

Sustainable Energy Report 2010

Progress against the Government's English household energy efficiency target

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Introduction

1 This document is published in accordance with Section 1(1)(e) of the Sustainable Energy Act 2003 (SE Act), which requires the Secretary of State to report annually on progress towards achieving the Government's energy efficiency target for the English household sector (see Fig.1)

Fig 1. Statutory energy efficiency targets for the household sector in England

- (a) The 2004 Energy Efficiency Action Plan¹ included an aim to reduce annual carbon emissions from the English residential sector by 3.5 million tonnes by 2010 through measures to improve energy efficiency. The aim uses the same 2010 business as usual baseline as previously defined in the 2000 Climate Change Programme. Publishing the aim fulfilled the requirement in Section 2 of the SE Act.
- (b) A second target for household energy efficiency was set in Section 217(1) of the Housing Act 2004². This requires the Secretary of State to take reasonable steps to improve residential energy efficiency in England by at least 20% by 2010 from a year 2000 baseline.

2 Improving the energy efficiency of our housing stock through Green Deal is a significant aspect of the Coalition Government's energy strategy. Furthermore, by helping to reduce overall demand, improved energy efficiency tackles the causes of energy waste rather than the symptoms. It provides a permanent solution with continual, year-on-year carbon and financial benefits for households.

3 The information presented in this Report shows that average household energy efficiency continued steadily to improve in 2009, with an 18% overall improvement since 2000. This has provided important benefits for many vulnerable and low-income families, with overall numbers of those in fuel poverty lower than they otherwise would be.

Reporting requirements

4 Section 1 of the SE Act, as amended, requires the Secretary of State to report each year on progress towards the achievement of Fig.1(b), together with estimates of how efforts to achieve this progress have affected English CO₂ emissions and the number of households in fuel poverty. The Act defines reporting periods in terms of calendar years, with this Report covering progress made during 2009.

5 Data relating to energy efficiency is available for the whole of the 2009 calendar year reporting period. However, we are able only to publish statistics for the period up to the end of 2008 for carbon emissions and fuel poverty due to the time-lag in data becoming available. Section 1(5) of the SE Act makes allowance for this, stating that the report "must be based on such information as is available to the Secretary of State when the report is completed".

6 There is no statutory duty to report progress against (a) in Fig.1, however the data presented below suggests that this aim is likely to be significantly overachieved by 2010.

¹ Energy Efficiency Action Plan 2004: www.archive2.official-documents.co.uk/document/cm61/6168/6168.pdf

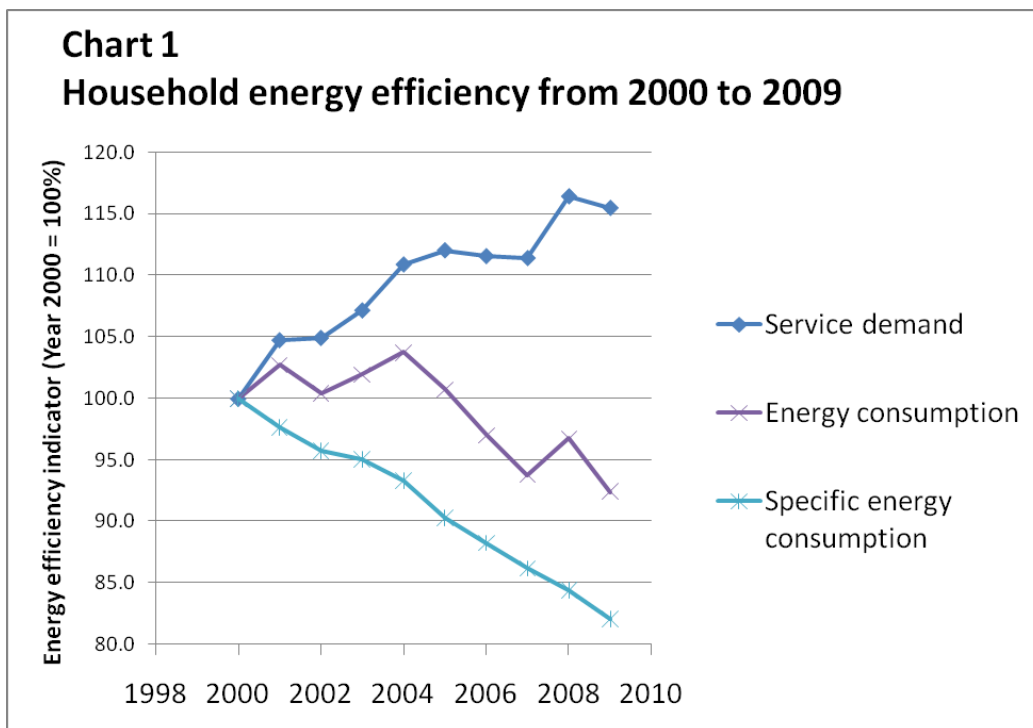
² Housing Act 2004: www.opsi.gov.uk/ACTS/acts2004/ukpga_20040034_en_1

Household energy efficiency and carbon emissions trends

Residential energy efficiency

7 The following charts and explanatory notes relate to the Housing Act target described in Fig.1(b), and serve to fulfil the requirements of the Sustainable Energy Act 2003 Section 1(1)(e) and 1(1AA) (a) and (b) respectively.

Trends in household energy efficiency



8 Chart 1 shows household energy consumption being driven by two factors: increased demand for the services that energy provides (for example, keeping a home warm) and increases in the efficiency with which energy is used (here indicated as falling “specific energy consumption”, which can be thought of as the energy required to deliver a specific service. See page 6 for further information about energy efficiency and service demand indicators.

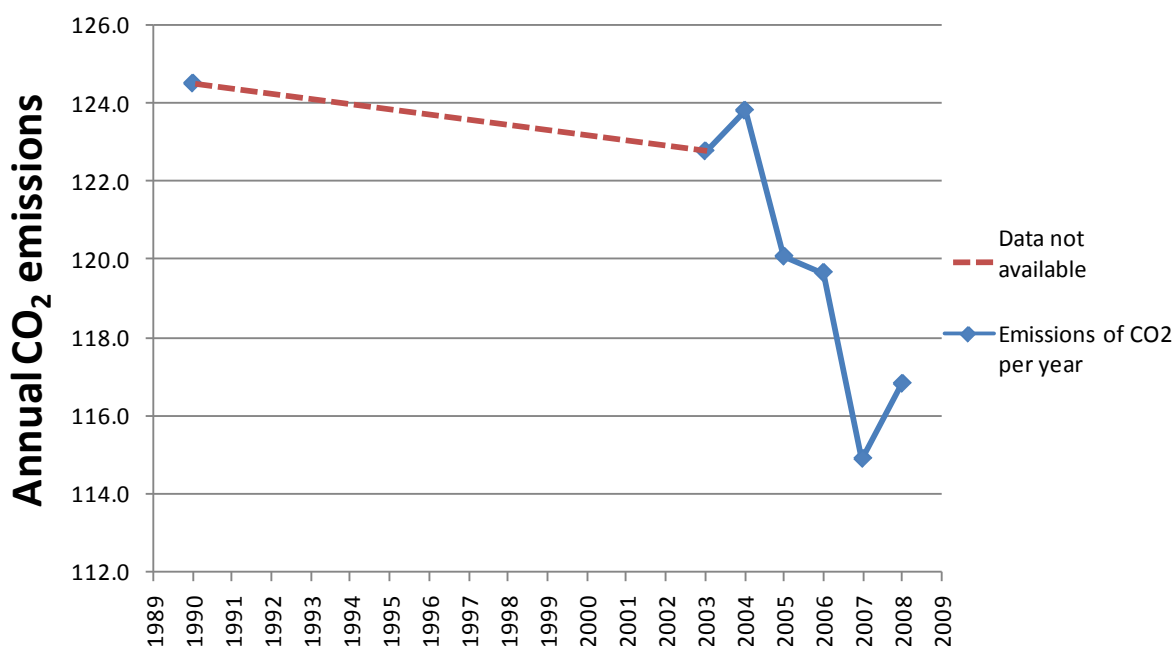
9 The specific energy consumption indicator for the housing sector shows a downward trend, indicating rising energy efficiency. Current specific energy consumption of 82.0, as opposed to a baseline figure of 100 in year 2000, means energy efficiency by this measure has improved by 18% since 2000. The prospects of achieving an additional 2% by the end of 2010 look promising given the annual additional improvement of approximately two percentage points over recent years.

10 Year-on-year, household energy efficiency in 2009 was 2.2% higher than in 2008. The data we have available for the construction of the energy efficiency indicator relate to GB consumption rather than just in England. Since consumption in England dominates GB consumption, any indicator for England will be very close to the corresponding indicator for GB.

Estimated effect on English CO₂ emissions

11 Chart 2 shows annual CO₂ emissions from combustion and electricity use in the household sector in England from 2003-2008, using “Devolved administration end user data” from the National Atmospheric Emissions Inventory³. The Chart shows that annual emissions in 2008 were 1.9MtCO₂ higher than in 2007, but have fallen by 7.1MtCO₂ since the SE Act was published in 2004. The 2008 increase appears to be a result of the rise in service demand shown in Chart 1, as average energy efficiency continued to improve over the same period.

Chart 2
English household CO₂ emissions
(1990 - 2008)



12 Figures for household emissions specific to England between 1990 and 2003 are not available. It can be seen by comparing 1990 data for England (scaled from UK data) with 2003 and 2004, that emissions fell slightly over the period without data. Carbon emissions data for 2009 is not yet available.

13 At the time of the SE Act legislation, total emissions from the household sector (for the UK), in the absence of additional policies, were projected to be more or less steady over the period 2000-2010.

³ National Atmospheric Emissions Inventory: <http://www.naei.org.uk/reports.php?list=DA>

Estimated effect on numbers of households in Fuel Poverty

14 Installing energy efficiency measures in the home helps to reduce the fuel bills of those households receiving the measures, and so can help fuel poor households, either bringing them out of fuel poverty or making them 'less fuel poor'.

15 The 2008 annual report on fuel poverty statistics⁴ states that energy efficiency improvements installed between 2007 and 2008, caused up to 80,000 fewer households to be fuel poor in England in 2008.

Measuring energy efficiency and fuel poverty: definitions and background

Energy efficiency

16 A high level description of the energy efficiency and energy services indicator, and associated methodology, is given in the document, "*Joint Working Group on Energy and the Environment: progress on the development of indicators July 2005*"⁵, available from the DECC website.

17 Efficiency and service demand indicators are calculated for each of the four main end uses in the household sector: space heating, water heating, lights and appliances, and cooking. They are then combined into one composite indicator for efficiency, and one for services.

18 For each "end use", the efficiency indicator is defined as "Specific Energy Consumption" (SEC), i.e. the energy required to deliver a constant amount of the corresponding "energy service". For hot water, the service could be defined as a fixed volume of water raised from ambient to, say, 60C. For space heating, the service is defined in terms of maintaining a given level of comfort within the dwelling for a required period each day throughout the heating season. Service demand would increase if, for example, the internal temperature was raised in part of the dwelling for the same number of hours per year, or if the average external temperature fell. As efficiency improves, the SEC falls. So we have interpreted an efficiency improvement of 20% to correspond to a 20% drop in the SEC relative to the base year value.

19 Household energy consumption is dominated by space heating, and most efficiency improvements are concentrated on that service via cavity and loft insulation and high-efficiency condensing boilers. From a combination of building physics and field measurements in real houses, the savings expected from energy efficiency improvements in a typical house are fairly well defined, and the government have reliable statistics on the annual numbers of installations. This data is the most significant component influencing the energy efficiency, or specific energy consumption, indicator.

⁴ Fuel Poverty Statistics for 2008: http://www.decc.gov.uk/en/content/cms/news/pn10_106/pn10_106.aspx

⁵ JWGEE indicators: www.decc.gov.uk/en/content/cms/statistics/publications/ecuk/ecuk.aspx

Fuel poverty statistics

20 The number of households in fuel poverty is derived from detailed survey data recorded from the English Housing Survey (EHS) and a census of fuel prices conducted by DECC. The EHS records a range of information about the dwelling and the people living there, from which the level of consumption required for the members of the household to maintain “adequately warm” (defined as achieving 21 degrees in the main living area and 18 degrees in other rooms) and the income of each household can be derived. Combining the level of consumption with prices produces a modelled bill. Households for which this modelled bill represents more than 10 per cent of income are defined as fuel poor. The modelled bill also incorporates spending on water heating, lights and appliances and cooking. For more information, see:

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

