

Annex A – Technical Notes

Tables 2.1.1 to 2.1.3

A1. The source of the prices in these tables is the Consumer Prices Index (CPI), published by the Office for National Statistics (ONS). The fuel components within the CPI are published, together with the all items CPI. Table A1 below gives the weights within the total index, in parts per 1,000, of the fuel components. The CPI is calculated using prices collected on the second or third Tuesday of each month.

A2. Quarterly data is published three months in arrears. Any revised data is marked with an “r”. Annual data is published in the March edition of QEP. Revisions to the real terms series in Table 2.1.2 occur when the GDP deflator is updated.

Table A1: Consumer price index, fuel component weights

	All items	Domestic fuels	Solid fuels	Gas	Electricity	Liquid fuels	Motor fuel and oils
1996	1,000	45	2	20	22	1	40
2000	1,000	33	1	13	17	2	38
2005	1,000	28	1	12	14	1	27
2006	1,000	32	1	14	15	2	35
2007	1,000	39	1	18	19	1	36
2008	1,000	35	1	15	17	2	38
2009	1,000	46	1	23	20	2	34
2010	1,000	47	1	25	19	2	41
2011	1,000	44	1	22	19	2	43
2012	1,000	56	1	32	20	3	46
2013	1,000	48	1	26	19	2	40
2014	1,000	45	1	21	21	2	35

The following notes apply to Table 2.1.1:

A3. **Solid fuels** - Retail prices of one standard grade of household coal and of the boiler/room heater grade of smokeless fuel sold by the retailer, obtained from local retailers in up to 146 areas throughout the United Kingdom.

A4. **Gas** – average of the major gas companies’ tariffs, plus butane gas.

A5. **Electricity** – average of the major electricity companies’ tariffs.

A6. **Liquid fuels** - This comprises domestic kerosene heating oil. Prices of heating oil are provided by retailers in up to 146 areas throughout the United Kingdom.

A7. **Motor fuel and oils** - Ultra-low sulphur petrol (ULSP), ultra-low sulphur diesel (ULSD) and motor oil. Retail prices of the different grades of motor spirit and engine oil are obtained weekly from oil companies and supermarkets throughout the United Kingdom, with the weekly data averaged to produce a monthly figure.

Tables 2.2.1 to 2.5.2

A8. Tables 2.2.3 and 2.3.3 show representative electricity and gas bills by payment type in each of the 15 Public Electricity Supply (PES) regions in the UK. The unit cost represents the total cost to the consumer per unit consumed and is calculated by dividing the bill shown by the number of units consumed (3,800 kWh for electricity, 15,000 kWh for gas). Data on regional electricity and gas bills from 2013 onwards are shown based on PES regions as opposed to selected towns and

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cities within the PES regions and gas Local Distribution Zones (LDZ). This change has been made because most energy suppliers now charge for gas according to the PES area that a household is in. It is not possible to present historical data on gas bills in this way, as the data from previous years was not collected in this format. Table A2 maps the selected towns and cities to the PES region and LDZ that they are within.

Table A2: Towns and cities by LDZ and PES area

	Gas LDZ	Electricity PES area
Aberdeen	Scotland	Northern Scotland
Belfast	n/a	Northern Ireland
Birmingham	West Midlands	West Midlands
Canterbury	South East	South East
Cardiff	Wales	South Wales
Edinburgh	Scotland	Southern Scotland
Ipswich	Eastern	Eastern
Leeds	North East	Yorkshire
Liverpool	North West	Merseyside & North Wales
London	London	London
Manchester	North West	North West
Newcastle	Northern	North East
Nottingham	East Midlands	East Midlands
Plymouth	South West	South West
Southampton	Southern	Southern

A9. Provisional annual data is published in the December edition of QEP, with final data being published in March.

A10. Bills and unit costs are based on published prices and include standing charges where applicable. No allowances are made for introductory offers or non-cash benefits that may be available from new suppliers. Both electricity and gas bills and costs reflect the prices of all suppliers. This basis is used for all the domestic bills and cost data used in Tables 2.2.1 to 2.3.3. The bills shown relate to the total bill including VAT in cash terms received during the calendar year, for the tariff type shown, including all tariff changes and rebates. Averages are weighted by the number of domestic customers. For electricity, an annual consumption of 3,800 kWh is used whilst the equivalent figure for gas is 15,000 kWh.

A11. The weighted average of all supplier gas bills are based on equivalent tariffs of British Gas and other gas supply companies. From 2007 onwards, due to a methodology change, the estimates are based on bills received during the calendar year. As part of the methodology change, it is now assumed that, of the 15,000 kWh of gas consumed per annum (see A8), 6,000 kWh are consumed in the first quarter, 3,000 kWh in Q2, 1,500 kWh in Q3 and 4,500 kWh in Q4.

A12. From June 2013, data on the number of gas customers are shown based on Public Electricity Supply (PES) regions. In previous quarters, this data has been presented by Local Distribution Zones (LDZs). This change has been made because most energy suppliers now charge for gas according to the PES area that a household is in, and so it is more appropriate to present data in this format. Gas bills are also published on a PES area basis from December 2013 onwards. It is not possible to present historical data on gas bills and customer numbers in this way, as the data from previous years was not collected in this format.

A13. Internet tables 2.4.2, 2.4.3 and 2.5.2 show data for 'Economy 7' tariffs, where a lower unit cost is applied to off-peak (night) consumption. For the total consumption of 6,000 kWh, off-peak consumption has been taken as 3,000 kWh.

A14. Internet tables 2.2.4 and 2.3.4 are experimental statistics, used together with modelled energy consumption in the calculation of household notional energy bills for use in the modelling of the level of fuel poverty in England. These data are not suitable for calculating the average bills of

low use consumers. The data reported is an average of the fixed and variable costs across the four quarters in the year. In the calculation, more weight is given to costs in Q1 and Q4, when it is assumed that more electricity and gas is consumed (and hence the price at this time should contribute more to the average). Therefore, these values should not be used to determine current average bills. For more information see the Fuel Poverty Methodology Handbook on the DECC website: <https://www.gov.uk/government/publications/fuel-poverty-methodology-handbook>

Table 2.6.1

A15. Household final consumption expenditure comprises household expenditure in the United Kingdom on the fuels specified and fuel purchases by foreign tourists. It excludes expenditure on fuels by businesses. VAT was levied on domestic fuels at 8 per cent in April 1994, reduced to 5 per cent in September 1997, and is included in the table from 1994 onwards. For coal, coke and petroleum products it was assumed that all consumers paid VAT from the date of its introduction. For electricity and gas an estimate was made that 5 per cent of electricity sales and 4 per cent of gas sales were covered by customers pre-paying their bills to avoid VAT in 1994 and 1995. Figures for total consumers' expenditure are also shown for comparison.

Due to the reclassification of Household Expenditure to conform to the European Systems of Accounts 1995 (ESA 95), COICOP (Classification of Individual Consumption by Purpose) headings have been rearranged.

The following notes apply to Table 2.6.1:

A16. **Solid Fuels** – Household final consumption expenditure on these fuels is based on estimates of inland sales of solid fuels to domestic consumers. Expenditure in Northern Ireland is estimated based on values of colliery despatches of house coal to Northern Ireland.

A17. **Gas** - Personal consumption in the United Kingdom is taken as sales to domestic premises. Estimates of the quantity and value of liquid gases purchased by domestic consumers are provided by the petroleum industry. The average price used is the average revenue per kWh for public supply sales of gas to domestic consumers.

A18. **Electricity** - Sales from the public electricity supply system to domestic consumers in the United Kingdom plus estimates of the domestic element included in sales to dual use premises. Sales are valued at the average revenue per unit for electricity sold to domestic consumers, which takes into account discounts and lump sum rebates.

A19. **Liquid fuels** (domestic heating and lighting oil) - For fuel oils and heating oils, information is available from the petroleum industry on quantities delivered to domestic consumers. The figures for domestic consumption are then valued using monthly prices collected by the department from oil companies.

A20. **Vehicle fuels and lubricants** (petrol, diesel, LPG, oil and lubricants, brake and other fluids, coolants) – Estimates of the quantity and value of lubricating oil purchased by domestic customers are provided by the petroleum industry. For motor spirit and diesel, estimates of business purchases of the fuels are made and deducted from total deliveries to arrive at purchases by domestic consumers. The figures for domestic consumption are then valued using monthly prices collected by the department from oil companies.

Table 2.6.2

A21. Figures for Internet Table 2.6.2 are taken from the Expenditure and Food Survey (EFS) conducted by the ONS. The figures are estimates based upon a representative sample of households. The averages in the table have been calculated on the basis of consuming

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households, i.e. only those households who consumed the particular fuel in question are included in the calculation of the average expenditure. These estimates therefore differ from those published by the ONS in the report, "Family Spending", where the total of all households is used to calculate average fuel expenditure. After the publication of data for 1993 the survey moved to a financial year basis until 2005/06, then returned to a calendar year basis from 2006. The data presented on expenditure on fuel as a proportion of total expenditure in table 2.6.2 are based on all households, not just those consuming the fuel or other commodity, for ease of comparison.

Tables 3.1.1 to 3.1.4

A22. Prices are derived from information collected via the Quarterly Fuels Inquiry on fuel purchases from a panel of about 600 establishments within manufacturing industry (which excludes electricity generation). The panel consists of companies purchasing fuels in small and large quantities. To maximise the coverage of each fuel type and minimise the burden on business, larger users are surveyed proportionally more than smaller users.

A23. Provisional quarterly data is published three months in arrears, with final data being published six months in arrears. Any revised data is marked with an "r". Provisional annual data is published in the March edition of QEP, with final annual data published in June. The entire year's quarterly data is reviewed in June to ensure that each of the contributors who supply data have been placed in the correct size band based upon their actual annual consumption. This means that there can be revisions made to data from Q1 to Q4.

A24. For each size of consumer the average price for a fuel (exclusive of VAT) is calculated by dividing the total quantity of purchases into their total value. The "all consumers-average" price uses base weighting and weights the prices for each size band according to purchases by businesses in the size band recorded in the 1984 Purchases Inquiry (a large scale survey conducted every 5 years until 1989, and conducted annually for a rotating selection of industries from 1994 to 1999.) The weights will be reviewed when comprehensive up-to-date purchases data are available. The size bands are defined, for each fuel individually, according to the approximate range of annual purchases covered. (See Table A3).

A25. As described above the prices given are representative market prices. This means trades that, because of their size or dominance of total consumption would produce an unrepresentative price, are excluded. Coal purchased by the iron and steel sector is excluded, as is gas purchased for electricity generation.

A26. For some fuels, the relative size in volume terms of the largest users can have the effect of moving the weighted average more towards the large user price. This is true for gas where, because of the growth in consumption, the weights provided by the 1984 purchases survey may be out of date. Therefore, for some fuels (e.g. gas and gas oil), the median price (the price at which 50 per cent of the prices paid are higher and 50 per cent lower) may be another useful guide to average prices.

A27. From Q1 2010, for coal only average prices and prices for large consumers are available due to the small number of companies reporting data. Data for medium fuel oil, liquefied petroleum gases and hard coke were discontinued from Q1 2005, and there was no sub-division into size bands due to the small number of sites purchasing each of these fuels. The small sample sizes reflect the small overall consumption, relative to the major fuels covered, which meant that, although the prices were still representative, they could be subject to more sample effects than the other fuels (e.g. if a relatively large purchaser switches fuel).

A28. To enable coal prices to be calculated in common units, companies record the calorific value of the coal they purchase. Conversion factors for fuel oil (both heavy and medium), gas oil, liquefied petroleum gas and hard coke are given in Annex B.

A29. The 10 per cent and 90 per cent deciles and the median price are presented in addition to the prices for each size band. The 10 per cent decile is the point within the complete range of prices below which the lowest 10 per cent of those prices fall. Similarly, the 90 per cent decile is the point above which the highest 10 per cent of the prices occur. These values give some indication of the spread of prices paid by purchasers. The deciles and the median are calculated by giving equal "weight" to each purchaser, but are scaled to represent the mix of fuel users by size in the industrial population that the panel represents. From Q1 2007, decile information is only published for gas and electricity.

Table A3: Range of annual purchases for the Quarterly Fuels Inquiry

Fuel	Large Greater than	Of which:		Medium Less than	Small Less than
		Extra large Greater than	Moderately large		
Coal (tonnes)	7,600	..	..	760 to 7,600	760
Heavy fuel oil (tonnes)	4,900	..	..	490 to 4,900	490
Gas oil (tonnes)	175	..	..	35 to 175	35
Electricity (thousand kWh)	8,800	150,000	8,800 to 150,000	880 to 8,800	880
Gas ⁽¹⁾ (thousand kWh)	8,800	..	..	1,500 to 8,800	1,500

(1) Respondents purchasing more than one type of supply (firm contract and interruptible contract) are treated as separate entities in respect of each type of supply.

Table 3.2.1

A30. The prices for fuels used in electricity generation are collected via a quarterly inquiry of electricity generators in the United Kingdom. This covers companies that produce electricity from nuclear sources plus all companies whose prime purpose is the generation of electricity. The companies are: AES Electric Ltd., Barking Power Ltd., Centrica plc., Coryton Energy Company Ltd., Eggborough Power Ltd., E.On UK plc., Fellside Heat and Power Ltd., Fibrogen Ltd., Fibropower Ltd., Fibrothetford Ltd., GDF Suez, International Power, Premier Power Ltd., Rocksavage Power Company Ltd., RWE Npower plc., Scottish Power plc., Scottish and Southern Energy plc., SELCHP Ltd., Spalding Energy Company Ltd.

A31. The data reported are the value and volume of fuel purchased during the quarter and may not always reflect the fuel actually used (i.e. there can be stocking and destocking, especially of coal). The prices reported are typically for long-term contracts, with price escalator factors, some of which may have been entered into some time ago. As such, the prices can be higher than those paid by large industrial users who typically negotiate contracts each year.

A32. Provisional quarterly data is published three months in arrears, with final data being published six months in arrears. Any revised data is marked with an "r". Provisional annual data is published in the March edition of QEP, with final data being published in June.

A33. The gas beach price series is derived from gas sales by licensees in the UKCS to delivery points in the UK. It excludes exported gas and is adjusted to include imported gas. It is calculated as follows:

$$\frac{\text{Value of (UKCS gas sales + gas imports - gas exports)}}{\text{Volume of (UKCS gas sales + gas imports - gas exports)}}$$

where the UKCS sales value and volume data are derived from DECC's statistical inquiry into oil and gas extraction (PQ1100). Returns from the inquiry give the value and volume of gas sold by each licensee from a particular field (or group of fields). Data from the inquiry on sales and expenditure by licensees are covered and further explained in Annex G of the internet version of

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the Digest of UK Energy Statistics. Trade data are supplied by Revenue and Customs and published in the internet version of the Digest in Annex G, Chart G1.0.

A34. The gas levy applied to gas purchased under certain contracts originally entered into before July 1975. The cost of gas under these pre-July 1975 contracts had historically been substantially less than the prevailing market price. Gas sold under these contracts was not subject to Petroleum Revenue Tax (PRT) because the contracts were classified as "tax-exempt" when PRT was introduced in 1975. Instead, under the Gas Levy Act 1981, the purchaser of gas subject to the relevant contracts had to pay a levy on every therm of such gas that they purchased. The purpose of the gas levy was to capture for the Exchequer the bulk of the economic rent which would otherwise accrue to the purchaser from purchasing this gas at below market prices. However, current and expected future gas market prices are now below the average cost of this gas (even before adding the cost of the levy). The gas levy was abolished from 1 April 1998.

Tables 3.3.1 and 3.3.2

A35. Provisional quarterly data is published three months in arrears, with final data being published six months in arrears. Any revised data is marked with an "r". Provisional annual data is published in March, with final data being published in June. The entire year's quarterly data for coal and HFO is reviewed in June to ensure that each of the contributors who supply data to the Quarterly Fuels Inquiry have been placed in the correct size band based upon their actual annual consumption. This means that there can be revisions made to data from Q1 to Q4.

A36. The Climate Change Levy (CCL) came into effect in April 2001. The rates increased in April 2007, 2008, 2009, and then annually in April of each successive year since 2011. The rates are shown in the table below:

	Coal	Electricity	Gas	LPG
Apr-2001	£11.70/tonne	0.430p/kWh	0.150p/kWh	£9.60/tonne
Apr-2007	£12.01/tonne	0.441p/kWh	0.154p/kWh	£9.85/tonne
Apr-2008	£12.42/tonne	0.456 p/kWh	0.159 p/kWh	£10.18/tonne
Apr-2009	£12.81/tonne	0.470 p/kWh	0.164 p/kWh	£10.50/tonne
Apr-2011	£13.21/tonne	0.485 p/kWh	0.169 p/kWh	£10.83/tonne
Apr-2012	£13.87/tonne	0.509 p/kWh	0.177 p/kWh	£11.37/tonne
Apr-2013	£14.29/tonne	0.524 p/kWh	0.182 p/kWh	£11.72/tonne
Apr-2014	£14.76/tonne	0.541 p/kWh	0.188 p/kWh	£12.10/tonne

Tables 3.4.1 and 3.4.2

A37. The prices for gas and electricity consumed by non-domestic users in the United Kingdom are collected via a quarterly inquiry of gas and electricity suppliers. The data reported are the value and volume of energy sold during the quarter, for each of the sizebands below:

		Annual consumption			Annual consumption
		MWh			MWh
Electricity	Very Small	0 - 20	Gas	Very Small	<278
	Small	20 - 499		Small	278 – 2,777
	Small/Medium	500 - 1,999		Medium	2,778 – 27,777
	Medium	2,000 - 19,999		Large	27,778 – 277,777
	Large	20,000 - 69,999		Very Large	277,778 – 1,111,112
	Very Large	70,000 – 150,000			
	Extra Large	>150,000			

Tables 4.1.1 to 4.1.3

A38. The data published are national average prices calculated from prices supplied by all major motor fuel marketing companies. Prior to 1977, price data were collated from a variety of sources, mainly the published wholesale prices of the oil companies to which retailers margins were added. The results of various consumers' surveys were also taken into consideration in arriving at a typical price. From January 1995 sales by super/hyper markets are included in the price estimates.

A39. Crude oil prices are shown in Table 4.1.1 as an index based on a "basket" of both indigenous and imported crude oil prices that are used as an input, along with other fuel prices, for the Producer Prices Index (produced by ONS). The index represents the average price paid by refineries for the month and is calculated in sterling on a cif basis.

A40. Provisional monthly prices are usually revised in the month following their original publication, with revisions being marked with an "r". Provisional annual prices are published in December, with revisions being made during the following two months as data becomes available.

Tables 5.1.1 to 5.10.3

A41. International comparisons are based on data published by international organisations. Motor fuel prices are taken from the European Commission's 'Oil Bulletin'.

A42. Annual electricity and gas prices in Tables 5.3.1, 5.5.1, 5.7.1 and 5.9.1 are collated and published by the International Energy Agency (IEA) in 'Energy Prices and Taxes'. Methodology can vary between countries. From December 2013, prices for all IEA countries are shown, rather than EU and G7 countries as previously published.

A43. The data presented in Sections 5.4, 5.6, 5.8 and 5.10 are derived from Eurostat's Statistics in Focus series. Eurostat publishes data on gas and electricity prices six months after the end of the reference period.

A44. From 1st January 2008, data shows average prices over 6-month periods (January - June and July - December). The sizebands for consumers from January 2008 onwards are as follows:

Industrial Electricity	Eurostat size band	Annual consumption (MWh)
Small	Band IB	20 - 499
Medium	Band ID	2,000 - 19,999
Large	Band IE	20,000 - 69,999
Very Large	Band IF	70,000 - 150,000

Industrial Gas	Eurostat size band	Annual consumption (MWh)
Small	Band I2	278 - 2,777
Medium	Band I3	2,778 - 27,777
Large	Band I4	27,778 - 277,777

Domestic Electricity	Eurostat size band	Annual consumption (kWh)
Small	Band DB	1,000 - 2,499
Medium	Band DC	2,500 - 4,999
Large	Band DD	5,000 - 15,000

Domestic Gas	Eurostat size band	Annual consumption (kWh)
Small	Band D1	< 5,557
Medium	Band D2	5,557 - 55,557
Large	Band D3	>55,557

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A45. Prior to 2008, the Price Transparency data was for a single point in time (1st January and 1st July), and each size band was represented by a single consumption figure. Eurostat's change to the methodology in 2008 created a discontinuity within the price series. We publish the new methodology prices within the original tables, with a clear distinction between old and new data. Whilst prices using the old and new methodologies will not be comparable, the UK ranking and UK price relative to the EU median should be broadly comparable across the old and new data.

A46. It is important when comparing international prices to keep in mind the impact of exchange rates (as the data are presented in a common pound sterling basis, the changing level of the pound will cause some changes in relative prices) and inflation rates in individual countries. The relative strength of the pound in 1997, 1998 and 1999 (e.g. sterling appreciated by 21 per cent against the German Mark between 1996 and 1999) to some extent will have had an adverse effect on comparisons of UK data. The pound depreciated against the euro by 6 per cent between the second half of 2012 and the same period in 2013.

A47. For tables 5.3.1 to 5.10.3, where data is not available, we have estimated the price in relation to the median for that table. A '+' indicates that the price is likely to exceed the median and is given a high price, '+/-' indicates that the price is likely to be around the median, '-' indicates that the price is likely to be below the median price and is given a low price. This methodology is intended to give a better indication of the UK position when compared with those countries where up-to-date data is not available.

Annex B – Calorific values and conversion factors

B1: Estimated average gross calorific values of fuels 2012

	GJ per tonne		GJ per tonne
Coal:		Renewable sources:	
All consumers (weighted average) ⁽¹⁾	26.9	Domestic wood ⁽³⁾	13.9
Power stations ⁽²⁾	25.3	Industrial wood ⁽⁴⁾	13.7
Coke ovens ⁽¹⁾	31.8	Straw	15.8
Low temperature carbonisation plants and manufactured fuel plants	28.4	Poultry litter	9.1
Collieries	29.0	Meat and bone	20.0
Agriculture	29.5	General industrial waste	16.0
Iron and steel	30.4	Hospital waste	14.0
Other industries (weighted average)	26.8	Municipal solid waste ⁽⁵⁾	9.6
Non-ferrous metals	25.1	Refuse derived waste ⁽⁵⁾	18.5
Food, beverages and tobacco	29.4	Short rotation coppice ⁽⁶⁾	11.1
Chemicals	26.6	Tyres	32.0
Textiles, clothing, leather etc.	29.5	Wood pellets	17.2
Pulp, paper, printing etc.	24.2	Biodiesel	38.7
Mineral products	27.7	Bioethanol	29.7
Engineering (mechanical and electrical engineering and vehicles)	29.5	Petroleum:	
Other industries	32.5	Crude oil (weighted average)	45.7
Domestic		Petroleum products (weighted average)	45.2
House coal	30.2	Ethane	50.7
Anthracite and dry steam coal	34.5	Butane and propane (LPG)	49.3
Other consumers	26.3	Light distillate feedstock for gasworks	47.8
Imported coal (weighted average)	27.4	Aviation spirit and wide cut gasoline	47.4
Exports (weighted average)	32.4	Aviation turbine fuel	46.2
Coke (including low temperature carbonisation cokes)	29.8	Motor spirit	47.1
Coke breeze	29.8	Burning oil	46.2
Other manufactured solid fuel	32.6	Gas/diesel oil	45.3
		DERV	45.7
		Fuel oil	43.3
		Power station oil	43.3
		Non-fuel products (notional value)	43.1
			MJ per m ³
		Natural gas produced ⁽⁷⁾	39.6
		Natural gas consumed ⁽⁸⁾	39.3
		Coke oven gas	18.0
		Blast furnace gas	3.0
		Landfill gas ⁽⁹⁾	21 – 25
		Sewage gas ⁽⁹⁾	21 – 25

(1) Applicable to UK consumption - based on calorific value for home produced coal plus imports and, for "All consumers" net of exports.

(2) Home produced coal only

(3) On an 'as received' basis; seasoned logs at 25% moisture content. On a 'dry' basis 18.6 GJ per tonne.

(4) Average figure covering a range of possible feedstock; at 25% moisture content. On a 'dry' basis 18.6 GJ per tonne.

(5) Average figure based on survey returns.

(6) On an "as received" basis; at 40% moisture content. On a "dry" basis 18.6 GJ per tonne.

(7) The gross calorific value of natural gas can also be expressed as 11.012 kWh per cubic metre. This value represents the average calorific value seen for gas when extracted. At this point it contains not just methane, but also some other hydrocarbon gases (ethane, butane, propane). These gases are removed before the gas enters the National Transmission System for sale to final consumers. As such, this calorific value will differ from that readers will see quoted on their gas bills.

(8) UK produced and imported gas. This weighted average of calorific values will approximate the average for the year of entering the National Transmission System and that readers will see quoted on their gas bills. It can also be expressed as 10.945 kWh per cubic metre.

(9) Calorific value varies depending on the methane content of the gas.

Note: The above estimated average gross calorific values apply only to the year 2012. For calorific values of fuels in earlier years see Table B2. The calorific values for coal other than imported coal are based on estimates provided by the main coal producers. The calorific values for petroleum products have been calculated using the method described in Chapter 1, paragraph 1.31 of the Digest of UK Energy Statistics (DUKES). The calorific values for coke oven gas and blast furnace gas are currently being reviewed jointly by DECC and the Iron and Steel Statistics Bureau (ISSB).

B2: Estimated average gross calorific values of fuels 1980, 1990, 2000 and 2009 to 2012

	GJ per tonne (gross)						
	1980	1990	2000	2009	2010	2011	2012
Coal							
All consumers ⁽¹⁾⁽²⁾	25.6	25.5	26.2	25.7	25.8	25.9	26.0
All consumers - home produced plus imports minus exports ⁽¹⁾	27.0	26.8	27.1	26.9	26.9
Power stations ⁽²⁾	23.8	24.8	25.6	24.9	24.9	25.2	25.3
Power stations - home produced plus imports ⁽¹⁾	26.0	26.0	25.8	26.0	26.2
Coke ovens ⁽²⁾	30.5	30.2	31.2	32.6	30.5	32.0	31.8
Coke ovens - home produced plus imports ⁽¹⁾	30.4	32.6	30.5	32.0	31.8
Low temperature carbonisation plants and manufactured fuel plants	19.1	29.2	30.3	28.8	30.2	28.4	28.4
Collieries	27.0	28.6	29.6	29.4	29.3	29.0	29.0
Agriculture	30.1	28.9	29.2	28.0	28.0	29.5	29.5
Iron and steel industry ⁽³⁾	29.1	28.9	30.7	30.4	30.4	30.4	30.4
Other industries ⁽¹⁾	27.1	27.8	26.7	27.5	27.7	26.8	26.8
Non-ferrous metals	..	23.1	25.1	25.0	25.4	25.1	25.1
Food, beverages and tobacco	28.6	28.1	29.5	28.7	28.6	29.5	29.4
Chemicals	25.8	27.3	28.7	26.7	26.7	26.7	26.6
Textiles, clothing, leather & footwear	27.5	27.7	30.4	29.5	29.5	29.5	29.5
Pulp, paper, printing, etc.	26.5	27.9	28.7	23.9	24.1	24.2	24.2
Mineral products ⁽⁴⁾	..	28.2	27.0	27.6	27.6	27.6	27.7
Engineering ⁽⁵⁾	27.7	28.3	29.3	29.5	29.5	29.5	29.5
Other industry ⁽⁶⁾	28.4	28.5	30.2	31.6	32.6	32.6	32.5
Domestic							
House coal	30.1	30.2	30.9	29.7	29.8	30.2	30.2
Anthracite and dry steam coal	33.3	33.6	33.5	34.7	34.7	34.6	34.5
Other consumers	27.5	27.5	29.2	26.4	25.5	26.4	26.3
Transport –Rail	..	..	..	30.0	30.3	30.3	30.2
Imported coal ⁽¹⁾	..	28.3	28.0	27.3	27.9	27.5	27.4
of which							
Steam coal	..	..	26.6	26.5	25.8	26.5	26.5
Coking coal	..	..	30.4	32.6	30.5	32.0	31.8
Anthracite	..	..	31.2	31.0	31.0	31.2	31.7
Exports ⁽¹⁾	..	29.0	32.0	32.7	32.3	32.3	32.4
of which							
Steam coal	..	..	31.0	31.4	31.2	31.2	31.2
Anthracite	..	..	32.6	33.2	33.2	32.7	32.7
Coke ⁽¹⁾	28.1	28.1	29.8	29.8	29.8	29.8	29.8
Coke breeze	24.4	24.8	24.8	29.8	29.8	29.8	29.8
Other manufactured solid fuels ⁽¹⁾	27.6	27.6	30.8	32.6	32.6	32.6	32.6
Petroleum							
Crude oil ⁽¹⁾	45.2	45.6	45.7	45.7	45.7	45.7	45.7
Liquefied petroleum gas	49.6	49.3	49.1	49.2	49.2	49.3	49.3
Ethane	52.3	50.6	50.7	50.7	50.7	50.7	50.7
LDF for gasworks/Naphtha	47.8	47.9	47.6	47.5	47.8	47.7	47.8
Aviation spirit and wide-cut gasoline (AVGAS & AVTAG)	47.2	47.3	47.3	47.4	47.4	47.4	47.4
Aviation turbine fuel (AVTUR)	46.4	46.2	46.2	46.2	46.2	46.2	46.2
Motor spirit	47.0	47.0	47.0	47.1	47.1	47.1	47.1
Burning oil	46.5	46.2	46.2	46.2	46.2	46.2	46.2
Vaporising oil	45.9	45.9	..	..	..	..	..
Gas/diesel oil ⁽⁹⁾	45.5	45.4	45.6	45.3	45.3	45.3	45.3
Derv ⁽⁹⁾	45.7	45.6	45.7	45.7
Fuel oil	42.8	43.2	43.1	43.5	43.3	43.3	43.3
Power station oil	42.8	43.2	43.1	43.5	43.3	43.3	43.3
Non-fuel products (notional value)	42.2	43.2	43.8	43.1	43.1	43.1	43.1
Petroleum coke (Power stations)	..	..	..	31.0	30.9	30.3	31.1
Petroleum coke (Other)	..	39.5	35.8	35.8	35.8	35.8	35.8
Natural Gas ⁽⁸⁾	..	38.4	39.4	40.0	40.1	39.8	39.6

(1) Weighted averages.

(2) Home produced coal only.

(3) From 2001 onwards almost entirely sourced from imports.

(4) Based on information provided by the British Cement Industry Association; almost all coal used by this sector in the latest 4 years was imported.

(5) Mechanical engineering and metal products, electrical and instrument engineering and vehicle manufacture.

(6) Includes construction.

(7) Since 1995 the source of these figures has been the ISSB.

(8) Natural gas figures are shown in MJ per cubic metre.

(9) DERV included within gas/diesel oil until 2005

B3: Standard conversion factors

1 tonne of oil equivalent (toe) = 10^7 kilocalories
 = 396.83 therms
 = 41.868 GJ
 = 11,630 kWh

1 therm = 100,000 British thermal units (Btu)

The following prefixes are used for multiples of joules, watts and watt hours:

kilo (k)	= 1,000	or 10^3
mega (M)	= 1,000,000	or 10^6
giga (G)	= 1,000,000,000	or 10^9
tera (T)	= 1,000,000,000,000	or 10^{12}
peta (P)	= 1,000,000,000,000,000	or 10^{15}

WEIGHT

1 kilogramme (kg) = 2.2046 pounds (lb)
 1 pound (lb) = 0.4536 kg
 1 tonne (t) = 1,000 kg
 = 0.9842 long ton
 = 1.102 short ton
 1 Statute or long ton = 2,240 lb
 = 1.016 t
 = 1.120 sh tn
 1 barrel = 159.0 litres
 = 34.97 UK gal
 = 42 US gal

VOLUME

1 cubic metre (cu m) = 35.31 cu ft
 1 cubic foot (cu ft) = 0.02832 cu m
 1 litre = 0.22 Imperial gallons
 1 UK gallon = 8 UK pints
 = 1.201 U.S. gallons
 = 4.54609 litres

LENGTH

1 mile = 1.6093 kilometres
 1 kilometre (km) = 0.62137 miles

TEMPERATURE

1 scale degree Celsius (C) = 1.8 scale degrees Fahrenheit (F)
 For conversion of temperatures: $^{\circ}\text{C} = 5/9 (^{\circ}\text{F} - 32)$; $^{\circ}\text{F} = 9/5 ^{\circ}\text{C} + 32$

Calorific values and conversion factors

B4: Average conversion factors for petroleum

		Litres per tonne
Crude oil:	Indigenous	1,199
	Imported	1,181
	Average of refining throughput	1,192
Ethane		2,730
Propane		1,969
Butane		1,735
Naphtha (l.d.f.)		1,467
Aviation gasoline		1,401
Motor spirit:	All grades	1,368
	Super unleaded	1,356
	Ultra low sulphur petrol (ULSP)	1,369
Middle distillate feedstock		1,093
Kerosene:	Aviation turbine fuel	1,251
	Burning oil	1,247
DERV fuel:	0.005% or less sulphur (ULSD)	1,195
Gas/marine diesel oil		1,170
Fuel oil (1% or less sulphur):	All grades	1,015
	Light	1,057
	Medium	1,018
	Heavy	1,011
Lubricating oils	White	1,138
	Greases*	1,094
Bitumen		997
Petroleum coke		843
Petroleum waxes		1,184
Industrial spirit		1,247
White spirit		1,282

Note: The above conversion factors, which for refined products have been compiled by DECC using data from UK Petroleum Industry Association companies, apply to the year 2012, and are only approximate for other years.

* The figure for Lubricating oils – Greases is for 2011 as no figure is available for 2012.

Annex C - Effective rates of duty on principal hydrocarbon oils, 1979 to 2014⁽¹⁾

Pence per litre

Date from which duty effective	Motor spirit ⁽²⁾⁽³⁾					Diesel ⁽²⁾	
	Leaded	Lead replacement	Unleaded	Super unleaded	Ultra low sulphur	Regular	Ultra low sulphur
13 June 1979	8.100	..	..	..	..	9.200	..
26 March 1980	10.000	..	..	..	..	10.000	..
10 March 1981	13.820	..	..	..	..	13.820	..
2 July 1981	..	..	..	..	..	11.910	..
9 March 1982	15.540	..	..	..	..	13.250	..
15 March 1983	16.300	..	..	..	..	13.820	..
13 March 1984	17.160	..	..	..	..	14.480	..
19 March 1985	17.940	..	..	..	..	15.150	..
19 March 1986	19.380	..	..	..	..	16.390	..
17 March 1987	..	..	18.420	..	..	..	..
15 March 1988	20.440	..	..	..	..	17.290	..
14 March 1989	..	..	17.720	..	..	..	..
20 March 1990	22.480	..	19.490	..	..	19.020	..
19 March 1991	25.850	..	22.410	..	..	21.870	..
10 March 1992	27.790	..	23.420	..	..	22.850	..
16 March 1993	30.580	..	25.760	..	..	25.140	..
30 November 1993	33.140	..	28.320	..	..	27.700	..
29 November 1994	35.260	..	30.440	..	..	30.440	..
1 January 1995	36.140	..	31.320	..	..	31.320	..
28 November 1995	39.120	..	34.300	..	..	34.300	..
15 May 1996	..	..	..	37.620	..	..	..
26 November 1996	41.680	..	36.860	40.180	..	36.860	..
2 July 1997	45.100	..	40.280	43.600	..	40.280	..
17 March 1998	49.260	..	43.990	48.760	..	44.990	42.990
9 March 1999	52.880	..	47.210	52.330	..	50.210	47.210
1 October 1999	..	49.210	..	49.210	..	..	..
21 March 2000	54.680	50.890	48.820	50.890	..	51.820	48.820
1 October 2000	..	..	..	..	47.820	..	..
7 March 2001	..	(4)	46.820	(4)	45.820	..	45.820
15 June 2001	..	..	48.820	..	..	..	..
1 October 2003	56.200	..	50.190	..	47.100	53.270	47.100
2004	..	(5)	..	(5)	..	..	..
7 December 2006	57.680	..	51.520	..	48.350	54.680	48.350
1 October 2007	60.070	..	53.650	..	50.350	56.940	50.350
1 April 2008	..	..	(5)	..	..	(9)	..
1 December 2008	62.070	..	..	..	52.350	..	52.350
1 April 2009	..	..	..	..	54.190	..	54.190
1 May 2009	63.910	..	..	..	..	..	..
1 September 2009	65.910	..	..	..	56.190	..	56.190
1 April 2010	66.910	..	..	..	57.190	..	57.190
1 October 2010	67.910	..	..	..	58.190	..	58.190
1 January 2011	68.670	..	..	..	58.950	..	58.950
23 March 2011	67.670	..	..	..	57.950	..	57.950

(1) Duty rates remain the same unless otherwise stated.

(2) These fuels became liable to Value Added Tax (VAT) as follows:-

- (i) 10% with effect from 1 April 1974
- (ii) 8% with effect from 29 July 1974
- (iii) For motor spirit 25% with effect from 18 November 1974
- (iv) For motor spirit 12.5% with effect from 12 April 1976
- (v) 15% with effect from 18 June 1979
- (vi) 17.5% with effect from 1 April 1991
- (vi) 15% with effect from 1 December 2008
- (vii) 17.5% with effect from 1 January 2010
- (viii) 20% with effect from 4 January 2011 (*Notes continued on following page*)

Effective rates of duty

Annex C - Effective rates of duty on principal hydrocarbon oils, 1979 to 2014⁽¹⁾ (continued)

		Pence per litre				
Date from which duty effective		Aviation gasoline ⁽²⁾	Gas for use as road fuel ⁽²⁾⁽⁸⁾	Fuel oil ⁽⁶⁾	Gas oil ⁽⁶⁾⁽⁷⁾	Kerosene ⁽⁶⁾
13 June	1979	8.100	4.050	0.660	0.660	
26 March	1980	10.000	5.000	0.770	0.770	
10 March	1981	13.820	6.910			
2 July	1981					
9 March	1982	7.770	7.770			
15 March	1983	8.150	8.150			
13 March	1984	8.580	8.580			zero
19 March	1985	8.970	8.970			
19 March	1986	9.690	9.690		1.100	
17 March	1987					
15 March	1988	10.220	10.220			
14 March	1989					
20 March	1990	11.240	11.240	0.830	1.180	
19 March	1991	12.930	12.930	0.910	1.290	
10 March	1992	13.900	13.900	0.950	1.350	
16 March	1993	15.290	15.290	1.050	1.490	
30 November	1993	16.570	16.570	1.160	1.640	
29 November	1994	17.630	33.140	1.660	2.140	
1 January	1995	18.070				
28 November	1995	19.560	28.170	1.810	2.330	
15 May	1996					
26 November	1996	20.840	21.130	1.940	2.500	
2 July	1997	22.550		2.000	2.580	
17 March	1998	24.630		2.180	2.820	
9 March	1999	26.440	15.000	2.650	3.030	
1 October	1999					
21 March	2000	27.340		2.740	3.130	
7 March	2001		9.000			
15 June	2001					
9 April	2003			3.820	4.220	
1 October	2003	28.100				
3 December	2004			4.820	5.220	
6 December	2005			6.040	6.440	
7 December	2006	28.840	10.810	7.290	7.690	
1 October	2007	30.030	13.700	9.290	9.690	
1 December	2008	31.030	16.600	9.660	10.070	
1 April	2009		19.260	10.000	10.420	
1 May	2009	33.340				
1 September	2009	34.570	22.160	10.370	10.800	
1 April	2010	38.350	23.600	10.550	10.990	
1 October	2010		25.050	10.740	11.180	
1 January	2011		26.150	10.880	11.330	
23 March	2011	37.700	24.700	10.700	11.140	

(3) From 14 March 1989 until 20 March 1990, the rate of duty for 2-star and 3-star leaded motor spirit was 21.220 pence per litre.

(4) With the separate duty rate abolished, duty on these fuels is now charged at the rate appropriate to unleaded petrol or ultra low sulphur petrol, dependent upon the sulphur and aromatic content of the fuel.

(5) Duty now charged at the rate appropriate to ultra low sulphur petrol.

(6) For industrial and commercial consumers these fuels became liable to the standard rate of VAT on 1 July 1990 (see note 2), recoverable by the majority of such consumers. These fuels attracted VAT for domestic consumers from 1 April 1994 at an initial rate of 8%. This was reduced to 5% from 1 September 1997.

(7) AVTUR (aviation turbine fuel) attracted the gas oil rate until 18 March 1986 after which it was zero-rated.

(8) From 29 November 1994 this duty is priced in pence per kilogram as the relative calorific values of the different types of road fuel gases are very similar when related to mass (kilogram).

(9) Duty now charged at the rate appropriate to ultra low sulphur diesel

Annex D – Further Sources of Information

D1 Energy prices

Energy Prices (annual); Statistical Office of the European Communities Summarises price information published in the European Commissions Weekly Oil Bulletin, and half-yearly Statistics in Focus on Gas Prices and Electricity Prices

Energy Prices and Taxes (quarterly); OECD International Energy Agency

Electricity prices; Eurostat (annual)

Gas prices; Eurostat, (annual)

D2 Fuel poverty

The 2014 fuel poverty statistics report was published in June 2014, and includes statistics for the number of fuel poor households in 2012. The web reference is:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319280/Fuel_Poverty_Report_Final.pdf

The UK Fuel Poverty Strategy – Published by the Department of Trade and Industry and the Department for Environment, Food and Rural Affairs in November 2001.

This document presents the Government's strategy for tackling fuel poverty. It includes information on how we plan to monitor progress in tackling this issue.

Available at: <http://webarchive.nationalarchives.gov.uk/+http://www.berr.gov.uk/files/file16495.pdf>

D3 Department of Energy and Climate Change publications on energy

Unless otherwise stated, all titles are available from the DECC publication order line:

web: www.gov.uk/government/publications

tel: 0845 504 9188

e-mail: deccteam@decc.ecgroup.net

and can also be found on the DECC website at:

<https://www.gov.uk/government/organisations/department-of-energy-climate-change>

Statistical publications

Energy Trends

<https://www.gov.uk/government/collections/energy-trends>

Contains quarterly data on production and consumption of overall energy and of the individual fuels in the United Kingdom. Also includes data on foreign trade in fuels.

Digest of UK Energy Statistics 2011

<https://www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes>

and available from The Stationery Office and can be ordered through Government Bookshops.

Contains annual data on production and consumption of overall energy and of the individual fuels in the United Kingdom. Also includes a commentary covering all the major aspects of energy and gives a comprehensive picture of energy production and use over the last five years with key series taken back to 1970.

UK Energy Sector Indicators

<https://www.gov.uk/government/collections/uk-energy-sector-indicators>

The indicators cover a variety of energy topics; the role of the industry in the UK economy, conversion efficiency, energy use, fuel prices, fuel poverty, competition and energy in the environment.

Energy Consumption in the UK

<https://www.gov.uk/government/collections/energy-consumption-in-the-uk>

This booklet brings together statistics from a variety of sources to produce a comprehensive review of energy consumption in the UK since the 1970s. It describes the key trends in energy consumption in the UK since 1970 with a particular focus on trends since 1990. It includes an analysis of the factors driving the changes in energy consumption, the impact of increasing activity, increased efficiency, and structural change in the economy, while detailed tables can be found on the internet. The information is presented in five sections covering firstly overall energy consumption, then energy consumption in the transport, domestic, industrial and service sectors.

Energy Flow Chart

<https://www.gov.uk/government/collections/energy-flow-charts>

An annual publication illustrating the flow of primary fuels from home production and imports to their eventual final uses. They are shown in their original state and after being converted into different kinds of energy by the secondary fuel producers.

Policy publications

Energy Act 2013

The Energy Act 2013 received Royal Assent on 18 December 2013. It established a legislative framework for delivering secure, affordable and low carbon energy, including Electricity Market Reform (EMR). More details on the DECC website:

<https://www.gov.uk/government/collections/energy-act>

Electricity Market Reform (EMR)

Further details at: <https://www.gov.uk/government/policies/maintaining-uk-energy-security--2/supporting-pages/electricity-market-reform>

Energy Act 2011

The Energy Act 2011 was given Royal Assent on 18 October 2011. The Act is available at:

<https://www.gov.uk/government/publications/energy-act-2011>

Energy Act 2009-2010

The Energy Act 2010 was given Royal Assent on 8 April 2010. The Act is available at:

<http://services.parliament.uk/bills/2009-10/energy.html>

The UK Low Carbon Transition Plan

http://webarchive.nationalarchives.gov.uk/20100509134746/http://www.decc.gov.uk/en/content/cms/publications/lc_trans_plan/lc_trans_plan.aspx

This paper, published in July 2009, sets out how the UK will meet the cut in emissions set out in the budget of 34% on 1990 levels by 2020.

Energy Act 2008

The Energy Act 2008 was granted Royal Assent on 26 November 2008. The Act is available at:

<http://www.legislation.gov.uk/ukpga/2008/32/contents>

Climate Change Act 2008

The Climate Change Act became law on 26 November 2008. The Act is available at:

<http://www.legislation.gov.uk/ukpga/2008/27/contents>

Energy White Paper 2007: Meeting the energy challenge

<http://www.official-documents.gov.uk/document/cm72/7296/7296.pdf>

This paper, published on 23 May 2007, sets out the Government's international and domestic energy strategy to respond to changing circumstances, address the long term energy challenges we face and deliver our energy policy goals.

The Energy Challenge, Energy Review Report 2006

This report was released in July 2006, announcing a package of proposals to help address the long-term challenges for UK energy policy. A series of public consultations were held throughout 2006/7 and together these formed the basis for the 2007 energy white paper: 'Meeting the energy challenge'. The report is available from The Stationery Office and is also available, free of charge, on the internet along with supporting documentation at

<http://www.official-documents.gov.uk/document/cm68/6887/6887.pdf>

D4 Energy related websites

The DECC website can be found at <https://www.gov.uk/government/organisations/department-of-energy-climate-change>;
the statistics website is at <https://www.gov.uk/government/organisations/department-of-energy-climate-change/about/statistics>

Other Government websites

HM Revenue and Customs

www.gov.uk/government/organisations/hm-revenue-customs

Department for Environment, Food and Rural Affairs

www.gov.uk/government/organisations/department-for-environment-food-rural-affairs

HM Government Online

www.direct.gov.uk

Department for Transport

www.gov.uk/government/organisations/department-for-transport

National Statistics (ONS)

www.statistics.gov.uk

Northern Ireland Executive

www.northernireland.gov.uk

Department for Communities and Local Government

www.gov.uk/government/organisations/department-for-communities-and-local-government

Ofgem (The Office of Gas and Electricity Markets)

www.ofgem.gov.uk

Scottish Executive

www.scotland.gov.uk

The Scottish Parliament

www.scottish.parliament.uk

National Assembly for Wales

www.wales.gov.uk

UK Parliament

www.parliament.uk

Other useful energy related websites

Air Quality Archive

www.airquality.co.uk

BP

www.bp.com

Building Research Establishment

www.bre.co.uk

Coal Authority

www.coal.decc.gov.uk/

Consumer Futures

www.consumerfutures.org.uk/

Advice Guide (Citizen's Advice Bureau)

www.adviceguide.org.uk/

Energy Institute

www.energyinst.org/home

Energy Networks Association

www.energynetworks.org

Energy UK

www.energy-uk.org.uk/home

Europa (European Union Online)

www.europa.eu

Eurostat

<http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home>

Interconnector (UK) Ltd

www.interconnector.com

International Energy Agency

www.iea.org

Iron and Steel Statistics Bureau

www.issb.co.uk

National Grid

www.nationalgrid.com

Organisation of the Petroleum Exporting Countries (OPEC)

www.opec.org

The Stationery Office

www.tso.co.uk

Oil & Gas UK

www.oilandgasuk.co.uk/

UK Petroleum Industry Association

www.ukpia.com

Ricardo AEA Energy and Environment

www.ricardo-aea.com/cms/

Renewable UK

www.renewableuk.com/

United Nations Statistics Division

unstats.un.org/unsd/default.htm

US Department of Energy

www.energy.gov

US Energy Information Administration

www.eia.doe.gov