

Domestic energy bills in 2013: The impact of variable consumption

Introduction

DECC publishes estimates of annual domestic electricity and gas bills in its Quarterly Energy Prices (QEP) publication. These bills are based on quarterly pricing information collected from energy suppliers. They are now calculated using standard annual consumption assumptions of 3,800kWh for standard electricity, 6,000kWh for Economy 7 electricity, and 15,000kWh for gas (see earlier article on page 52 in this edition of Energy Trends). These assumptions allow for easy price comparisons between years, removing the impact of weather and energy efficiency measures.

Table 1: Domestic energy bills based on revised fixed consumption levels 2010-2013¹

	Standard Electricity	Gas	Combined Bill
2010	£474	£564	£1,038
2011	£513	£617	£1,130
2012	£542	£686	£1,228
2013	£577	£729	£1,306
Growth 2012-2013	6.5%	6.3%	6.4%

In the March 2012 edition of Energy Trends we first published final calendar year bills based on actual average household consumption for the years 2009 through to 2011. This article uses household consumption data to update these bills based on the provisional 2013 data.

The key advantage of presenting bills with a fixed consumption level is that users can see the effects of price changes in the table. Also estimates can be produced in advance of detailed consumption information being made available. The first estimates of energy bills are published in December of the year, whilst estimates of domestic consumption are first published in March of the following year, with data subsequently being revised in the July edition of DUKES (Digest of UK Energy Statistics).

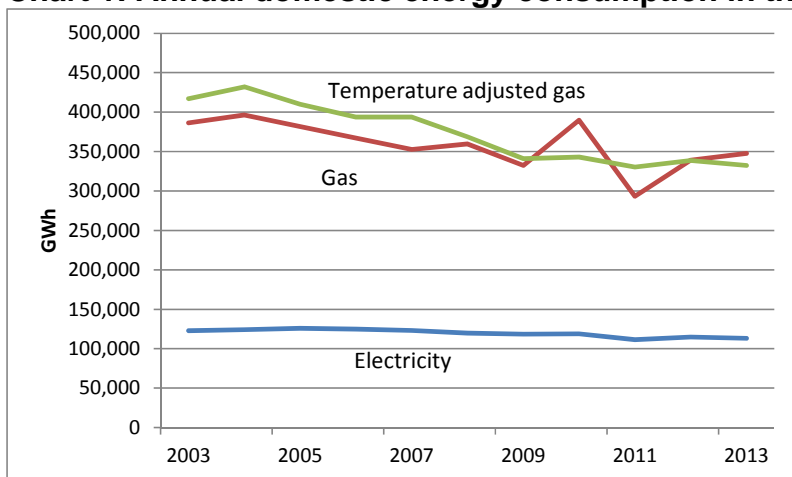
Annual Domestic Energy Consumption

Quarterly data on energy consumption is published in tables 4.1 (Gas) and 5.2 (Electricity) of Energy Trends. The data is collected from a variety of sources - supplier surveys, DECC administrative systems, data modelling – and is combined to provide quarterly and annual figures. Chart 1 shows the trends in energy consumption in the UK from 2003 to 2013. Data are temperature and seasonally adjusted by DECC so that a better idea of the underlying trend can be observed. In the past 10 years the temperature fluctuations have had a significant effect on gas demand with actual consumption either up or down by up to 13 per cent in the particularly cold or warm years of 2010 and 2011 respectively. The fluctuations in electricity demand are much lower with temperature effects limited to around 2 per cent per year even with the recent extreme temperatures.

Although this period has seen some large fluctuations in annual energy consumption (particularly for gas), the trend is of generally falling consumption between 2003 and 2013. This is likely to be as a result of a number of factors, which include price changes, weather patterns, and increased household energy efficiency in the form of greater insulation and increased efficiency of boilers, lighting, and appliances.

¹ Gas data within this article refers to Great Britain unless otherwise stated. Electricity bills and consumption figures are based on UK data.

Chart 1: Annual domestic energy consumption in the UK: 2003-2013 (GWh) ²



Price Changes

CPI data shows that gas and electricity prices have been rising in both current and real terms almost every year between 2003 and 2013.

Following two rounds of energy price rises in 2011, small reductions in gas or electricity prices were announced by all of the big six suppliers in early 2012. However, the subsequent large rises in prices towards the end of 2012 outweighed these small reductions, causing overall annual energy prices to rise. Bills in 2013 rose as a result of this last increase, with a further round of price rises commencing in November, though some reductions have subsequently occurred. Gas prices have generally risen by more than electricity prices in recent years. The extent of these rises is visible in Table 1, where consumption is fixed between years.

Weather

Annual changes in consumption figures have been greater for gas than electricity as a result of annual variation in the demand for heating. DECC estimates that in 2012, 77 per cent of domestic gas use was for space heating, compared to only 21 per cent for electricity.³ As a result, the degree to which changes in electricity consumption will be attributable to weather patterns will be much smaller than for gas, as far fewer households rely on electricity for heating.

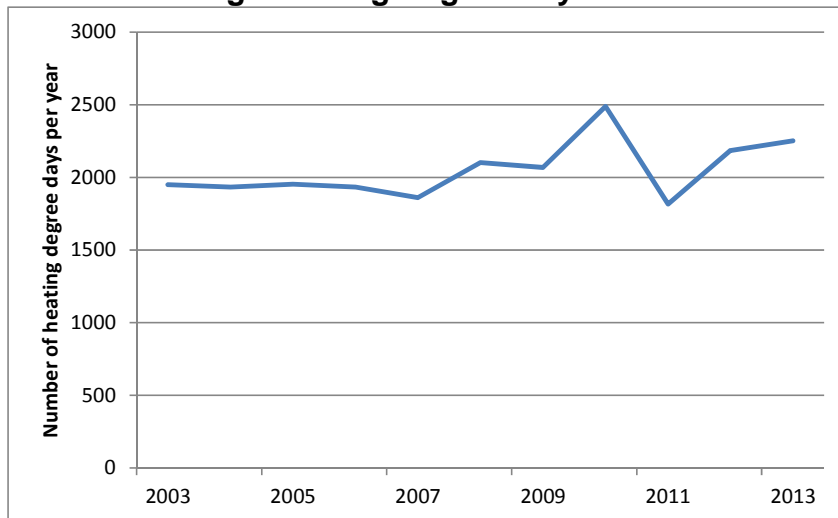
Heating Degree Days (HDDs) are used to reflect how weather influences the energy used to heat homes. They are calculated relative to a base temperature (DECC use 15.5°C), so if a day has an average (of the maximum and minimum) temperature of 10°C, the HDD for that day will be 5.5. If the daily average temperature exceeds the base temperature, the HDD for that day will be 0. The HDDs are summed for each month and published in Table 7.1 of Energy Trends.

Between 2004 and 2009 the number of Heating Degree Days per calendar year was relatively consistent. Over this period, annual energy consumption fell fairly steadily, as shown in Chart 1. In 2010 the comparatively much colder weather saw the number of Heating Degree Days jump by 20 per cent, and led to a corresponding rise in energy consumption. The warmer weather of 2011 had the opposite effect.

² Electricity consumption figures include both Standard Electricity and Economy 7 Electricity customers.

³ Energy Consumption in the UK: Table 3.05

Chart 2: Average Heating Degree Days 2003-2013



Average 2013 temperatures were slightly cooler than in 2012, with the number of Heating Degree Days rising by 3 per cent compared to 2012. This led to an increase in demand for gas for heating resulting in slightly higher consumption of gas by the domestic sector in 2013 than in 2012.

Annual Domestic Energy Bills based on Actual Consumption

Table 2 shows estimates of annual household consumption of gas and electricity for 2010 – 2013. These are calculated by dividing total energy consumption figures shown in Chart 1 by DECC estimates of customer numbers on each fuel type.⁴

Table 2: Average annual household consumption in kWh 2010-2013⁵

	Standard electricity	E7 electricity	Total electricity	Gas
2010	4,090	6,230	4,420	17,770
2011	3,830	5,850	4,130	13,280
2012	3,890	6,090	4,220	15,280
2013	3,800	5,980	4,140	15,660
Growth 2012-2013	-2.3%	-1.8%	-2.0%	2.5%

Most energy tariffs are comprised of a fixed and a variable element. These can be in the form of either a Standing Charge and Single Unit price structure, or a two-tier tariff whereby a customer pays a high price for a set number of units of energy consumed, and any subsequent consumption is paid for at a lower unit rate. The average fixed and variable prices and corresponding bills for 2010-2013 can be seen in table 3 below:

⁴ DECC estimates that in 2013 there were 23.3 million domestic Standard electricity customers and 3.9 million Economy 7 electricity customers in the UK, and 22.1 million domestic Gas customers in Great Britain. These figures are based on DCLG household numbers published in Table 3.07 of DECC’s Energy Consumption in the UK, data collected through the Domestic Fuel Inquiry, and other sources.

⁵ Total domestic consumption figures are available in DUKES tables 4.2 (Gas) and 5.3 (Electricity).

Table 3: Average prices based on standard and actual consumption (pence/kWh)^{6 7}

	Using standard volume assumptions		Using actual volume assumptions	
	Std electricity	Gas	Std electricity	Gas
2010	12.47	3.76	12.39	3.66
2011	13.50	4.11	13.49	4.21
2012	14.26	4.57	14.22	4.56
2013	15.20	4.86	15.20	4.83
% change	6.6%	6.2%	6.8%	6.0%

Combining the actual consumption estimates with the prices above suggests that average bills by consumers dual fuel electricity and gas were as follows:

Table 4: Average energy bills on actual consumption

	Electricity	Gas	Total
2010	£507	£651	£1,158
2011	£516	£559	£1,075
2012	£553	£697	£1,249
2013	£577	£756	£1,332
Change	£25	£60	£84
% change	4.4%	8.6%	6.7%

Between 2010 and 2013, bills based on standard consumption assumptions have been rising consistently between years. This reflects price increases during this period. However, when variations in annual consumption are taken into account, whilst electricity has continued to grow, there is more variation for gas.

User Feedback

Please send any comments or queries regarding this analysis to the contact details below:

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⁶ The average unit prices are published in QEP tables 2.2.4 (Electricity) and 2.3.4 (Gas).

⁷ Economy 7 electricity tariffs are based on different prices for units consumed during the day (peak) and night (off-peak). Our bills calculations assume 55% of electricity is consumed at the lower night rate.