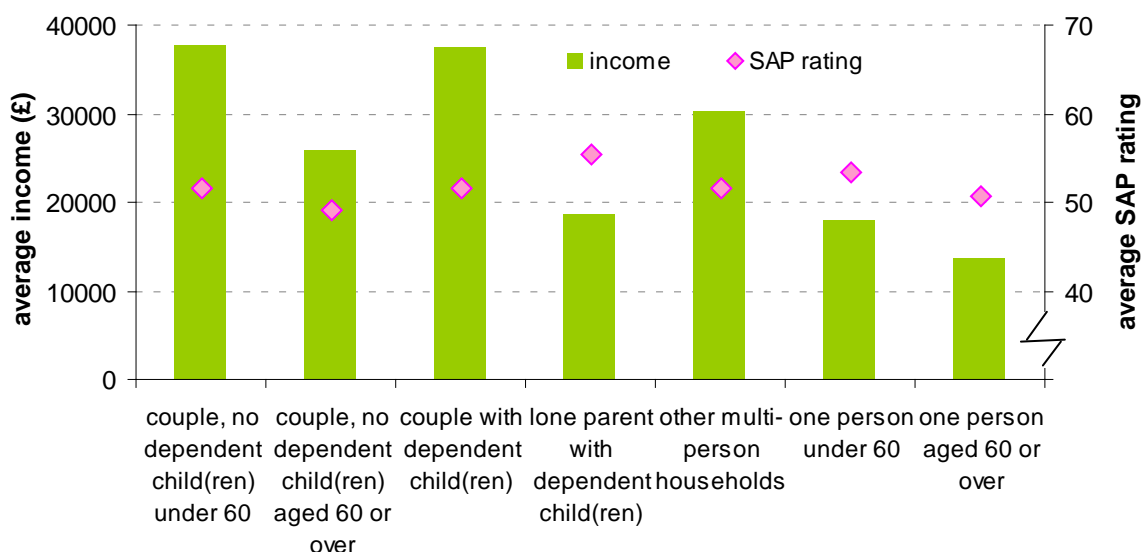


Chart 19 helps to understand the level of fuel poverty amongst each of these household types further. On average, working age couples receive over double the level of income of single person households. It is also interesting to note that households containing members over the age of 60 live in dwellings with the worst SAP ratings on average. Lone parents tend to live in the most energy efficient housing, reflecting that over 40 per cent of lone parent households live in social dwellings, which are generally more energy efficient.

Chart 19 – average income by household type and average SAP rating, 2008



The chart below shows the number of fuel poor households in each income decile. Unsurprisingly, there is a heavy concentration amongst lower income households, with the lowest 30 per cent of income households accounting for nearly 90 per cent of fuel poverty in England. As in recent years, increasing fuel prices have led to a gradual rise in the rate of fuel poverty amongst the higher income deciles. Although, historically, households in these deciles were only fuel poor because of a very high modelled bill, through under occupying their dwelling, or having a very inefficient dwelling, price rises in recent years now mean that there are more fuel poor observed in these deciles.

Chart 20 – Fuel poverty by income decile, 2008

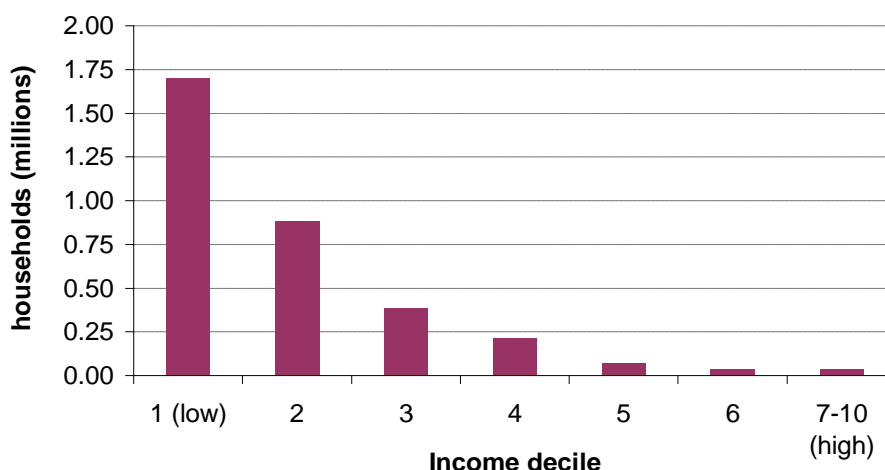
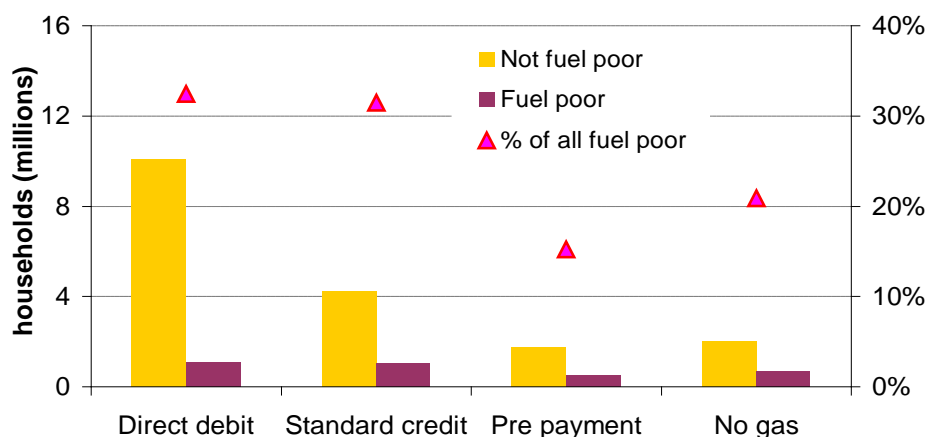


Chart 21 shows the number of fuel poor households split by their gas connection and method of payment. The highest propensity of fuel poverty is amongst households without gas, where just over a quarter of households are fuel poor. Pre-payment meters are often associated with the fuel poor, however the chart shows that there are actually relatively few fuel poor households that use pre-payment meters for gas. In fact, gas pre-payment meter users account for only around 15 per cent of the total

fuel poor. However, the average income of households using pre-payment meters, at around £18,000 per year, is lower than for those paying their bills in other ways. The average SAP rating for households using pre-payment meters for their gas connection is higher than for the other three household types, at just below 57, compared with around 53 for both standard credit and direct debit. Combining these higher SAP ratings with a reduced heating requirement (due to smaller homes) results in the average modelled fuel bill of those households using pre-payment meters being lower than for the other payment methods, by over £50 per year.

**Chart 21 – Fuel poverty by gas connection/method of payment, 2008**



The next chart shows fuel poverty levels by household size and shows that over half of the fuel poor live in single person households. These households often have lower incomes than two person (or larger) households and, while their modelled bills are lower, they are not as low as half of the average bill of two person households, as the table indicates.

**Chart 22 – Fuel poverty size of household, 2008**

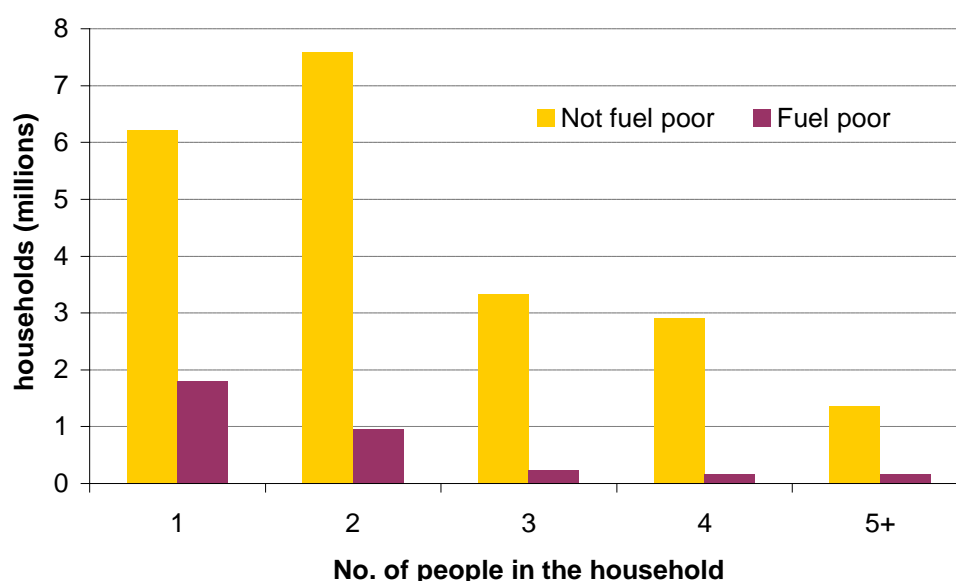


Table 7 below shows the average annual modelled bills, incomes and under-occupancy status of single and multi person households, as measured in the 2008 EHS. This analysis is developed further in section 5.3.

**Table 7 – Average modelled bills, incomes and under-occupancy rates, 2008**

No. people in the household	Average annual income (£)	Average annual modelled bill (£)	% of homes under occupied
1	15,600	980	57%
2	28,400	1,180	34%
3	33,200	1,260	15%
4	39,000	1,460	10%
5+	39,000	1,630	5%

Chart 23 shows a split of fuel poverty by the age of the oldest household member. This shows that a little over half of all fuel poor households contain somebody over the age of 60, which is a similar proportion to recent years. Around 22 per cent of households containing somebody over the age of 60 are fuel poor, compared with 12 per cent of those without anybody over 60. This is largely due to the lower average incomes of older households – average annual incomes for those households containing somebody over 60 are around two thirds of those for households without anybody over 60.

**Chart 23 – Fuel poverty by age of oldest household member, 2008**

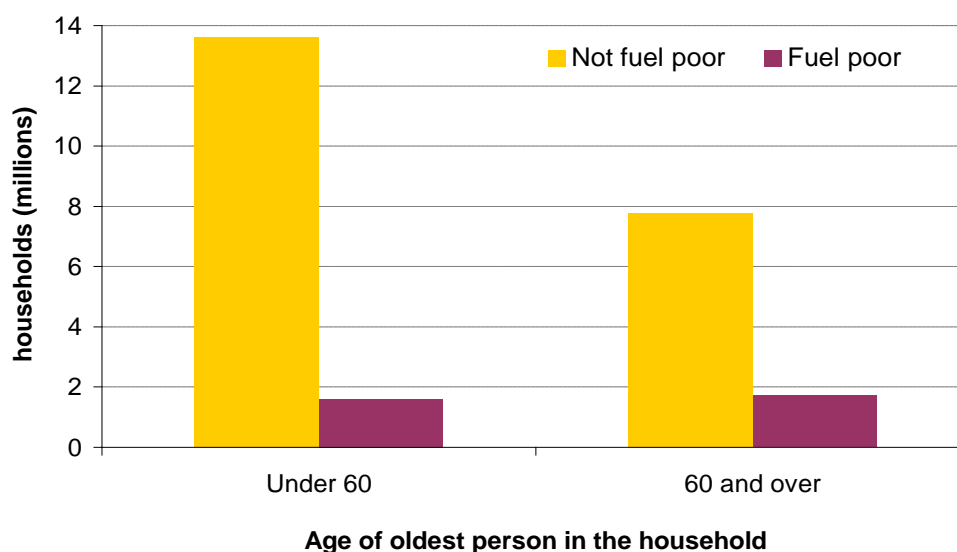
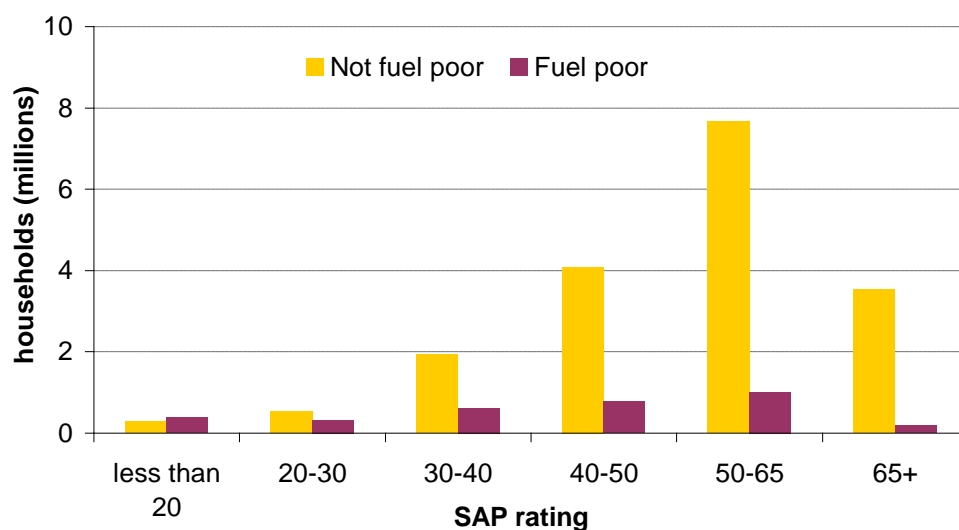


Chart 24 looks at the level of energy efficiency of the dwelling. This shows that the most common SAP band for a household to fall into is between 50 and 65, with 40 per cent of dwellings lying in this band. Roughly one in nine households living in these dwellings were fuel poor in 2008. In dwellings with a SAP rating below 20, nearly 60 per cent of households are fuel poor. Only 5 per cent of households in the top band, with SAP ratings above 65 were fuel poor.

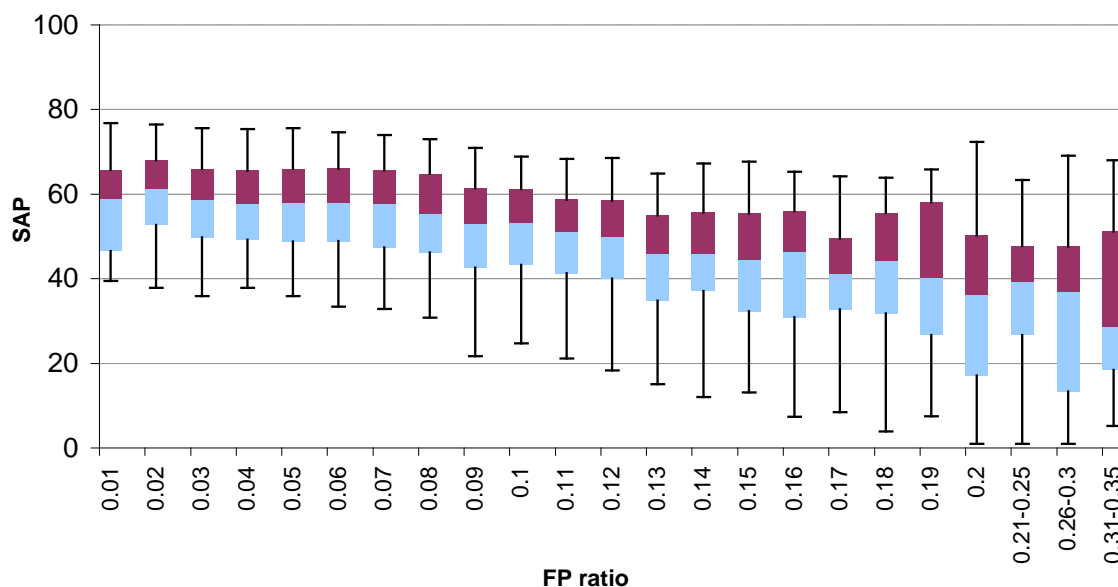
Chart 24 – Fuel poverty by SAP rating, 2008



The final chart in this chapter is a box plot of SAP ratings by fuel poverty ratio. For each fuel poverty ratio (separated into individual, or grouped ratios), it presents the minimum (defined as the 5 percentile), lower quartile, median, upper quartile and maximum (defined as the 95 percentile) SAP ratings. Therefore, it shows that of all households in the lowest fuel poverty ratio (up to 1 per cent of income), only 5 per cent of homes have a SAP rating below 40, a quarter have a SAP between 47 and 59, a further quarter have a SAP between 59 and 66, and 5 per cent have a SAP above 77.

It is interesting to observe how the spread of SAP ratings changes as the fuel poverty ratio increases. While the maximum SAP in each ratio grouping gradually decreases, the minimum SAP reduces at a faster rate moving from left to right. The fact that a number of households with a fuel poverty ratio greater than 20 per cent have SAP ratings above 60 emphasises the role of income in the fuel poverty ratio.

Chart 25 – Box plot of SAP ratings by fuel poverty ratio, 2008



## 5. Trends in fuel poverty in England, 2003 to 2008

### 5.1 Introduction

This chapter considers some of the key changes in fuel poverty between 2003 and 2008 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 this chapter 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 2008, 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).

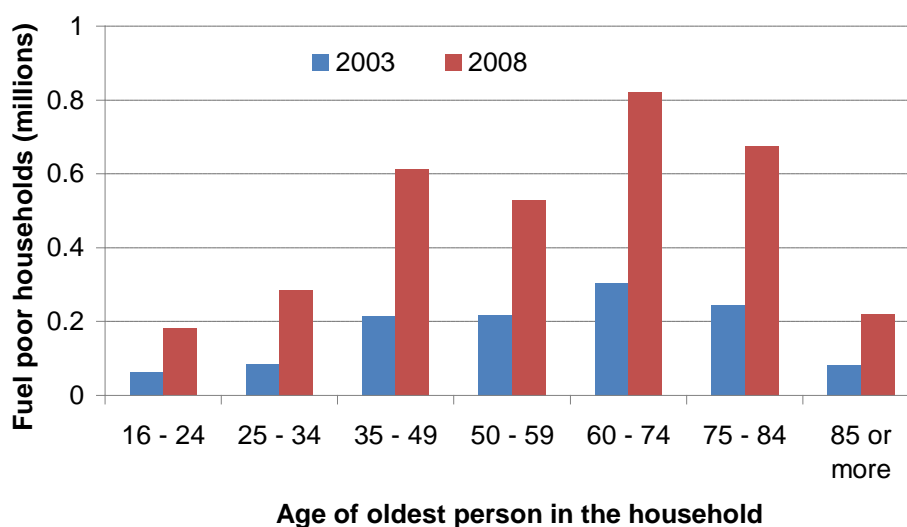
In 2003, the number of households in fuel poverty stood at 1.2m, representing 5.9 per cent of all households in England. In 2008, this figure rose to 3.3m, which represented 15.6 per cent of all English households. A common theme throughout the chapter is the impact of rising bills between 2003 and 2008 on fuel poverty. Using figures from the Retail Prices Index (as compiled by the Office for National Statistics), domestic electricity prices increased by around 80 per cent between 2003 and 2008, while gas prices doubled 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 1.0m vulnerable households in fuel poverty, increasing to 2.7m in 2008. One in fifty households with at least one dependent child were in fuel poverty in 2003, rising to one in five by 2008.

In 2003, one in ten households with at least one person aged 60 or over were in fuel poverty and, by 2008, this had risen to one in five. However, Chart 26 shows that the number of fuel poor households more than doubled across all household age groups (according to the age of the oldest occupant) in England between 2003 and 2008.

Chart 26 – Number of households in fuel poverty by age of oldest occupant, 2003 and 2008



As shown in Chart 27, there was no real change between 2003 and 2008 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 2008, slightly over half of all fuel poor households had an occupant who was aged 60 or over (52 per cent in both 2003 and 2008), while over a quarter had at least one occupant aged 75 or over (27 per cent in both 2003 and in 2008).

Chart 27 – Proportion of all fuel poor households, by age range, 2003 and 2008

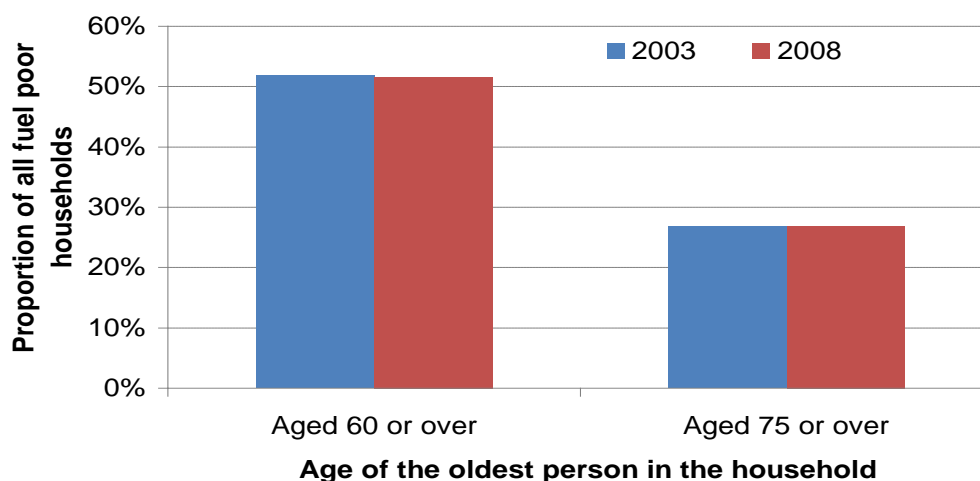
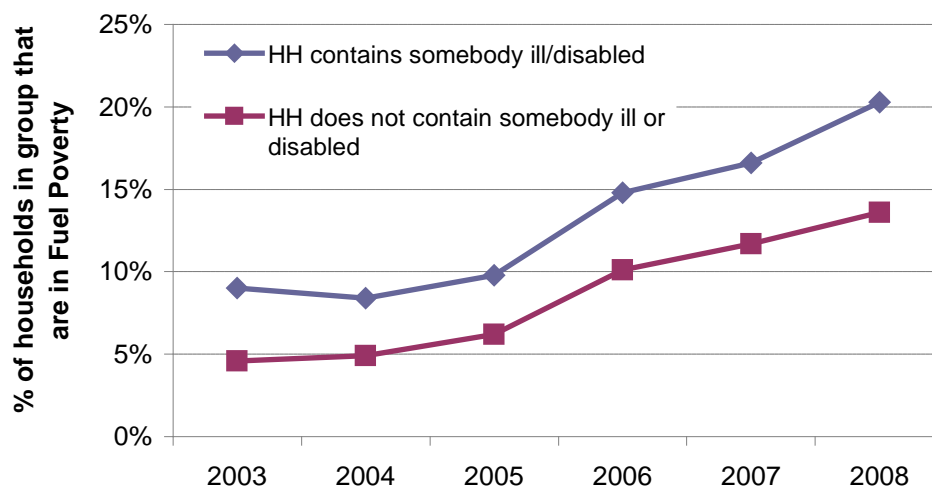


Chart 28 shows that, throughout the period 2003 and 2008, households containing someone with a disability or a long-term illness had a higher rate of fuel poverty than other households. Although the percentage of households in fuel poverty in this group increased between 2003 and 2008 (from 9 per cent in 2003 to 20 per cent in 2008), the rate of increase was broadly consistent with those households not containing someone with a disability or long-term illness.

**Chart 28 – Fuel poverty rate by presence or not of someone with a disability or long term illness in the household, 2003 to 2008**

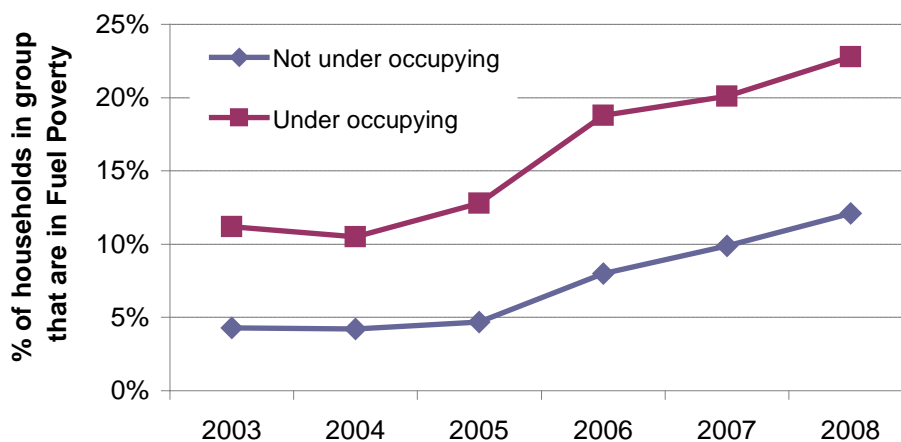


### 5.3 Household occupancy

In England there was a 45 per cent increase in the number of under occupied<sup>14</sup> households between 2003 and 2008. The percentage of single person households under occupying their dwelling rose from 43 per cent in 2003 to 57 per cent in 2008, suggesting that single person households are now occupying larger dwellings. In 2008, just 23 per cent of multi-person households were under-occupying their dwellings, however this was 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 2008. However, the proportion of under occupying households that are fuel poor is consistently more than double the proportion of households not under occupying that are fuel poor (see Chart 29).

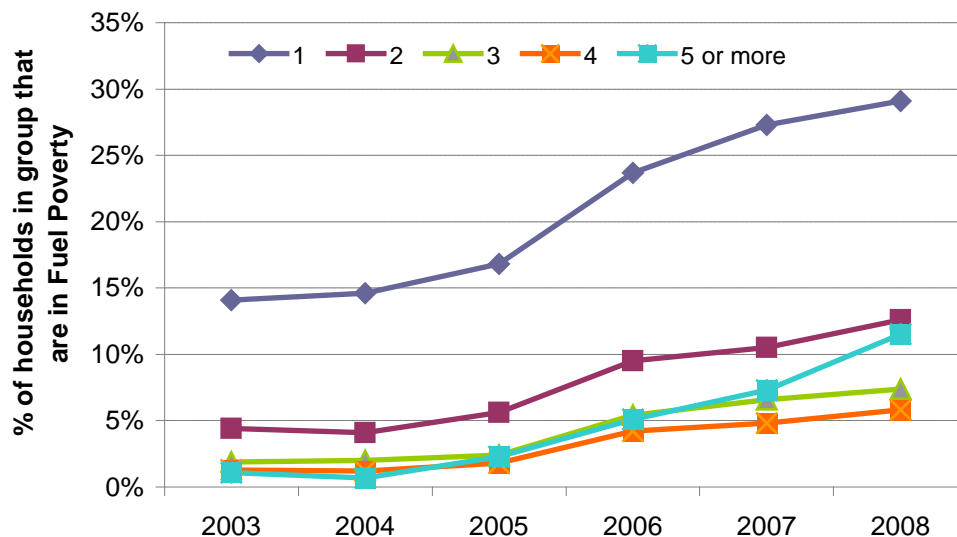
**Chart 29 – Fuel poverty rates by under occupancy, 2003 to 2008**



<sup>14</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.aspx?filepath=what\\_we\\_do/supporting\\_consumers/addressing\\_fuel\\_poverty/strategy/annual\\_report/file29694.pdf&filetype=4](http://www.decc.gov.uk/media/viewfile.aspx?filepath=what_we_do/supporting_consumers/addressing_fuel_poverty/strategy/annual_report/file29694.pdf&filetype=4)

There were increases in the rate of fuel poverty for all household sizes between 2003 and 2008, indicating that no one size of household has been protected against the rise in fuel prices.

**Chart 30 – Fuel poverty rate by number of people in household, 2003 to 2008**



There was a notable increase in the rate of fuel poverty amongst one person households, from 14 per cent (0.8m households) in 2003 to 29 per cent (1.8m households) in 2008. This rise in fuel poverty amongst single person households<sup>15</sup> between 2003 and 2008 is consistent with the changes in fuel poverty by household composition (see chart 31).

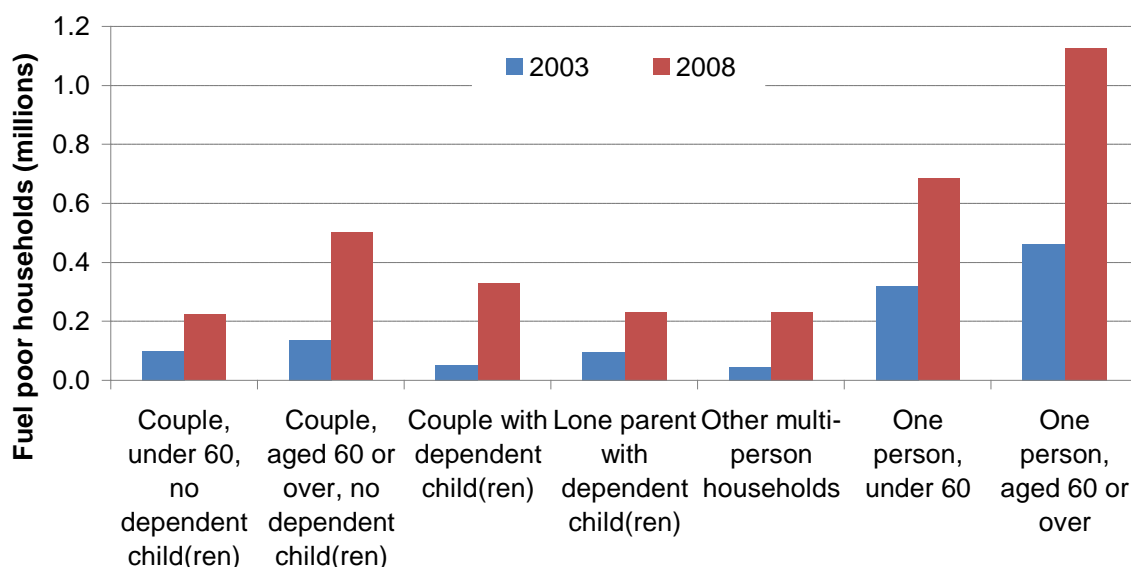
Chart 30 also shows that there was a rise in the rate of fuel poverty amongst households with 5 or more occupants, up from 1 per cent to 11 per cent (from 0.02m to 0.16m households) between 2003 and 2008. In particular, there was a large increase between 2007 and 2008. This was caused by a large number of households containing 5 or more people being positioned close to the fuel poverty threshold compared with other household sizes in 2007 and hence more households being pushed over the threshold into marginal fuel poverty in 2008 due to rising energy bills. Generally, the average income difference between 4 person and larger households is relatively small, while modelled bills increase at a faster rate than income for these larger households as seen in Table 7 in Chapter 4.

Chart 31 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 2008. 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 2008, the number of households in this group that were in fuel poverty was over 6 times the number in 2003.

<sup>15</sup> EHS methodology improvements have increased the number of single person households relative to the EHCS methodology. For more details please refer to Section 1.3.

Chart 31 – Number of households in fuel poverty by household composition, 2003 and 2008



#### 5.4 Employment status

Employment here is defined as the employment status of the household reference person (HRP)<sup>16</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 2.2 million households between 2003 and 2008 (see Chart 32). 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 32 – Number of households in fuel poverty by employment status, 2003 to 2008



<sup>16</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.

**Table 8 – Number and proportion of households in fuel poverty by employment status, 2003 to 2008**

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

Table 8 shows that fuel poverty amongst working households represented just over a quarter of all the fuel poor in 2008, up from around 14 per cent in 2003, compared with small reductions in the proportion for unemployed and inactive groups. 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 32, 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 2008 there were 0.56m unemployed HRP households, compared with 12.85m working households and 8.0m inactive households). Chart 33 shows the proportion of households in fuel poverty in each employment status group from 2003 to 2008. 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 42 per cent by 2008.

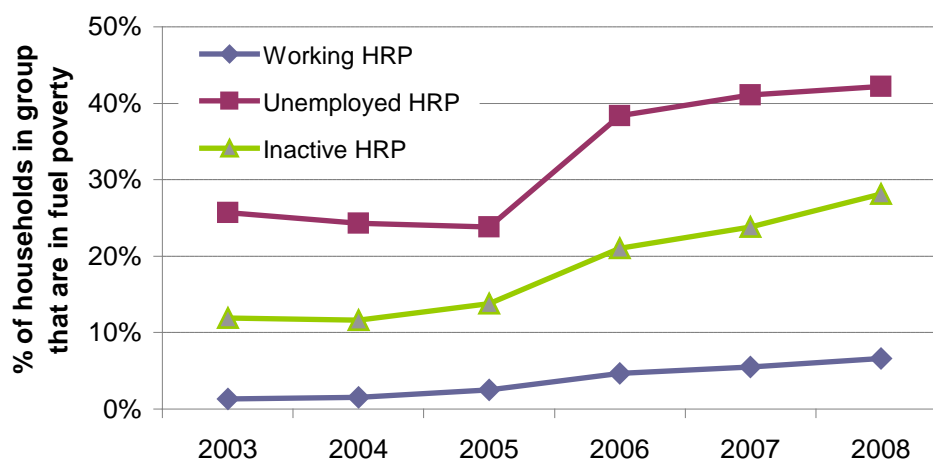
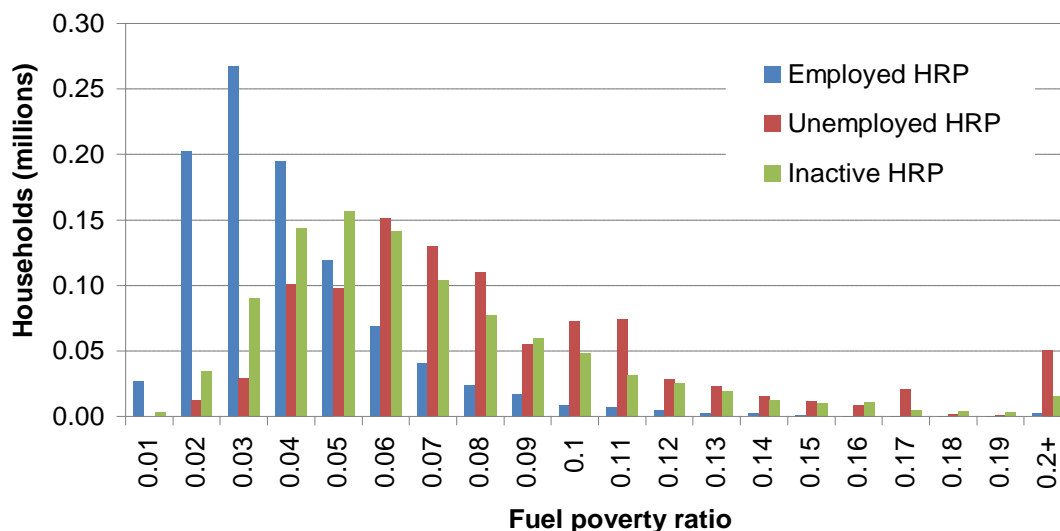
**Chart 33 – Fuel poverty rate by employment status, 2003 to 2008**

Chart 33 also shows that the rate of fuel poverty in households where the HRP is unemployed increased considerably between 2005 and 2006. During this period, domestic gas prices increased by around 30 per cent, while electricity prices

increased by around 20 per cent<sup>17</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, as shown for 2005 in Chart 34.

Chart 34 – Fuel poverty ratios, 2005

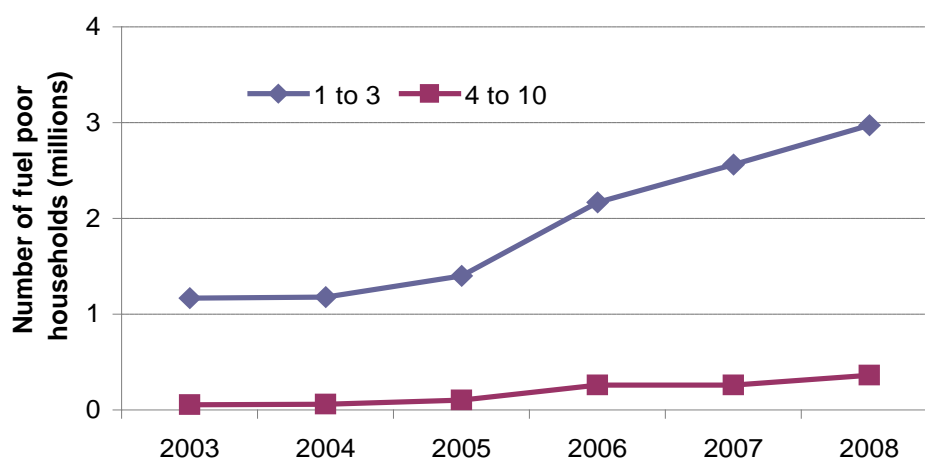


## 5.5 Income

The majority of households in fuel poverty are consistently in the lowest three income deciles. In 2003, there were 1.2m fuel poor households in the lowest three deciles, representing 96 per cent of all fuel poor households. In 2008, the number of fuel poor households in the lowest three deciles rose to 3.0m, representing 89 per cent of all fuel poor households. Over the same period, the number of fuel poor households in income deciles 4 to 10 increased from 0.05m to 0.36m (see Chart 35). These statistics further emphasise the impact of prices rising faster than incomes, meaning that increasingly, fuel poverty is experienced outside of the lowest income deciles.

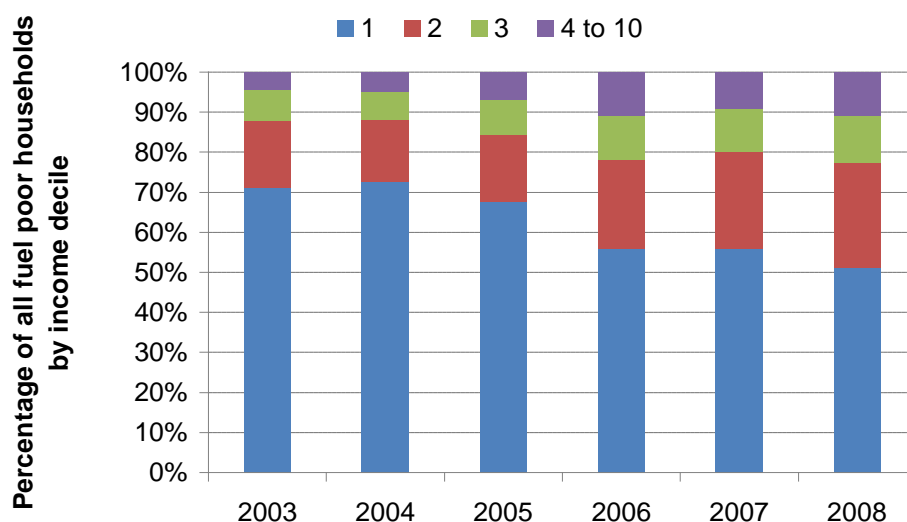
<sup>17</sup> Source: Table 2.1.2 (based on the fuel components of the Retail Prices Index from the Office of National Statistics) of 'Quarterly Energy Prices' publication found at: <http://www.decc.gov.uk/en/content/cms/statistics/publications/prices/prices.aspx>

Chart 35 – Number of households in fuel poverty by income decile, 2003 to 2008



The overall proportion of fuel poor households by income decile can be seen in Chart 36. Although households in the lowest income decile consistently make up the majority of the fuel poor households, the proportion actually fell from 71 per cent in 2003, to 51 per cent in 2008. In contrast, the proportion of fuel poor households in the second income decile increased from 17 per cent to 27 per cent over the period, while the proportion in the third income decile increased from 8 per cent to 12 per cent. The proportion of fuel poor households in the highest income deciles (4 to 10) also saw an increase between 2003 and 2008, rising from 4 per cent to 11 per cent.

Chart 36 – Proportion of all fuel poor households in income deciles, 2003 to 2008



## 5.6 Fuel expenditure

Average modelled<sup>18</sup> fuel expenditure increased from £694 to £1,201 between 2003 and 2008, an increase of over 70 per cent. Average incomes also rose over the same period, but only by around 20 per cent, meaning the average modelled fuel

<sup>18</sup> Consumption modelled to ensure the adequate standard of warmth is achieved.

cost to income ratio rose from around 3 per cent in 2003 to 4.4 per cent in 2008 in England.

As seen in Chart 37, the number of households spending up to 5 per cent of their income on fuel to maintain the adequate standard of warmth decreased from 14.4m in 2003 to 10.7m in 2008, with the largest fall seen between 2005 and 2006. 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 5.1m households in 2003 to 7.4 million households in 2008. Therefore, over the period 2003 to 2008, 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 2008 compared with 2003.

Although fuel poverty rose substantially between 2003 and 2008, half of households still have a fuel poverty ratio below 5 per cent, as seen in Chart 38. However, this fell from 70 per cent in 2003.

**Chart 37 – Number of households by modelled expenditure on fuel as a proportion of income, 2003 and 2008**

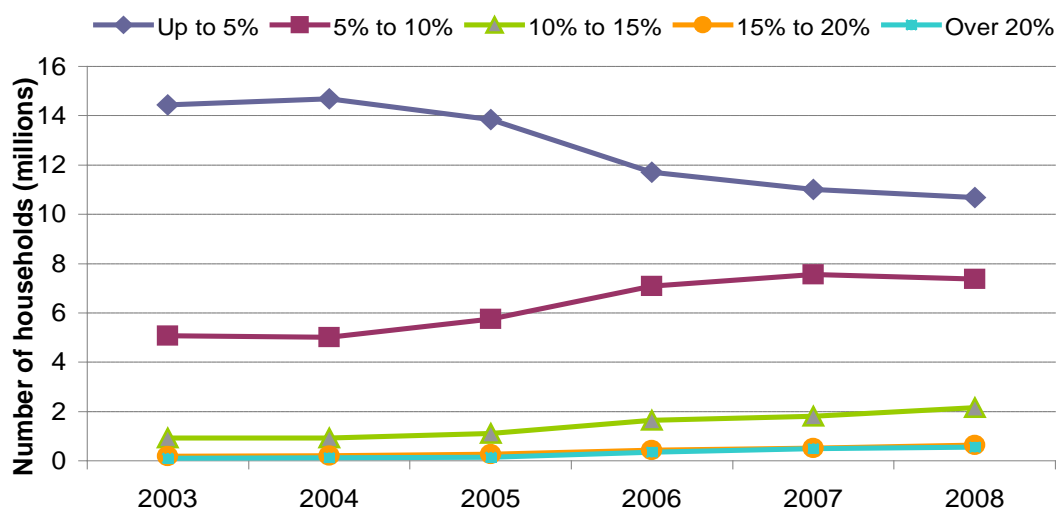
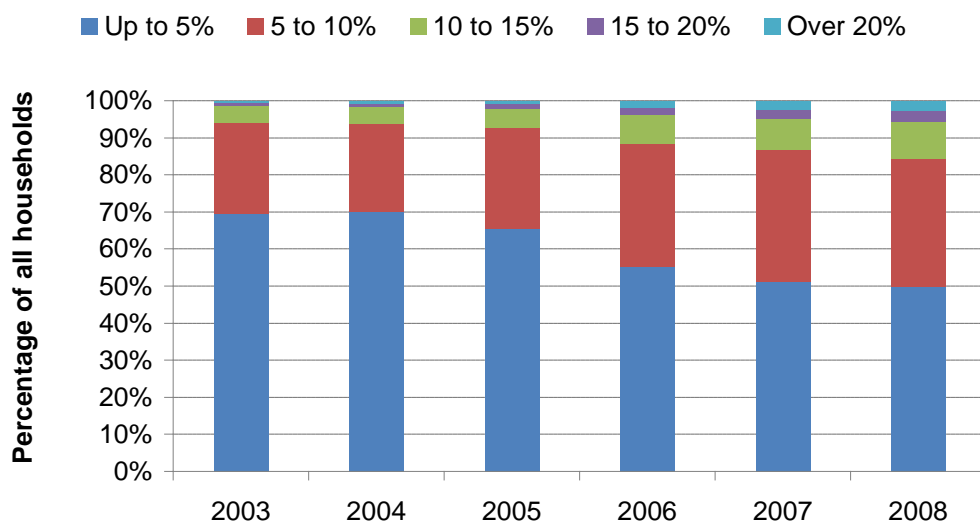


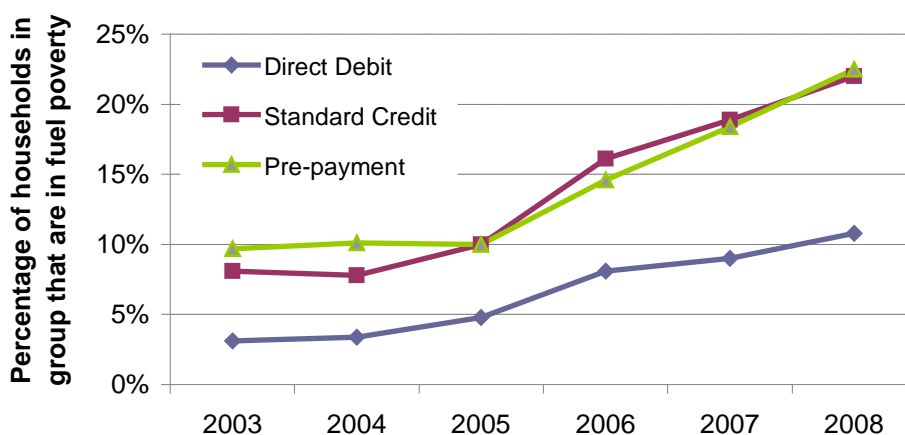
Chart 38 – Percentage of households within the banded fuel poverty ratios, 2003 to 2008



### 5.7 Payment method

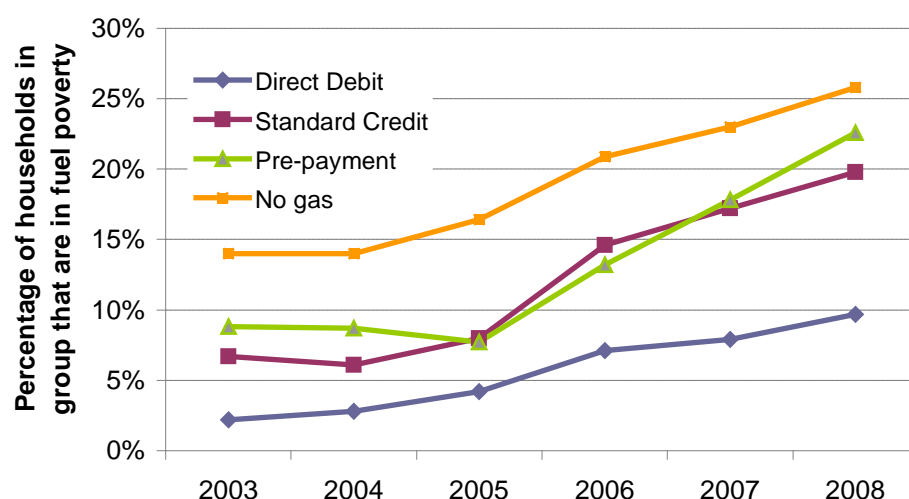
In 2003 and 2004 the rate of fuel poverty was greatest amongst those paying for their electricity and gas by pre-payment meters. However, in 2005, fuel poverty rates amongst households using pre-payment meters were similar to those amongst households paying via standard credit for both gas and electricity. This has also remained the case in the period between 2005 and 2008 for electricity and in the period 2005 to 2007 for gas. In 2008, those households on gas pre-payment meters again had a slightly higher rate of fuel poverty (23 per cent) than those on standard credit (20 per cent).

Chart 39 – Fuel poverty rate by method of payment for electricity, 2003 to 2008



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 26 per cent in 2008. For both gas and electricity, households using direct debit consistently had the lowest fuel poverty rate from 2003 to 2008.

Chart 40 – Fuel poverty rate by method of payment for gas, 2003 to 2008



With the exception of those households off the gas network, pre-payment meter users had the highest fuel poverty rate in 2008. However, Table 9 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.

Table 9 – Average income, fuel bill<sup>19</sup> and SAP by payment method for gas, 2008

Payment method	Average Income (£)	Average fuel bill (£)	Average SAP
Direct Debit	31,500	1,170	53
No gas	24,500	1,410	40
Pre-payment Meters	18,200	1,120	57
Standard Credit	24,700	1,180	53

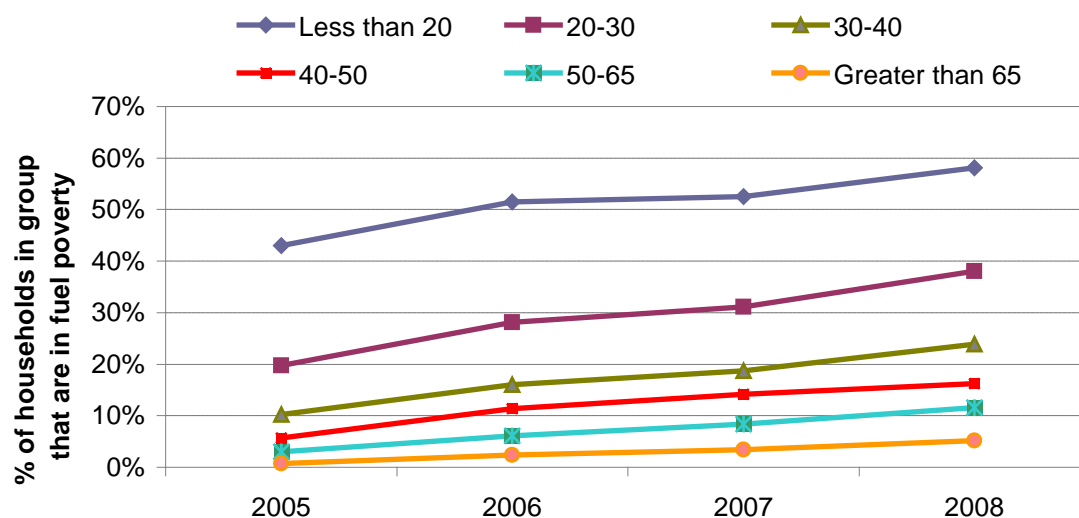
### 5.8 Energy efficiency

As described in Section 3.6 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 41 shows the fuel poverty rate between 2005 and 2008 for households within different SAP bands. Analysis of SAP ratings has only been carried out between 2005 and 2008 as the methodology for SAP changed in 2005 and therefore figures prior to this year cannot be calculated using a consistent methodology. 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 have the lowest rate highlighting the importance of energy efficiency in reducing fuel poverty.

<sup>19</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.

Chart 41 – Fuel poverty rate by banded SAP rating, 2005-2008



For context, Table 10 below details the average income of households in each of these SAP bands in 2008. Those households with an average income less than the English average income tend to live in properties with an SAP rating either below 20 or above 50. This latter group are likely to live in social housing where the average energy efficiency of the homes is highest.

Table 10 – Average income by payment banded SAP rating, 2008

SAP	Average income (£)
Less than 20	23,800
20 - 30	28,700
30 - 40	32,800
40 - 50	29,100
50 - 65	27,200
65+	24,000
All households	27,600

Conversely, Chart 42 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 2005 and 2008, those households which spend more than 10 per cent of their income on fuel, have a lower SAP rating than those households which spend less than 10 per cent. However, in all groups, the average SAP rating increased between 2005 and 2008, 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 2008 was seen in the group that spend more than 20 per cent of their income on fuel, rising from 20 to 37, although this partly reflects increasing prices, which have pushed more households living in relatively energy efficient homes into severe fuel poverty.

**Chart 42 – Average SAP rating by fuel poverty ratio, 2005 and 2008**

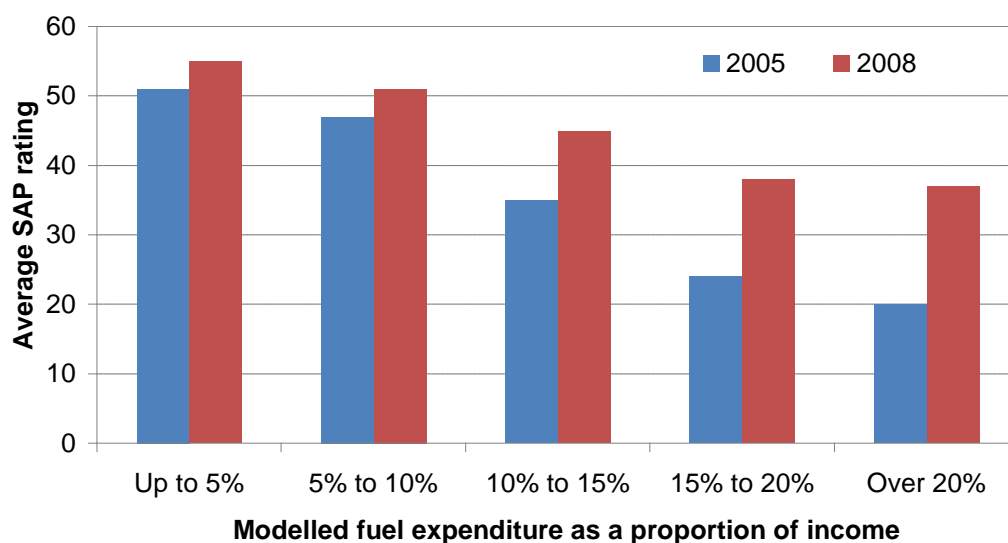


Table 11 shows the average fuel poverty ratio by the SAP bands, all of which increased between 2005 and 2008. For those households in the '20 – 30' band, the average fuel poverty ratio is above the fuel poverty threshold of 0.1, which was not the case in 2005. This reflects the impact of rising energy 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 2005 and 2008 in the average SAP rating of those households spending more than 20 per cent of their income on fuel.

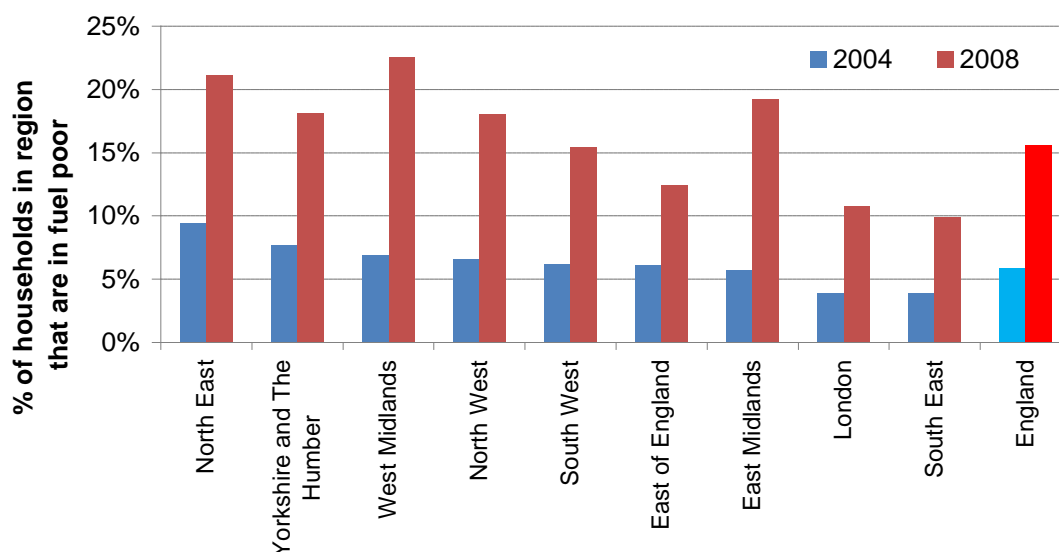
**Table 11 – Average fuel poverty ratio by SAP band, 2005 and 2008**

SAP	Average fuel poverty ratio	
	2005	2008
Less than 20	0.11	0.14
20 - 30	0.07	0.10
30 - 40	0.05	0.08
40 - 50	0.05	0.07
50 - 65	0.04	0.06
65+	0.03	0.05

### 5.9 Government Office Region

Chart 43 shows the proportion of households in each of the Government Office Regions (GORs) in England that were in fuel poverty in 2004 and in 2008. The Chart is shown with the GORs 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.

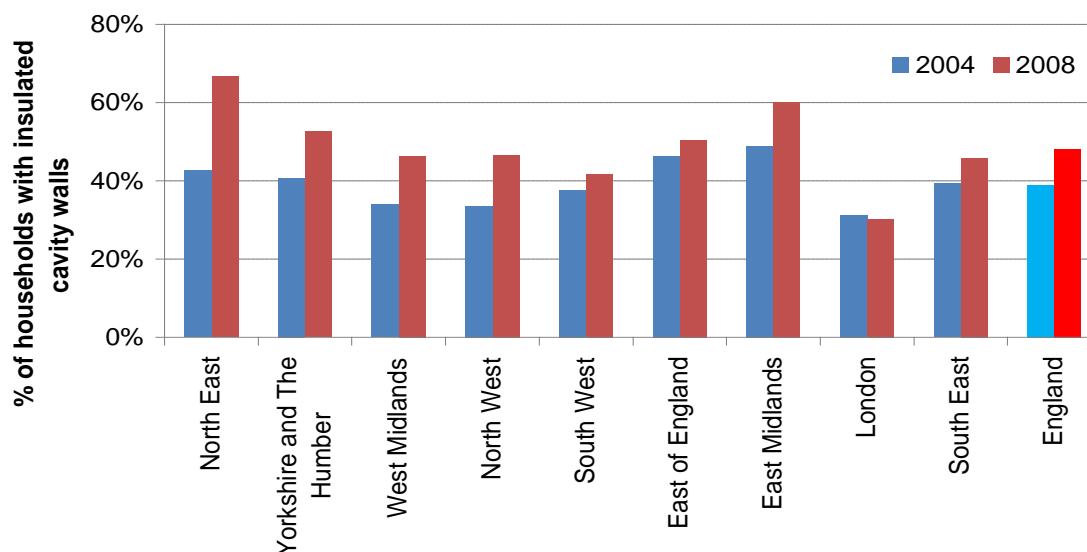
Chart 43 – Fuel poverty rate by Government Office Region, 2004 and 2008



The percentage of fuel poor households increased substantially in all GORs between 2004 and 2008. However, it appears that the GORs have been affected disproportionately as, in 2008, the North East (with 21 per cent of households being fuel poor) is replaced by the West Midlands (23 per cent) as the region with the highest rate of fuel poverty. 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 2008, the rate of fuel poverty in the East Midlands increased to 19 per cent making it the GOR with the third highest fuel poverty rate (after the West Midlands and the North East).

Charts 44 and 45 show the prevalence of cavity wall and loft insulation (over 150mm thickness) in each of the Government Office Regions in 2004 and 2008. In all GORs, the proportion of households (with cavity walls) having cavity wall insulation increased between 2004 and 2008, with the exception of London, where the percentage stayed at approximately the same level. 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 67 per cent in 2008. This may also partially help to explain why the North East is no longer the GOR with the largest fuel poverty rate.

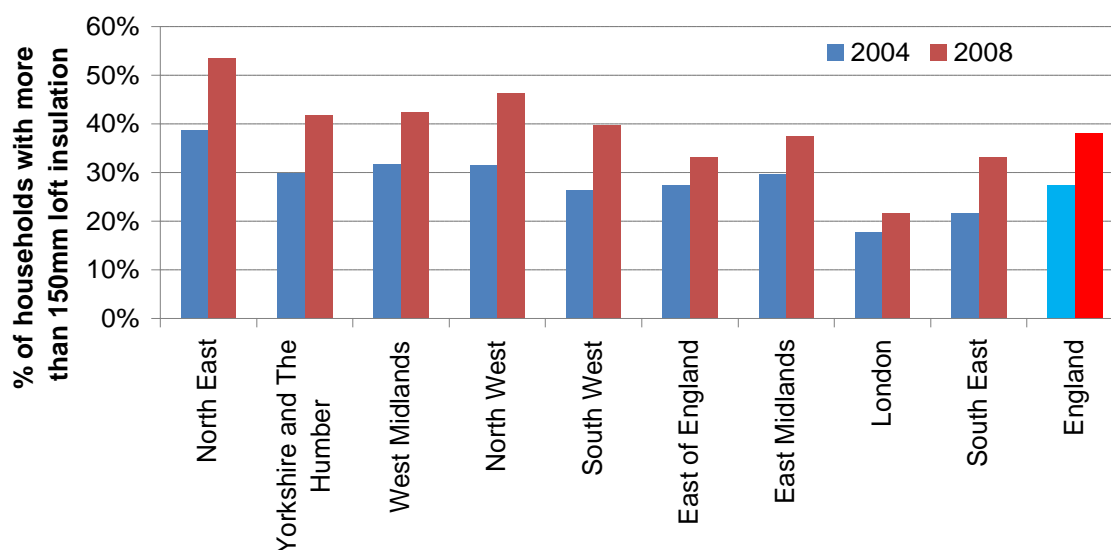
**Chart 44 – Percentage of households (with cavity walls) that have cavity wall insulation by Government Office Region, 2004 and 2008**



There was little change in the proportion of cavity walls insulated in the Government Office Region of London between 2004 and 2008. There is some evidence to suggest that this is due to the conversion of larger, older dwellings into multiple smaller dwellings, hence increasing the number of households left to insulate.

In addition, as shown in Chart 45, although the North East had the highest proportion of households (with lofts) with loft insulation of greater than 150mm thick in 2004, it also saw the second largest percentage point increase between 2004 and 2008 (after the North West). In 2004, 39 per cent of households with lofts were insulated in the North East, which rose to 54 per cent in 2008.

**Chart 45 – Percentage of households (with lofts) that have loft insulation thicker than 150mm by Government Office Region, 2004 and 2008**



## 6. Other indicators

This section considers other associated indicators around fuel poverty, including consideration of actual expenditure on fuel rather than modelled expenditure as used in the fuel poverty definition.

A full set of supplementary indicators is available at

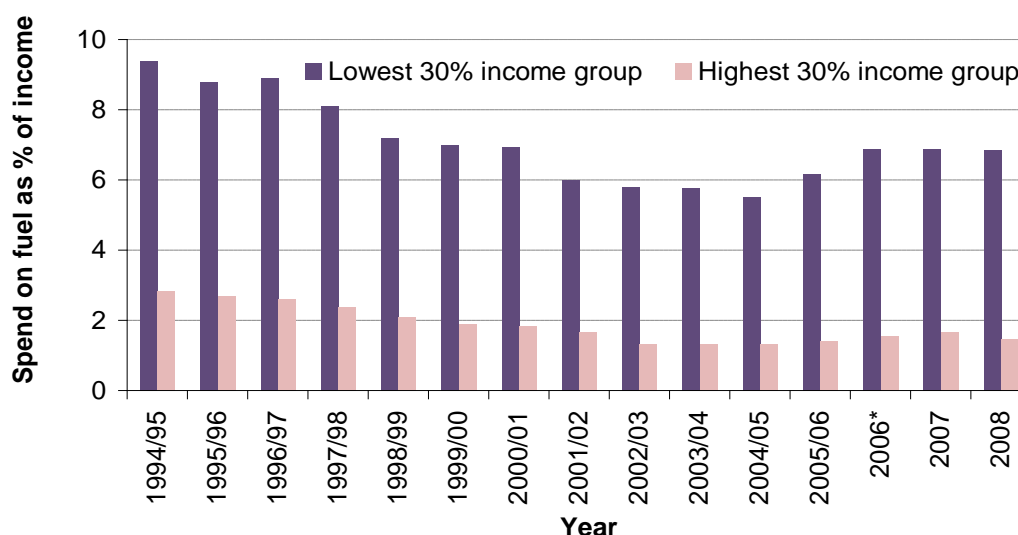
[http://www.decc.gov.uk/en/content/cms/statistics/fuelpov\\_stats/fuelpov\\_stats.aspx](http://www.decc.gov.uk/en/content/cms/statistics/fuelpov_stats/fuelpov_stats.aspx)

### 6.1 Actual expenditure from the Living Costs and Food Survey (LCFS)

The LCFS (formerly the Expenditure and Food Survey) is a survey of around 6,000 households in the UK. It asks householders to record their household expenditure in a “diary” over a two week period and is carried out across the year, with different households recording expenditure during different two week slots. While the diary is very useful for 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 such as those on repairs. The methods of collection for each of these three types of spending allow for annual expenditure totals to be easily calculated.

The definition of fuel poverty has its roots in spending on energy for the home by the lowest three income deciles. The chart below shows the proportion of income spent on fuel for the lowest 30 per cent and highest 30 per cent income groups – that is the lowest three income deciles and the highest three income deciles.

**Chart 46 – Spend<sup>20</sup> on fuel<sup>21</sup> as a proportion of income for the lowest and highest 30 per cent income bands, 1994/5-2008**



\* the Living Costs and Food Survey collection period changed to calendar years from 2006

<sup>20</sup> Source: Living Costs and Food Survey (ONS)

<sup>21</sup> Defined in the Living Costs and Food Survey as electricity, gas, coal and oil and other fuels

In the mid 1990s, the lowest 30 per cent of income groups spent just over 9 per cent of their income on energy but this decreased steadily and was between 5 per cent and 6 per cent in 2001 and the following few years, before rising to around 7 per cent for 2006 to 2008. Looking at the highest 30 per cent of income groups, a similar pattern can be seen, although the changes from one year to the next are more subtle, particularly in recent years. This is because the increase in bills tends to affect the higher income households to a lesser extent, as energy forms a smaller proportion of their overall income.

## 6.2 Differences between full and basic income fuel poverty figures

Two definitions of income are used in relation to fuel poverty; ‘basic’ income and ‘full’ income (see chapter 1 for more detail). For both definitions income is calculated as the income of the whole household net of income tax and national insurance. That is, the income of the Household Reference Person (HRP) and any partner, plus any other “additional benefit units” (i.e. any other adult member of the household).

To recap the definitions of chapter 1:

- Basic income is calculated by adding the personal incomes of every member of the household together plus any benefit payments that the household receives (from private source, state benefits and savings) but excludes income related directly to housing;
- Full income is the official headline figure and, in addition to the basic income measure, it includes income related directly to housing (i.e. Housing benefit, Income Support for Mortgage Interest (ISMI), Mortgage Payment Protection Insurance (MPPI), Council Tax Benefit (CTB).

Excluding housing-related incomes under the basic income definition increases fuel poverty figures by 400,000 households in 2008 as can be seen in chart 47. The gap has narrowed by 50,000 from 2007 due to full income fuel poverty increasing by more than basic income fuel poverty (this is because more households have become marginally fuel poor under the full income definition in 2008 compared with the basic income definition). In 2003, the difference between fuel poverty levels for full and basic income measures was 300,000 households.

Chart 47 – Fuel poverty in England, full vs basic income, 2003-2008

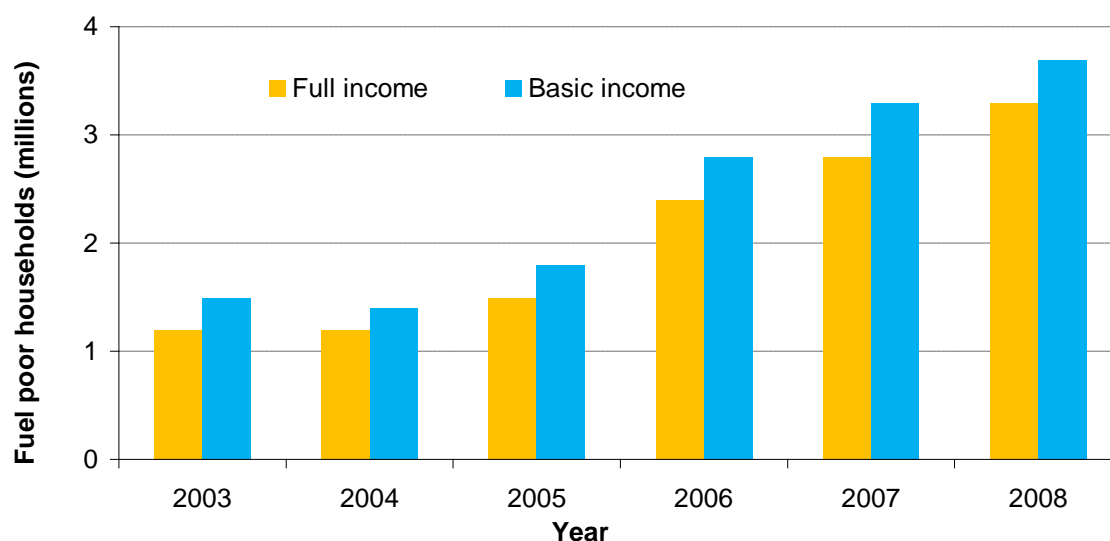


Table 12 below shows how the basic and full income definitions overlap. Of those in basic income fuel poverty, 78 per cent are also fuel poor under the full income model, and of those in full income fuel poverty, 88 per cent are in basic income fuel poverty.

Table 12 – Fuel poverty under basic and full income models, England, 2008

Number of households (000s)	Basic income		
	In fuel poverty	Not in fuel poverty	Total
In fuel poverty	2.9	0.4	3.3
Full income Not in fuel poverty	0.8	17.3	18.1
Total	3.7	17.7	21.4

Table 13 below shows that the biggest gaps between fuel poverty figures on full and basic income definitions are for the social housing sector and for households in urban areas, whereas private and rural households have very similar figures irrelevant of definitions. This is because the housing benefits excluded from the basic income definition are more likely to be received by households in the social housing sector and in urban areas.

Table 13 – Fuel poverty under basic and full income models, England, 2008

no. of households (millions)	Full income	Basic income
Private	2.7	2.6
Social	0.6	1.1
Urban	2.5	2.9
Rural	0.8	0.8
Total	3.3	3.7

### 6.3 Income trends

As part of the additional analysis we are undertaking this year, we have further considered the split of incomes of the fuel poor, namely earnings, benefits, savings and investment and other income (including Winter Fuel Payments, rent, student loans and private pensions).

Chart 48 shows the median annual income by income decile (1<sup>st</sup> decile receiving the lowest income, 10<sup>th</sup> decile receiving the most). The overall median income for all households in 2008 was £22,300, which lies between the average incomes for deciles 5 and 6.

**Chart 48 – Median annual income by income decile, 2008**

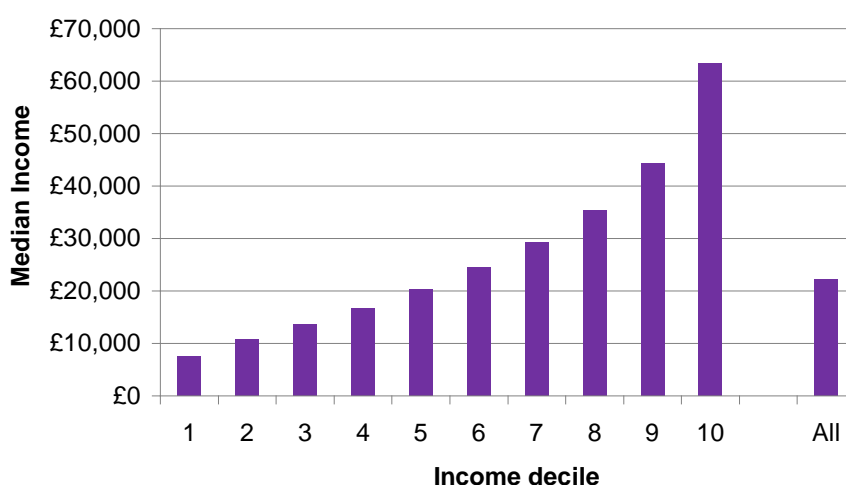
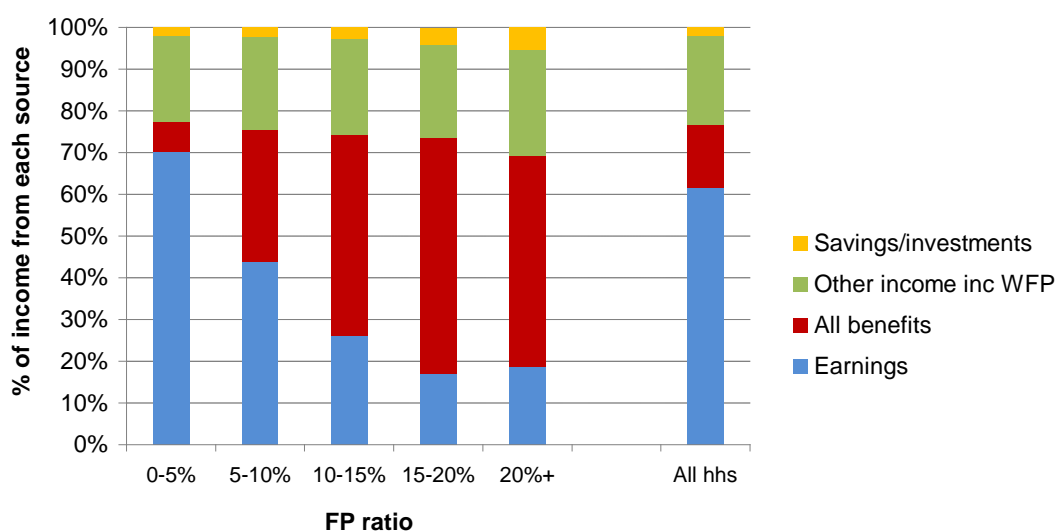


Chart 49 shows how the overall income can be broken down by banded fuel poverty ratios. The general trend is that the majority of incomes across all bands come from a combination of earnings and benefits, with each band showing broadly similar proportions of their income coming from these two sources combined. Income from earnings make up decreasing levels of overall income as you move closer to (and beyond) the 10 per cent fuel poverty threshold, with the reverse happening for benefits. Whilst average earnings for households in the '20%+' band is actually smaller than for the '15-20%' band (see Table 14), it makes up a greater percentage of the overall income. The total proportion accounted for by 'other income' is relatively stable as you move across the bands.

**Chart 49 – Income\* splits by banded fuel poverty ratios, 2008**

\*Excludes council tax payable

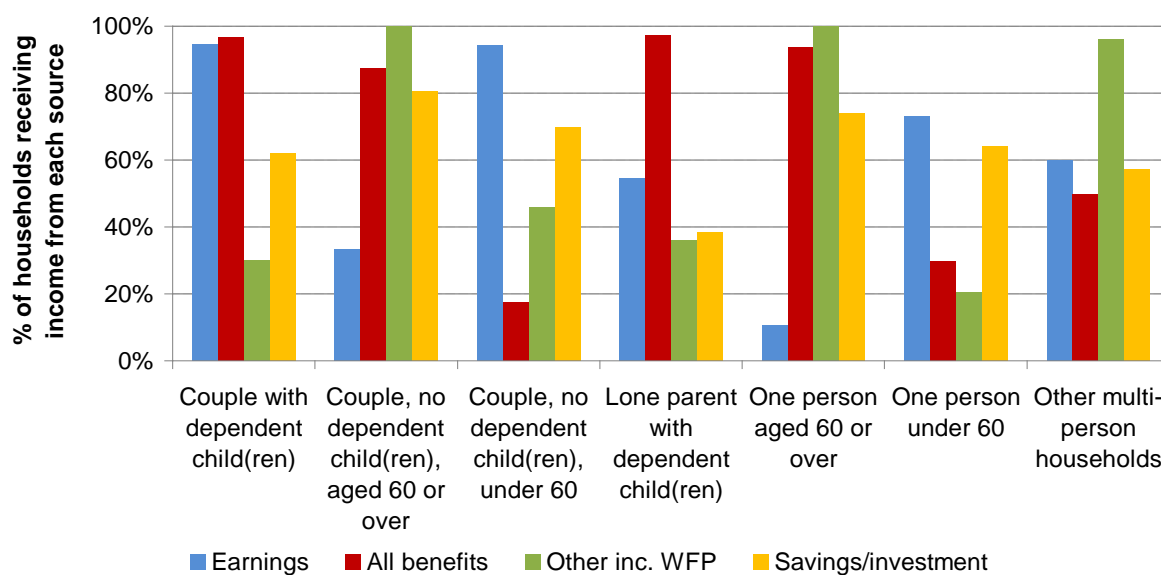
**Table 14 – Income\* splits by banded fuel poverty ratios, 2008**

FP ratio	Income source (averages shown)			
	Wages	All benefits	Other income inc WFP	Savings/investments
0-5%	£ 28,700	£ 2,900	£ 8,500	£ 800
5-10%	£ 8,300	£ 6,000	£ 4,200	£ 400
10-15%	£ 3,200	£ 5,900	£ 2,800	£ 300
15-20%	£ 1,700	£ 5,700	£ 2,300	£ 400
20%+	£ 1,200	£ 3,300	£ 1,600	£ 400
All hhs	£ 17,600	£ 4,400	£ 6,100	£ 600

\*Excludes council tax payable

Chart 50 shows the income sources by household composition type. The majority of households aged 60 or over receive income from benefits and 'other' income sources (private pensions, Winter Fuel Payments etc). These households also have the highest proportions of income coming from savings or investments. Over 90 per cent of lone parents receive income from benefits (both income and housing related). Nearly all households containing couples with dependent children receive income from both earnings and benefits, whereas the income for couples without children comes from earnings, followed by savings or investments, with significantly less from benefits (18 per cent of households) which reflects that they do not receive child benefits.

Chart 50 – Income source by household composition, England, 2008



For more detailed analysis of income looking at similar splits to those presented above, please refer to the 'Households Below Average Income' statistics produced by DWP available at <http://statistics.dwp.gov.uk/asd/index.php?page=hbai> . This work uses the Family Resources Survey, which is designed to report specifically on income.

## 7. Projections

### 7.1 Analysis of projections against outturn

The 2009 Annual Report on Fuel Poverty Statistics made projections for both 2008 and 2009 data. It projected a level of fuel poverty in 2008 of 3.6m, noting that this was likely to be an upper bound, as it made only a conservative estimate of the impact of energy efficiency improvements made to the housing stock between 2007 and 2008, and did not allow fully for the impact of social tariffs. As this report sets out, the actual level of fuel poverty is around 0.3m lower than the projection. This section looks to identify why the projection was higher than the actual figures, and from this analysis, presents improved projections for future years.

As chapter 1 of this report makes clear, fuel poverty is determined by three factors: income, fuel prices and energy consumption (which relates to the energy efficiency of dwellings). To project fuel poverty into the future, it is therefore necessary to project each of these three factors:

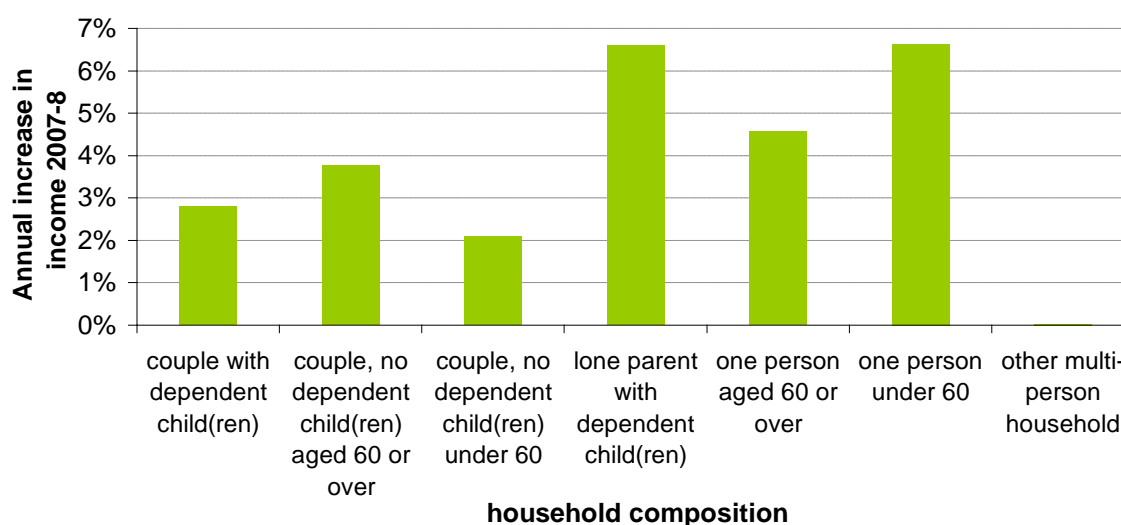
- Changes in incomes have generally come from HM Treasury budget report<sup>22</sup> estimates of the changes in real disposable income from one year to another.
- Components of the Retail Prices Index (RPI)<sup>23</sup> have been used for price changes for gas, electricity, oil and other fuels and solid fuels.
- 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 of Government schemes, DIY and other initiatives on fuel poverty is estimated instead. This is then applied to the projected level of fuel poverty arising from the result of income and fuel price projections.

Historically, a “one size fits all” approach has tended to be used when projecting. That is to say, the same estimated changes in incomes and prices have been used for each household (although different factors are used for different fuels), regardless of region, payment types and circumstances. However, comparing household incomes from one year to the next for certain groups suggests a more refined approach would improve projections. For example, the chart below shows the income increases between 2007 and 2008 by household composition.

<sup>22</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>23</sup> More information on Consumer Price Indices can be found here: <http://www.statistics.gov.uk/CCI/nugget.asp?ID=19>.

Chart 51 – Annual change in income by household composition, 2008



As chapter 6 showed, different types of households receive income from a variety of sources and, as illustrated in chart 51, this means that incomes will rise at different rates for different households. For example, even though earned incomes for many will not be rising at the same rate that they were three or four years ago, many benefits and state pensions are usually up-rated by either inflation, or during periods of low inflation, by a minimum factor<sup>24</sup>. In addition, chapter 3.4 shows that annual changes in income are different across the income deciles. Changes in the level of components from one year to the next are likely to be different for different categories of income. Therefore, it makes sense to apply different income uplifts to different types of households when producing projections.

In measuring fuel poverty, the household bill is a product of the modelled level of consumption and the prices associated with the region, payment method and fuel type. Therefore, the prices paid by a household in one region will be different to those in other regions. Similarly, although prices for a fuel tend to move similarly regardless of payment method, there will be some differences by payment method and region due to different suppliers, tariffs and offers. Chart 52 below shows the annual change in electricity bills between 2007 and 2008 for standard credit in each region. The source for this chart is the annual bills presented in DECC's Quarterly Energy Prices publication<sup>25</sup>, the same source as is used to provide average prices in the fuel poverty modelling.

<sup>24</sup> In the June 2010 Budget, the Chancellor announced the Government's intention to use the Consumer Prices Index (CPI) for price indexation of benefits and tax credits from April 2011. See [http://www.hm-treasury.gov.uk/d/junebudget\\_press\\_notice2.pdf](http://www.hm-treasury.gov.uk/d/junebudget_press_notice2.pdf)

<sup>25</sup> <http://www.decc.gov.uk/en/content/cms/statistics/publications/prices/prices.aspx>. The prices in the QEP publication are shown for electricity regions – these have been converted into Government Office Regions in the chart, consistent with fuel poverty geography.

Chart 52 – Annual change in standard credit electricity bill by region, 2008



The broken horizontal line shows the national average change in standard credit electricity bills. As the chart shows, prices for electricity can move slightly differently in different regions even for the same method of payment. For households close to the fuel poverty 10 per cent line, these differences can determine whether a household is fuel poor or not. Households in regions below the line will therefore have a projected bill that is too high, whilst those above will have a projected bill that is too low.

The choice of income and fuel prices are therefore very influential in determining the level of the projections for those households close to the fuel poverty threshold, and the source data used to project in 2007 has led to an exaggerated projection for 2008. Revisiting the projections made last year and using actual income increases (by type of income, as reflected in the EHS) and regional and payment specific price changes between 2007 and 2008 suggests that income was slightly more influential in over projecting the level of fuel poverty, in particular for those in the third income decile, who are often close to the fuel poverty threshold. The discrepancy was also significant when considering households using gas as their main heating fuel, where prices had been over projected.

## 7.2 Improvements to projections this year

In projecting fuel poverty data, there will always be uncertainties and, despite the significant work invested in improving projections, uncertainty and approximation still exists, but the developments made in this report should help to reduce the uncertainty.

For the 2009 and 2010 projections presented below, different rates of income have been assumed for different types of income, and the data obtained from a variety of sources, most notably the 2010 June Budget Report<sup>26</sup>. Prices for 2009 and 2010 have been applied by payment method and region, sourced from the average bills

<sup>26</sup> See [http://www.hm-treasury.gov.uk/junebudget\\_documents.htm](http://www.hm-treasury.gov.uk/junebudget_documents.htm). Table C2 of the budget report projects various sources of income for several years

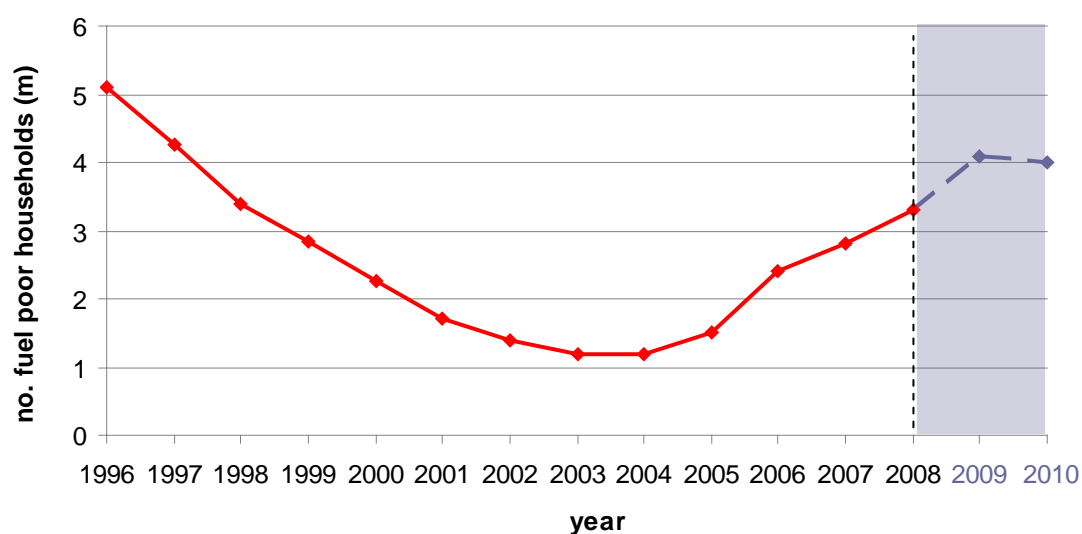
presented in the September QEP publication<sup>27</sup>. Using this data has an additional benefit as it is a census of all tariffs available from all gas and electricity companies in the country, and is the same source as is used in the annual fuel poverty statistics modelling.

No changes have been made to the way energy efficiency improvements have been estimated – that is, an annual reduction is made to the overall projected level of fuel poverty once the income and fuel price projections have been applied.

### 7.3 Projected levels of fuel poverty in England, 2009 and 2010

The chart below shows the new projections for fuel poverty for 2009 and 2010. It shows that increasing energy prices (as illustrated in section 3.5 of this report) are likely to increase fuel poverty to around 4.1m households in 2009, followed by a slight reduction in 2010, to around 4.0m households. The reduction is due partly to prices levelling out, and in some cases reducing during 2009 and 2010 (see section 3.5 of this report), as well as continued improvements in the energy efficiency of housing.

**Chart 53 – Fuel poverty 1996-2008, projections 2009, 2010; England**



As noted above, 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 ‘do it yourself’ type improvements (such as loft insulation). The projections do not make any adjustment for the impact of social and discounted tariffs (see section 8.2 for more details), which will reduce bills for those households on such tariffs.

The extent to which the actual fuel poverty levels for 2009 and 2010 will differ from the above projections will depend on a number of important and, until the results of survey data from those year are compiled, uncertain factors. These include:

<sup>27</sup> Bills presented in the September QEP publication are provisional, and are finalised in the December data.

- 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; and
- The economic climate and the degree to which employment levels change

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

## 8. Developments

This section looks at some of the planned developments for the period up to publishing the 2009 figures in 2011. Note that the publication date for 2009 fuel poverty 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>

### 8.1 Sub-regional fuel poverty, 2008

Sub-regional estimated levels of fuel poverty for 2006 were published alongside the 2007 national fuel poverty statistics in October 2009. The data on sub-regional statistics have proved very popular amongst local authorities, local Government and Parliament in particular. To better understand the needs of users, and what developments they would like made to the sub-regional fuel poverty data, DECC undertook a consultation with key users of the data at local authority level. A report of this consultation will be published in early November 2010 and one of the key findings was that users would like the figures to be updated annually. The consultation report will set out DECC's intentions to repeat the analysis for 2008 data, with sub-regional fuel poverty levels published in late 2010 or early 2011. The demand for this data is clear from users, and DECC will consider ways of producing this data for future years.

As part of the 2008 publication, a number of developments will be made to the data, in line with user feedback. We are currently considering these and will set out our plans in the forthcoming consultation report.

### 8.2 Social tariffs

As documented in the Annual Report on Fuel Poverty Statistics 2009, the role of social tariffs<sup>28</sup> has been considered over the past year. Initial consideration had been given to incorporating their role in the 2008 statistics, and analysis suggested that the impact was likely to be a reduction in fuel poverty of less than 10,000 households. After assessment of the likely impact and further consideration of user needs, it was decided to defer to the 2009 statistics, published in 2011.

The main difficulty in measuring the impact of social tariffs on fuel poverty is that it is not possible to identify from EHS data the exact tariff any individual household receives. Therefore, it is not possible to say with certainty what the impact of social tariffs is. However, as a specific policy aimed at helping vulnerable and fuel poor customers, it is important that the impact of social tariffs is quantified in the statistics report. Therefore, the method chosen to estimate the impact is based on

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<sup>28</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 stricter definition of social tariff as defined by OFGEM in 2008.

approximating receipt of such tariffs, given the eligibility as defined by each of the energy suppliers during the voluntary agreement. The eligibility tends to be focused at households on benefits, elderly households or those containing people who are ill or disabled. Using the detailed EHS data, it is possible to assign each household as eligible or not for the tariffs.

Clearly there are many more households that are eligible for social tariffs than actually receive them, and choosing one group of these could have a very different impact on fuel poverty compared with choosing a different group. To overcome this, the tariffs will be randomly assigned to eligible households, subject to achieving the appropriate number of tariffs as documented by OFGEM in their annual reports on supplier social programmes<sup>29</sup>, and the household selected will have their bills adjusted appropriately. The resultant impact on fuel poverty of the social tariff allocation will be recorded, and further iterations run, recording the outputs at each stage. This is similar to a technique known as Monte-Carlo methods, where the random iterations are run until the mean value of all outcomes converges to a common value. For social tariffs, once convergence is achieved, this will be the figure that is applied to the headline fuel poverty statistics and reported in the 2009 publications.

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 will assign social tariffs according to a “mean” assignment – that is, one that matches the convergent impact and does not adversely affect any of the key detailed series disproportionately.

This methodology has been discussed and approved amongst the methodology group, and is popular as it maintains the consistency between the public data set and the headline statistics.

### 8.3 Detailed uncertainty analysis of 2008 figures

The UKSA assessment accredited the fuel poverty statistics as National Statistics subject to three requirements. One of these was to publish more information around uncertainty and variability of the headline figures, and their dependence on the assumptions made in the modelling. This work had already been considered for the overall level of uncertainty (ie. from variations to all factors) on national fuel poverty in 2006, and the results of this were published in the annual report on fuel poverty statistics for 2007 last year.

The UKSA felt that it would be of particular interest to users to consider uncertainty with regard to different types of uncertainty. Two different aspects of fuel poverty modelling were identified: (i) the modelling of incomes; (ii) the modelling of the fuel

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<sup>29</sup> Latest reports available here:

<http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=264&refer=Sustainability/SocAction/Suppliers/CSR>

“price” a household encounters. A number of assumptions are made when modelling the level of incomes (for example, where banded levels of income are submitted) – the outputs of this work would give an idea of the range that fuel poverty might take if different assumptions were made. Similarly, the actual unit and standing charges assigned to each household in the modelling are the average for the payment method and region appropriate for each household. However, the actual price each household experiences will be different from the average costs in the region for the payment method, so this element of the work will highlight the likely range of fuel poverty given different assumptions around prices.

In addition to the added dimensions noted above, the work will also consider lower level splits of fuel poverty data – for example, are there types of households or dwellings that are more affected than others by the assumptions made ?

This work is underway and a report is expected to be published in December 2010 on the DECC fuel poverty statistics webpage:

[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)

#### 8.4 Methodology Group

The Fuel Poverty Methodology Group (FPMG) are a group of expert users that meet three times a year. The primary aim of the FPMG is to ensure the published data on fuel poverty continues to reflect the needs of the wider user community. More detail about the structure and membership of the group are contained in the detailed methodology document<sup>30</sup>. Forthcoming work areas that the group will be considering include a comparison of the features of households in fuel poverty with those living in income poverty, and the overlap between the two and a consideration of the impacts of cold weather, and cold weather payments. The group will also continue to advise on the appropriate methodology for introducing social tariffs to the fuel poverty methodology for 2009 data, changes and developments in the BREDEM model and all such related fuel poverty issues.

#### 8.5 Routine updates

Aside from the developments outlined above, routine updates, for example to the BREDEM (BRE Domestic Energy Model) are made during the course of the year, as better information becomes available. All such changes are discussed and agreed by the fuel poverty methodology group, and documented in the annual statistics publication, and related documents.

As noted in the first standalone statistics report last year, the estimation of fuel poverty statistics has developed in recent years. Through the work of the methodology group and DECCs own work on how data on fuel poverty can be enriched, we will continue to seek new analysis to include in future publications.

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<sup>30</sup> [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 DECC statistics team are keen to hear of any other ideas in which this report and the analysis of the fuel poor can be further advanced. If you have any thoughts or suggestions, please contact [fuelpoverty@decc.gsi.gov.uk](mailto:fuelpoverty@decc.gsi.gov.uk), or one of the authors, whose details are listed on the inside back cover of this report.

In particular, DECC would like to understand more about how these data (both headline data and the underlying dataset) are used, to assist our planning and also to further inform our work on documenting user needs as requested by the UK Statistics Authority.

For enquiries about fuel poverty statistics, or suggestions for future publications, please contact:

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