



Department for  
Business, Energy  
& Industrial Strategy

# Review of the average annual domestic gas and electricity consumption levels

Methodology note



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# Contents

Background	3
New Mean Consumption Levels	4
Bills based on actual consumption	4
Calculation	5
Gas Calculations	6
Electricity Calculations	6

## Background

In the Quarterly Energy Prices (QEP) statistical release, average household energy bills are published by categories including region, payment type and whether the tariffs were offer as fixed term or not<sup>1</sup>.

To allow for equivalent comparisons in price year-to-year, domestic bills are calculated using set, consistent levels of consumption for each type of energy used (Gas and Electricity). Since 2014<sup>2</sup> bills have been presented with fixed annual consumption levels of:

- **15,000kWh** for Gas
- **3,800kWh** for Standard Electricity, and
- **6,000kWh** for Economy 7 (or time of use tariffs) Electricity

These levels provide an estimate of the average consumption across all UK households by taking the total consumption in the country and apportioning it to the number of households (by fuel).

This differs from Ofgem's Typical Domestic Consumption Values (TDCVs)<sup>3</sup> which provide the annual gas and electricity usage of a '*typical*' domestic consumer, expressed as the median<sup>4</sup> consumption value.

Providing bills based on a fixed mean consumption over time allows users to observe the impact of the change in price independent of changes in consumption arising from factors such as weather conditions, changes in energy efficiency and householder behaviour.

The bills based on fixed mean consumption levels are analogous to presenting bills in the form of a price index.

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<sup>1</sup> [Tables 2.2.1 – 2.2.3 for Electricity and 2.3.1 – 2.3.3 for Gas](#)

<sup>2</sup> Average consumption levels were last updated in 2014 (based on data to 2013) following [user consultation](#)

<sup>3</sup> [TDCVs are given by size of consumer](#) where the median is the 'medium' sized consumer.

<sup>4</sup> The median is the mid-point in a distribution of data. As the distribution of gas and particularly electricity consumption is positively skewed - the mean is greater than the median.

# New Mean Consumption Levels

The new consumption levels were proposed in the December 2019 Quarterly Energy Prices release. No objections to these proposed levels were received, and therefore from the March 2020 QEP, bills tables<sup>5</sup> were presented for the first time using the revised fixed mean consumption levels of:

- **13,600 kWh** for Gas
- **3,600 kWh** for Standard Electricity, and
- **5,100 kWh** for Economy 7 Electricity

These figures have been used in the estimated final bills for 2019 along with a revised, consistent time series (currently<sup>6</sup>) back to 2017.

The time series using the previous consumption values has been retained for information within the published tables.

The new consumption values were calculated using 2018 data; as at the time of review these were the most recently available consumption and household data. Details on the calculation of these values are presented in the **Calculation** section below.

The department will continue to review the levels on an annual basis, but with an expectation that changes at this stage will only be made if there is significant evidence that the current levels are no longer appropriate. A full review will be carried out **every five years** – with changes expected to be made at this stage.

## Bills based on actual consumption

Actual average consumption varies due to weather conditions, changes in energy efficiency and householder behaviour.

Trends that *do* reflect actual consumption are therefore also important. Bills based on actual annual consumption (included weather adjusted figures for example) will continue to be published annually in Tables 2.2.5 and 2.3.5<sup>7</sup>.

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<sup>5</sup> Tables 2.2.1 – 2.2.3 for Electricity and 2.3.1 – 2.3.3 for Gas, Available here: <https://www.gov.uk/government/statistical-data-sets/annual-domestic-energy-price-statistics>

<sup>6</sup> We intend to update the time-series in the next release of the annual bills tables (22 December 2020 provisional 2020 data)

<sup>7</sup> Also Available here: <https://www.gov.uk/government/statistical-data-sets/annual-domestic-energy-price-statistics>

# Calculation

The average consumption levels are given by calculating for each fuel type (Standard Electricity, Gas, Economy 7):

$$\text{Consumption Level (in kWh)} = \frac{\text{Consumption (in GWh)}}{\text{Customer Numbers (in thousands)}} \times 1000$$

For total **consumption** the following is used:

- Domestic Electricity and Gas **weather adjusted** consumption data from the **Energy Consumption UK (ECUK)** Table C9<sup>8</sup>.
- Electricity is apportioned into Standard Electricity and Economy 7 using Table 5.2 in the Digest of UK Energy Statistics (DUKES).

For **Customer Numbers** the following is used:

- The total number of consuming households by fuel from Table C9 in **ECUK**.
  - This figure itself is based on figures already used the Quarterly Energy Prices release for total customers sourced from Ofgem switching statistics but combined with estimates for Northern Ireland.
- Electricity is apportioned into Standard Electricity and Economy 7 using the household meter point data from **Sub-National**<sup>9</sup> electricity data.

The data below shows how the figures of 13,600 kWh for Gas, 3,600 kWh for Standard Electricity, and 5,100 kWh for Economy 7 Electricity were derived.

**Note:** that due to revisions to historic data this calculation method will not directly replicate the estimates produced during the previous review.

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<sup>8</sup>The ECUK publication is available here: <https://www.gov.uk/government/statistics/energy-consumption-in-the-uk>

<sup>9</sup>Meters are considered 'Domestic' households if they have a 'Profile 1' or 'Profile 2' meter and have a consumption lower than 100,000kWh. More information can be found here: <https://www.gov.uk/government/collections/sub-national-electricity-consumption-data>

## Gas Calculations

**Table 1 - Calculating the standard consumption level for Gas data**

Year	Consumption (GWh)	Customer Numbers (000s)	Average (Mean) Consumption Level (kWh)	Rounded Consumption Level (kWh)
	ECUK	ECUK	Calculated	Calculated
2008	369,218	22,061	16,736	16,700
2009	353,343	22,155	15,949	15,900
2010	347,749	22,200	15,664	15,700
2011	342,585	22,273	15,381	15,400
2012	344,143	22,263	15,458	15,500
2013	329,199	22,452	14,662	14,700
2014	324,407	22,920	14,154	14,200
2015	318,662	23,109	13,790	13,800
2016	319,197	23,329	13,682	13,700
2017	323,302	23,557	13,725	13,700
2018	325,268	23,907	13,606	13,600

## Electricity Calculations

**Table 2a - Derivation of total consumption by Standard Electricity and Economy 7**

Year	(a)	(b)	(c)	(d)	(e)	(f)	(g)
	Consumption (GWh)  ECUK	Std electricity consumption (GWh)  DUKES	Economy 7 consumption (GWh)  DUKES	Std electricity consumption Split  (b)÷[(b)+(c)]	Economy 7 consumption Split  (c)÷[(b)+(c)]	Derived cons. std electricity (GWh)  (a)x(d)	Derived cons. Economy 7 (GWh)  (a)x(e)
2008	120,498	91,833	27,967	0.77	0.23	92,369	28,130
2009	119,149	92,972	25,569	0.78	0.22	93,449	25,700
2010	116,172	93,210	25,600	0.78	0.22	91,141	25,031
2011	114,032	88,369	23,113	0.79	0.21	90,390	23,642
2012	114,800	90,534	23,621	0.79	0.21	91,045	23,755
2013	112,497	89,911	22,872	0.80	0.20	89,683	22,814
2014	110,799	86,112	21,030	0.80	0.20	89,052	21,747
2015	109,496	85,510	21,083	0.80	0.20	87,840	21,657
2016	108,915	85,932	20,713	0.81	0.19	87,761	21,154
2017	107,263	83,721	20,197	0.81	0.19	86,417	20,847
2018	105,880	83,331	20,128	0.81	0.19	85,281	20,599

For electricity, the Standard Electricity and Economy 7 populations must be derived for both the total consumption and customer numbers from ECUK.

DUKES Table 5.2<sup>10</sup> was used to calculate a ratio of Standard Electricity to Economy 7. For example, in 2018, this was 0.81 for Standard Electricity and 0.19 for Economy 7.

<sup>10</sup> Available here: <https://www.gov.uk/government/statistics/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes>

This ratio is applied to total temperature adjusted consumption in ECUK, giving consumption of 85,281 GWh for users on Standard Electricity tariffs and 20,599 GWh for those on Economy 7.

**Table 2b - Derivation of customer numbers by Standard Electricity and Economy 7**

	(a)	(b)	(c)	(d)	(e)	(f)	(g)
Year	Customer numbers (000s)	Std electricity meter points (number)	Economy 7 meter points (number)	Std electricity customer Split	Economy 7 customer Split	Derived std electricity cust. no. (000s)	Derived Economy 7 cust. no. (000s)
	ECUK	Sub-national	Sub-national	(b)÷[(b)+(c)]	(c)÷[(b)+(c)]	(a)x(d)	(a)x(e)
2012	26,614	23,363,011	4,865,213	0.83	0.17	22,027	4,487
2013	26,661	23,589,726	4,753,094	0.83	0.17	22,190	4,471
2014	26,732	23,866,991	4,656,081	0.84	0.16	22,368	4,364
2015	27,042	24,156,948	4,543,886	0.84	0.16	22,760	4,281
2016	27,089	24,495,608	4,408,200	0.85	0.15	22,957	4,132
2017	27,228	24,826,739	4,246,227	0.85	0.15	23,251	3,977
2018	27,424	24,826,739	4,246,227	0.85	0.15	23,419	4,005

The same principle is applied to customer numbers. Domestic meter point data from the regional and local authority electricity consumption data set<sup>11</sup> is used to calculate a ratio of Standard to Economy 7 meters. This information is only available from 2012 onwards.

2018 data is available for Great Britain but the most recent published Northern Ireland data is 2017. As there is not complete data for the full year, the 2017 values were carried forward for 2018.

Please note, it is acknowledged that some households with an Economy 7 meter will be purchasing electricity on standard tariffs but these data were used given the limited data in this area.

Total consumption is then divided by customer numbers for Standard Electricity and Economy 7 separately to give the average consumption levels.

**Table 3a - Calculating the standard consumption level for Standard Electricity data**

Year	Consumption (GWh) ECUK	Customer numbers (000s) ECUK	Average (Mean) consumption level (kWh)	Rounded consumption level (kWh)
	Derived	Derived	Calculated	Calculated
2012	91,045	22,027	4,133	4,100
2013	89,683	22,190	4,042	4,000
2014	89,052	22,368	3,981	4,000
2015	87,840	22,760	3,859	3,900
2016	87,761	22,957	3,823	3,800
2017	86,417	23,251	3,717	3,700
2018	85,281	23,419	3,642	3,600

<sup>11</sup> The Great Britain statistics are available here: <https://www.gov.uk/government/statistical-data-sets/regional-and-local-authority-electricity-consumption-statistics> and the Northern Ireland statistics available here: <https://www.gov.uk/government/statistics/sub-national-electricity-consumption-statistics-in-northern-ireland>

**Table 3b - Calculating the standard consumption level for Economy 7 Electricity data**

<b>Year</b>	<b>Consumption (GWh) ECUK</b>	<b>Customer numbers (000s) ECUK</b>	<b>Average (Mean) consumption level (kWh)</b>	<b>Rounded consumption level (kWh)</b>
	<b>Derived</b>	<b>Derived</b>	<b>Calculated</b>	<b>Calculated</b>
2012	23,755	4,587	5,179	5,200
2013	22,814	4,471	5,103	5,100
2014	21,747	4,364	4,984	5,000
2015	21,657	4,281	5,059	5,100
2016	21,154	4,132	5,120	5,100
2017	20,847	3,977	5,242	5,200
2018	20,599	4,005	5,143	5,100

Additionally, with Economy 7 time of use tariffs, we are continuing to assume 50:50 split in the Day and Night consumption. So this would be 2,550 kWh a year during the day and 2,550 kWh a year at night (compared with 3,000 kWh at day and night with the 6,000 kWh figure).