Department for
Business, Energy
& Industrial Strategy

SUB-NATIONAL CONSUMPTION STATISTICS

Methodology and guidance booklet

January 2018

Any enquiries regarding this publication should be sent to us at EnergyEfficiency.Stats@beis.gov.uk.

This document is also available from our website at https://www.gov.uk/government/publications/regional-energy-data-guidance-note.

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Sub-national consumption statistics

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We are seeking feedback and comments about the publication so we can tailor it to our users in the future. Responses to the following survey would be much appreciated: https://www.surveymonkey.co.uk/r/TN28XL3

Contents

1 Introduction

This methodology and guidance booklet aims to assist local authorities and other users in interpreting the Department of Business, Energy and Industrial Strategy's (BEIS)[1] sub-national energy consumption statistics. The booklet provides detailed information about the collection and compilation of the sub-national estimates used for the datasets; in particular their coverage, limitations and comparability. It also provides guidance on the interpretation of historical trends for the different fuel categories.

The information provided in this booklet relates to the sub-national consumption datasets published on the BEIS website at a local authority level, for four main fuel categories:

- **Gas**
- **Electricity**
- **Road transport fuels**
- **Residual (non-electricity, non-gas and non-road transport) fuels**

These four datasets are aggregated to comprise a dataset for **total final** energy consumption, for which guidance is also provided.

BEIS also publishes gas and electricity datasets at a super output area[2] level and datasets for electricity consumption in Northern Ireland, for which detailed methodology and guidance have also been provided:

- Gas and electricity consumption at an **MSOA/IGZ** and **LSOA** level.
- Electricity consumption in **Northern Ireland** (both domestic and non-domestic) at a **District Council**[3] level.

To assist users in interpreting the sub-national statistics, the following Annexes have also been included in this booklet:

- **Annex A: Step-by-step guide to identifying statistical areas**.

  This section gives step-by-step instructions on how to identify super output areas using a postcode, how to view them on maps, and how to use them to find the corresponding consumption statistics.

- **Annex B: Frequently Asked Questions (FAQs).**

  A collection of the most frequently asked questions from users.

[1] Prior to BEIS's creation in 2016; sub-national work was carried out by the Department for Energy and Climate Change (2009-2016), Department for Business, Enterprise and Regulatory Reform (2007 - 2008) and the Department of Trade and Industry (pre-2007).
[2] Middle layer super output area (MSOA) and lower layer super output area (LSOA) for England and Wales and intermediate geography zone (IGZ, similar to MSOA) for Scotland. Further information is included in section 1.2.
[3] Northern Ireland's District Councils are similar to local authorities within Great Britain.

- **Annex C: Comparison of consumption estimates, sub-national consumption, DUKES and ECUK**

  This table gives detailed information on the differences between each sub-national consumption dataset and national estimates published in other BEIS publications; Digest of UK Energy Statistics (DUKES) and Energy Consumption in the UK (ECUK).

- **Annex D: Tools available to aid users in the interpreting the datasets**

  This annex provides a brief overview of a variety of tools and maps available to aid users interpret the sub-national datasets.

- **Annex E: Related BEIS statistical publications**

  This annex provides a brief overview of a variety of datasets related to the sub-national outputs referenced in this guide.

Queries on the content of this guidance note or any of the outputs should be sent to: EnergyEfficiency.Stats@beis.gov.uk

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1.1 Summary of datasets

Key points for each sub-national consumption dataset have been provided in the table below. For each dataset, it contains the consumption period; the geographical coverage; web links; and a brief summary of key points.

Table 1 Key information for sub-national consumption datasets

Consumption dataset	Dates covered	Coverage	Location of dataset	Key points
Gas	1st October to 30th September	Great Britain Regional (NUTS1) and local authority (LAU1) MSOA/IGZ and LSOA (domestic only)	Regional and local authority level gas data MSOA/IGZ and LSOA level gas data	• Latest publication: LA data in December 2017 (2016 data); SOA data in January 2018 (2016 data). The LA data was revised in January 2018. • Next publication: LA data in December 2018 (2017 data); SOA data in January 2019 (2017 data). • Annual consumption based on meter point (MPRN) data provided by Xoserve • Consumers using less than 73,200 kWh a year are classified as domestic. • Gas consumption figures have been weather corrected.
Electricity	**Non Half Hourly** 31st January to 30th January **Half Hourly** 1st January to 31st December	Great Britain. Regional (NUTS1) and local authority (LAU1) MSOA/IGZ and LSOA (domestic only). Not weather corrected	Regional and local authority level electricity data MSOA/IGZ and LSOA level electricity data	• Latest publication: LA data in December 2017 (2016 data); SOA data in January 2018 (2016 data). The LA data was revised in January 2018. • Next publication: LA data in December 2018 (2017 data); SOA data in January 2019 (2017 data). • Annual consumption based on meter point (MPAN) data provided thanks to full co-operation from energy suppliers. • Consumption data is included for both NHH and HH meters. • Non-half hourly dates vary annually. See section 3.1.3 for more details. • Electricity consumption figures are estimates of actual consumption and have *not* been weather corrected.
Electricity: Northern Ireland	1st April to 31st March	Northern Ireland District council (similar to local authority)	Northern Ireland District Council level electricity data	• Latest publication: September 2017 (2015 data). • Next publication: September 2018 (2016 data). • Annual consumption data provided by Northern Ireland Electricity (NIE). • These statistics are experimental, so year-on-year analysis should be done with caution. • Not directly comparable with Great Britain statistics due to differences in market structure. • 2009 and 2010 data cover the calendar year. See section 6.1.
Road transport	1st January to 31st December	United Kingdom Regional (NUTS1) and local authority (LAU1)	Regional and local authority level road transport fuel data	• Latest publication: June 2017 (2015 data). • Next publication: June 2018 (2016 data). • Annual consumption data is modelled and provided to BEIS by Ricardo-Energy & Environment. • Consumption estimates are based on where fuel is consumed, rather than where it is purchased. • Consumption in this dataset is given in tonnes of oil equivalent (toe).

Residual fuels (non-gas, non-electricity and non-road transport	1st January to 31st December	United Kingdom Regional (NUTS1) and local authority (LAU1)	Regional and local authority level residual fuel data	• Latest publication: September 2017 (2015 data). • Next publication: September 2018 (2016 data). • Annual consumption data is modelled and provided to BEIS by Ricardo-Energy & Environment. • Contains information regarding consumption of petroleum products, coal, manufactured solid fuels and renewables and waste. • Fuel consumed by aviation, national navigation and heat sold are not included in the dataset. • Consumption in this dataset is given in thousand tonnes of oil equivalent (ktoe).
Total final energy (aggregation of gas, electricity, road transport and residual fuel datasets)	Various (see above dates for each dataset)	United Kingdom Regional (NUTS1) and local authority (LAU1) *Please note this dataset does not include gas and electricity data for Northern Ireland*	Regional and local authority level total final energy data	• Latest publication: September 2017 (2015 data). • Next publication: September 2018 (2016 data). • Annual consumption data is based on the amalgamation of the four sub-national data exercises (gas, electricity, road transport and residual fuels). • All fuel types are converted to thousand tonnes of oil equivalent (ktoe) when they are included in the totals dataset. • Northern Ireland gas and electricity consumption data are not included in this dataset due to the differences in market structure.

1.2 Statistical geographies[4]

English region and devolved administration (formerly Government Offices for the Regions)
Government Office Regions (GORs) were the primary statistical subdivisions of England and the areas in which the Government Offices for the Regions fulfilled their role. They closed on 31 March 2011. However, there is still value in maintaining the geography – now known as 'Regions' – for statistical reporting purposes. The regional boundaries remain 'frozen', covering the same areas as the Government Office Regions when they closed in 2011. Each area was built up of complete counties/unitary authorities at the time the geography was frozen.

Sub-national consumption estimates are provided for the nine English regions and three devolved administrations. Totals for England, Scotland and Wales are included in gas and electricity consumption datasets. Totals for England, Scotland, Wales and Northern Ireland are included in road transport fuels, residual fuels and total final energy consumption datasets.

[4] More detailed information regarding statistics geographies can be found on the ONS geography homepage: http://geoportal.statistics.gov.uk/

Local authorities

A local authority is an administrative body in local government. There are 326 local authorities in England, 22 local authorities in Wales and 32 local authorities in Scotland. There are 26 district councils in Northern Ireland. This level of disaggregation is similar to the local authority level for Great Britain.

Super output areas

Super output areas (SOAs) were designed to improve the reporting of small area statistics. SOAs are geographic areas made up of a number of output areas (OAs). They are used on the Neighbourhood Statistics[5] site, and have a wider application across National Statistics.

There are currently two layers of SOA, lower level super output area (LSOA) and middle layer super output area (MSOA). LSOAs and MSOAs are intermediate in size between 2011 Census Output Areas (OAs) and local authorities. This offers a choice of scale for the collection and publication of data, and allows for the release of local data that could disclose information for individual households if published for OAs.

SOAs give an improved basis for comparison across the country because the geographies are more consistent in size of population than, for example, electoral wards. They are also intended to be stable, enabling the improved comparison and monitoring of policy over time. In addition, figures for user defined geographies can be aggregated and best fitted from data held for OAs and SOAs. SOA boundaries may be revised in census years (the next such year being 2021), and statistics will be revised to reflect these changes as they occur.

Lower layer super output areas

Lower Layer Super Output Areas (LSOAs) in England and Wales were built by zone-design software using 2011 Census data from groups of Output Areas (typically four to six) and were constrained by the Standard Table wards[6] used for 2011 Census outputs. They have a minimum size of 1,000 residents or 400 households, but had an average of 1,500 residents. Measures of proximity (to give a reasonably compact shape) and social homogeneity[7] (to encourage areas of similar social background) were also included.

Following the 2011 Census, there are now 34,753 LSOAs in England and Wales.

Middle layer super output areas

Middle Layer Super Output Areas (MSOAs) were defined in a two-stage process: an initial set was generated automatically but the boundaries were then modified in consultation with local authorities and other local bodies. The final boundaries were released to the public in August 2004.

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[5] The Neighbourhood Statistics site can be accessed here: http://neighbourhood.statistics.gov.uk/dissemination/.
[6] More information on Standard Table wards can be found at the following location: https://www.ons.gov.uk/methodology/geography/ukgeographies/censusgeography.
[7] The specific homogeneity criteria used related to type of dwelling – for example, detached/semi-detached, and so on - and nature of tenure – for example, owner-occupied, private rented, and so on.

As with the LSOAs, initial MSOAs were generated automatically by zone-design software. They were built using 2001 Census data from groups of Lower Layer SOAs and had a minimum size of 5,000 residents and 2,000 households. They also fitted within the boundaries of local authorities as at the end of 2002 (corresponding with the geography of the Census).

A nationwide consultation exercise gave local authorities the opportunity to amend the initial MSOAs to define areas more suited to local requirements. The consultation resulted in 7,193 MSOAs with an average population size of 7,200.

Following the 2011 Census, there are now 7,201 MSOAs in England and Wales[8].

Data zones and intermediate geographies in Scotland
In Scotland a set of areas similar to LSOAs were released in 2004. These areas are referred to as **'data zones'**. Their population range is smaller than their LSOA counterparts, being between 500 and 1,000. There are 6,505 data zones. In 2005 Scotland also released a further layer, similar to MSOAs. This layer is referred to as the **'intermediate geography'**. Again, the population range is smaller than their MSOA counterparts, being between 2,500 and 6,000. There are 1,235 zones in the Scottish intermediate geography[9].

1.3 Users and uses of the data

The most significant use of the sub-national consumption data is by local authorities and devolved administrations for targeting and monitoring a range of carbon reduction and energy efficiency policies. For example, they have told us they use it to:

- identify areas with high consumption to identify reasons and target measures;
- enable more effective deployment of renewable energy schemes by knowing where energy is consumed;
- estimate the proportion of energy reduced or replaced through local sustainable energy projects;
- help identify areas off the gas grid;
- establish a baseline consumption figure to set targets for reduction;
- enable more efficient targeting of investments and interventions;
- help in planning to improve the energy efficiency of homes.

Other external users include academics and members of industry who use the data for a variety of purposes. Most commonly data has been used to examine trends over time or assess the effectiveness of energy efficiency initiatives.

[8] For more information on SOAs, LSOAs and MSOAs please see the ONS website: https://www.ons.gov.uk/methodology/geography/ukgeographies/censusgeography.
[9] For more information on Scottish statistical geographies, please see the Scottish Neighbourhood Statistics website: http://www.sns.gov.uk/.

Internally, data are used by BEIS policy colleagues and other analysts within the department to inform policy development and help with monitoring and evaluation of BEIS policies. The meter point gas and electricity data collected for sub-national consumption outputs are also the most important input for BEIS's National Energy Efficiency Data-Framework (NEED)[10].

They also and form the basis of responses to a number of parliamentary questions and general enquiries.

1.4 Revisions policy

Revisions are made in line with the BEIS organisational policy (https://www.gov.uk/government/publications/energy-statistics-revisions-policy).

On occasions, previously published data will need to be revised. These revisions are usually due to forecasted values being replaced with actual data, where actual figures were not available at the time of publication. In particular, annual revisions are made to the road transport, residuals and total final energy publications, and these revisions have been explained in further detail in chapters 7, 8 and 9 respectively.

Changes to historic data will only be made as part of a new publication. Data that are revised from the previous release will be denoted with "r". Where a large revision has taken place reasons will be provided. In cases where entire historic datasets have been revised, this will be clearly marked in the dataset. Changes to methodology would be pre-announced and impact of revisions explained when changes are made (with at least one year of data produced by both methods if appropriate).

Where significant changes to most recent data are required as a result of an incorrect figure in a publication these will be made as soon as reasonably possible, with a note on the webpage stating that the output has been revised and which figures any change has affected. Reasons for these types of revisions would include:

- Revised and validated data received from a data supplier; or
- The figure in the publication was incorrect because of a typographical or similar error.

Information on revisions will also be included in the methodology note for the relevant release.

[10] Further information about NEED can be accessed from: https://www.gov.uk/government/collections/national-energy-efficiency-data-need-framework.

2 Gas consumption statistics

Sub-national gas consumption statistics (2016)

Dates covered: 1st October 2015 to 30th September 2016

Sectors covered: Domestic and non-domestic

Features: Annualised and weather corrected

Years available: 2001 to 2016

Source: Xoserve

Statistical releases:

English region and devolved administration (NUTS1); local authority (LAU11 & NUTS4):

Latest release: December 2017 (2016 data) [Revised January 2018]

Next release: December 2018 (2017 data)

MSOA/IGZ and LSOA:

Latest release: January 2018 (2016 data)

Next release: January 2019 (2017 data)

https://www.gov.uk/government/collections/sub-national-gas-consumption-data

2.1 Overview (2005 to 2016 datasets)

2.1.1 Coverage

The datasets cover annual gas consumption in Great Britain. Data are published at sub-national level, including for; English region and devolved administrations; local authority; MSOA/IGZ; and LSOA. This chapter deals chiefly with the local authority level dataset, which also includes data for English region and devolved administrations. For guidance regarding the MSOA/IGZ and LSOA level datasets, please see chapter four.

The datasets include:

- Gas consumption for meters in Great Britain between 1 October and 30 September.
- All gas distributed through the National Transmission System.
- Gas consumers whose consumptions are recorded on a daily basis who are known as Daily Metered (DM) customers.

The datasets exclude:

- Data for Northern Ireland, due to the difference in market structure.
- A considerable amount of consumption fed directly to power stations and some very large industrial consumers, as this would be disclosive.
- Any gas passing through other transmission and distribution systems such as those owned by North Sea producers.

Unallocated and misallocated meters

The dataset also includes an aggregated total of consumption for unallocated meters. Unallocated meters are meters with insufficient address information, meaning that consumption for these meters is unable to be allocated to a local authority. This can be due to incomplete postcode information being provided by the data suppliers or no postcode information being received at all (this usually accounts for less than 1 per cent of consumption).

In some cases a meter can be misallocated to the wrong statistical geography. For example, if an address contains a PO Box number, then the meter would be assigned to the LAU1 area of the Post Office sorting depot. This is particularly important for interpretation of the data at levels below that of LAU1 (see chapter 4) as consumption may be allocated to a different area than where it is actually taking place. Misallocation can occur when a meter is allocated to a company's HQ or PO Box rather than the actual address of the meter. Similarly to unallocated meters, this is caused by incomplete or incorrect address information.

2.1.2 Data suppliers

In 2005, there were some major structural changes in the gas distribution network in Great Britain with some of the Local Distribution Zones (LDZs) being sold off by National Grid. As a result National Grid, who previously released postcode sector gas sales data, were no longer able to do so, as they were not responsible for the whole of the gas distribution network in Great Britain. BEIS entered into discussions with the gas industry on how to obtain annualised gas consumption estimates at industrial meter level.

In November 2005, BEIS met with Xoserve, the company now responsible for the collation and aggregation of gas consumption, who agreed to generate annualised consumption estimates for all Meter Point Reference Numbers (MPRN), or gas meters, subject to permissions being provided by the owners of the LDZ network (that is, the four major gas transporters in Great Britain – National Grid, Scotia, Wales and West Utilities and Northern Gas Networks).

Annual Quantity (AQ) data limitations

The user should note that around **4 million MPRNs (approximately 18% of total MPRNs) have no new AQ value annually,** because no new meter readings for these meters have been taken.

An AQ is an estimate of annualised consumption using consumption recorded between two meter readings at least six months apart (with a max span of 18 months), and the closing reading is taken within the period 1 October to 30 September.

National Statistics Postcode Look-up (NSPL)[11] from ONS

The NSPL is an Office for National Statistics (ONS) Geography product which is used to link all United Kingdom postcodes to the super output area in which they fall. From this data can then be aggregated to other geographies such as local authority or region.2.1.3 Sectors.

The data received from Xoserve does not currently contain a reliable profile marker to indicate if the meter relates to either a domestic or non-domestic consumer. BEIS uses the gas industry standard “Annual Quantity” (AQ) cut-off point of 73,200 kWh and classifies all consumers using under that annual consumption as domestic consumers. Unfortunately, this classification incorrectly allocates many small businesses to the domestic sector and, conversely, a small number of larger domestic consumers to the non-domestic sector. This also implies that a small number meters can change sector from year to year.

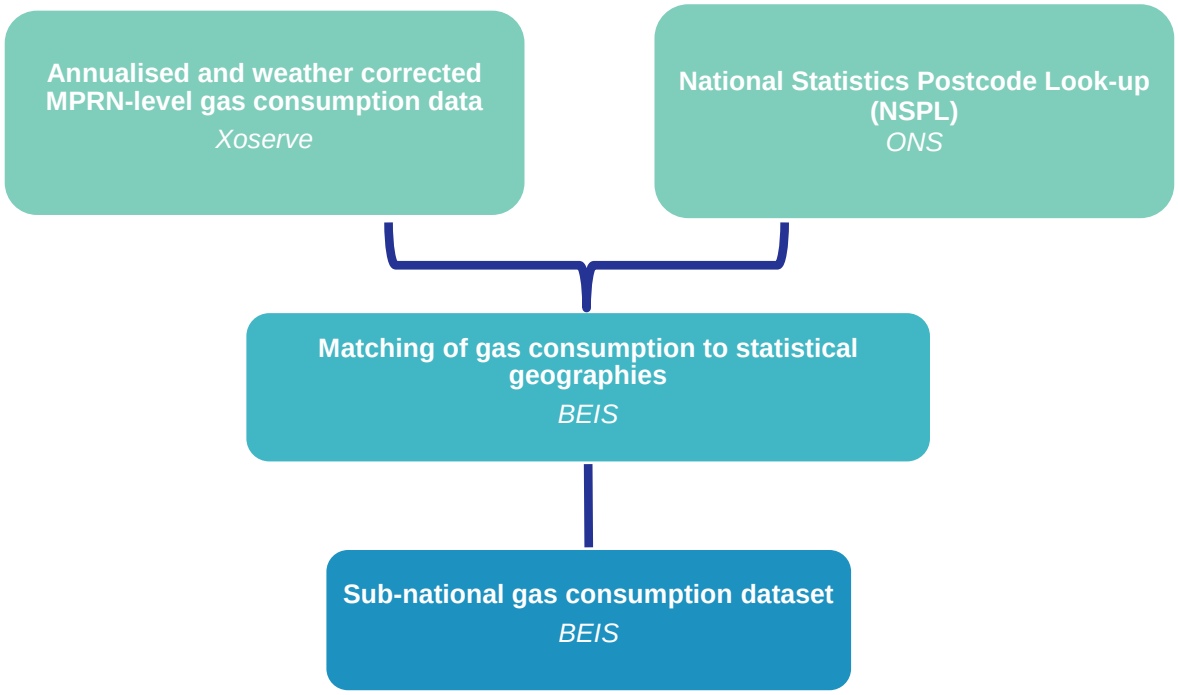
[11] For further information on the NSPL and how to access it, please visit the ONS website: http://geoportal.statistics.gov.uk/

Sector allocation

The gas industry cut-off point is **73,200 kWh**. All consumers using less than this figure are classed as domestic and it is estimated that around 2 million small businesses are incorrectly classed as domestic using this cut-off threshold.

2.2 Methodology

Chart 1: Flowchart showing the production process of the sub-national gas consumption dataset



Annualised and weather corrected MPRN-level gas consumption data from Xoserve and independent gas transporters

The base data for the analysis are obtained from Xoserve. Xoserve provide annualised estimates of consumption for all Meter Point Reference Numbers (MPRNs) based on an Annual Quantity (AQ). The estimate is then adjusted by Xoserve using a weather correction factor based on a Met Office model which uses historic data and also forecasts ten years into the future[12]. BEIS has combined this consumption information together with associated information on the location of the meters (also provided by Xoserve)

[12] For more information on weather correction, please see the National Grid's Gas Demand Forecasting Methodology note: http://www.nationalgrid.com/NR/rdonlyres/71CFD0F6-3607-474B-9F37-0952404976FB/52071/GasDemandForecastingMethodologyFeb12.pdf.

Unfortunately, the data available to BEIS from Xoserve does not enable the weather correction factor to be removed from the annual quantities at this time or for estimates on a calendar or financial year basis to be produced.

Dates for gas year

Gas consumption statistics cover the gas year **(1st October to 30th September).** For example, 2016 data covers the period from 1 October 2015 to 30 September 2016.

Matching of gas consumption to statistical geographies by BEIS

The gas consumption data are then matched to LAU1 (local authority) codes using postcode information. On occasions it has been possible to allocate an MPRN to an LAU1 code, but not at a lower level code.

Sub-national gas consumption dataset from BEIS

The sub-national gas dataset provides consumption as sales in gigawatt hours (GWh) as well as the number of meters for both domestic and non-domestic (commercial and industrial) customers. In addition, average domestic and industrial and commercial consumption is given as sales per meter in kilowatt hours (kWh). The data is provided at a local authority level and the dataset also includes English region and devolved administrational totals.

2.3 Comparability

2.3.1 Comparison to sub-national electricity data

The sub-national gas and electricity consumption statistics use varying methodology and cover slightly different time periods. The most important difference to bear in mind is that gas data are weather corrected, whilst the electricity data are not. Despite these differences, the combined electricity and gas provide a good indication of overall annual household energy consumption in Great Britain at local authority, MSOA/IGZ and LSOA level, due to the robustness of the data collection and collation process.

For information on how electricity consumption statistics are produced, please see chapter 3.

2.3.2 Comparison to DUKES

It is important to take care when comparing sub-national gas data to data published in the Digest of United Kingdom Energy Statistics (DUKES)[13]. DUKES is an annual BEIS publication which provides a detailed and comprehensive picture of energy production and use over the last five years, with extensive tables, charts and commentary covering all the major aspects of energy.

There are differences in reported gas figures in the sub-national and DUKES publications as DUKES data:

[13] DUKES can be accessed at the following page: https://www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes.

- Are based on a calendar year, whereas sub-national data covers the period 1st October to 30th September.
- Are not weather corrected whereas sub-national data have been.
- Covers consumption for the United Kingdom, whereas the sub-national statistics cover Great Britain only.
- Are compiled using a top-down approach, where statistics are gathered by energy companies on a national level, whereas sub-national datasets are compiled using a bottom-up approach, from an initial set of individual MPRN data.
- Include consumption from large power stations in its totals, which are not included in sub-national data (see section 2.1.1)

2.3.3 Comparison to ECUK

There are also points the user needs to be aware of when comparing sub-national data to Energy Consumption in the UK (ECUK)[14]. ECUK is an annual BEIS publication which includes a detailed overview of energy consumption at a UK-wide level.

Differences occur between ECUK and sub-national figures as data in ECUK:

- Are, in many cases, modelled and obtained from secondary analysis performed by BEIS on data from a number of sources, including DUKES.
- Contains a more comprehensive sectoral split than sub-national statistics, and gives information on the end use of the majority of fuels.

2.3.4 Comparison to NEED

For gas consumption, the mean consumption is very similar for the published sub-national gas consumption data and the Nation Energy Efficiency Data Framework (NEED)[15]. This is as expected since both datasets are derived from the same data source. However, the mean consumption is slightly lower in the NEED dataset than the sub-national gas consumption dataset. These differences occur because:

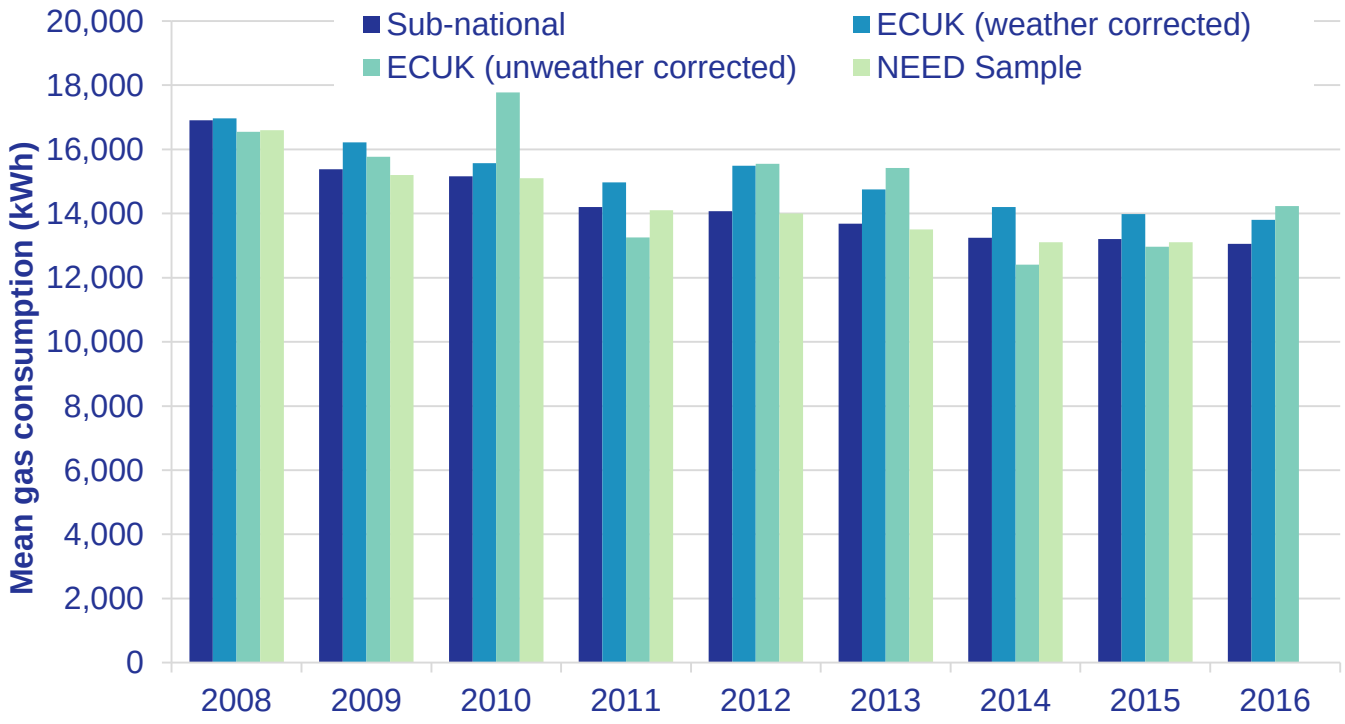
- In NEED, properties are defined as domestic based on the Valuation Office Agency property attribute database if they have consumption between 100kWh and 50,000kWh, whereas in sub-national data, meters are considered domestic if they have a consumption lower than 73,200kWh.
- The NEED dataset has suspected estimated readings removed, whereas sub-national gas consumption estimates do not.
- In NEED, data is matched to other sources by National Land and Property Gazetteer, Unique Property Reference Number[16] at property level, whereas the sub-national data are assigned to a Lower Layer Super Output Area.

[14] ECUK can be accessed at the following page: https://www.gov.uk/government/collections/energy-consumption-in-the-uk.
[15] All NEED publications can be accessed from the following page; https://www.gov.uk/government/collections/national-energy-efficiency-data-need-framework
[16] NLPG UPRN. More info on the NLPG can be found at: http://www.nlpg.org.uk/nlpg/welcome.htm

The chart below shows a comparison of the estimates of mean domestic gas consumption per household taken from each of the different sources mentioned above in order to give a representation of the differences between the datasets.

Note: The latest NEED release only contains consumption data up to 2015, so 2016 NEED data is omitted from the chart.

Chart 2: Comparison of estimates of mean gas consumption per household



2.4 Pre-2005 datasets

Data from 2001 to 2004 at local authority and English region and devolved administrational level were published by BEIS using base data from National Grid in 2004 and 2005. Data were allocated based on gas sales figures at a postcode sector level made available by National Grid.[17]

For the analysis, BEIS aggregated the consumption data from postcode sector to local authorities, however where a postcode sector covered more than one LAU1 area, the consumption was equally divided between the relevant LAU1 areas. There were also some circumstances where for confidentiality or other reasons, the National Grid dataset combined postcode sectors, and each sector was given an equal share of the data when deriving LAU1 area statistics.

The National Grid data were weather corrected to National Grid's standard 35-year trend. This standard weather condition was used for comparison purposes, although this has subsequently been replaced with a new 17 year condition that reflects observed warming in recent years (this correction is used for the revised 2004 dataset, and the datasets collected by BEIS from 2005 onwards, which are generated from the re-structured industry).

Users should note that there are quality issues to consider before using the gas consumption data for the National Grid network between 2001 and 2004. Data for these years are experimental since the methodology used for producing these data was still in development stages at the time. An important issue is that National Grid used an algorithm to amalgamate gas consumption at postcode sector levels to maintain the confidentiality of some larger non domestic consumers. The impact of this has meant that the data are not always consistent from year to year.

Advice on time series analysis

In terms of making historical comparisons for the gas consumption data, **2005 data** should be used as the baseline year, as data from 2005 onwards (classed as National Statistics) have been produced with a consistent methodology. Major changes recorded in consumption figures before 2005 are caused mainly by data quality improvements.

It is important to recognise that when making comparisons at local authority level from year to year, total and average consumption levels are influenced by new industrial or commercial establishments or the closure or downsizing of existing businesses for economic reasons and the extent to which more or less smaller businesses were affected. The impact that these changes have on totals and averages is highly dependent on the size of the businesses.

[17] The postcode sector is the postcode of the meter minus the last two characters, for example, SW1A 2.

2.5 Data below local authority level (MSOA/IGZ and LSOA)

Gas consumption data are available below local authority level, with the aim that this will enable councils and others to monitor and target small areas for further interventions as part of their local energy strategies and enhance implementation of energy efficiency programmes, thus reducing carbon dioxide emissions.

Data is published on the BEIS website at a Middle Layer Super Output Area (MSOA)/Intermediate Geography Zone (IGZ) and Lower Layer Super Output Area (LSOA) level. Further information regarding the MSOA/IGZ and LSOA datasets is contained in chapter 4.

2.6 Estimates of households not connected to the gas network

Sub-national estimates of homes not connected to the gas network (2016)

Dates covered: 1st October 2015 to 30th September 2016

Sectors covered: Domestic

Features: Derived from sub-national gas consumption statistics

Years available: LA: 2012 to 2016
MSOA: 2015 and 2016
LSOA: 2013 and 2015 to 2016

Source: Xoserve and independent gas transporters.

Statistical releases:

English region and devolved administration (NUTS1) and local authority (LAU1):

Latest release: December 2017 (2016 data)

Next release: December 2018 (2017 data)

MSOA/IGZ and LSOA:

Latest release: January 2018 (2016 data)

Next release: January 2019 (2017 data)

https://www.gov.uk/government/collections/sub-national-gas-consumption-data

2.6.1 Overview

This dataset is based on the gas meter point data used to produce DECC's sub-national gas consumption estimates and provides estimates of the number of households within each local authority and lower layer super output area without a gas meter.

The datasets include:

- Estimates for the number of houses without a gas meter in Great Britain between 1 October and 30 September.
- Estimates based on data for all gas distributed through the National Transmission System.
- Gas consumers whose consumptions are recorded on a daily basis who are known as Daily Metered (DM) customers.

The datasets exclude:

- Data for Northern Ireland, due to differences in market structure.
- Any gas consumers flagged as non-domestic in the sub-national gas consumption estimates, since these estimates are designed to be based on domestic households only.

2.6.1.1 Local authority level dataset

This dataset contains estimates of the number and proportion of households without a gas meter in Great Britain. Data are published at the sub-national level, including for; English region and devolved administrations and local authority. This section deals chiefly with the local authority level dataset, which also includes information for English region and devolved administrations. For guidance regarding the lower layer super output area (LSOA) level datasets, please refer to section 2.6.1.2. BEIS also advises that the user gains familiarity with the coverage and methodology of the local authority level gas consumption statistics (Chapter 2) before utilising this dataset.

Unallocated meters

The dataset also includes an aggregated total of gas meters that could not be allocated to a local authority. Some meters cannot be allocated to a local authority due to insufficient or incomplete address information, this is due to incomplete postcode information being provided by the data suppliers or no postcode information received at all. Approximately 0.3 percent of domestic meters could not be allocated to a local authority in the 2016 data. These meters are included in the overall estimates for Great Britain.

2.6.1.2 Lower layer super output area level dataset

This dataset contains estimates of the number and proportion of households without a gas meter in Great Britain. Data are published at the lower layer super output area (LSOA) level. This section deals chiefly with the LSOA level dataset, for guidance regarding English region and devolved administrations or local authority level data, please refer to section 2.6.1.1. BEIS also advises that the user gains familiarity with the coverage and methodology of the LSOA level gas consumption statistics (Chapter 4) before utilising this dataset.

Estimates of the number of households not connected to the gas network have been made available at the LSOA level, with the aim that this will enable councils and others to monitor and target small areas for further interventions as part of their local energy strategies.

Data for the LSOA level dataset is taken from the same base consumption data used to produce the estimates of households not connected to the gas network at local authority level.

Unallocated meters and merged LSOAs

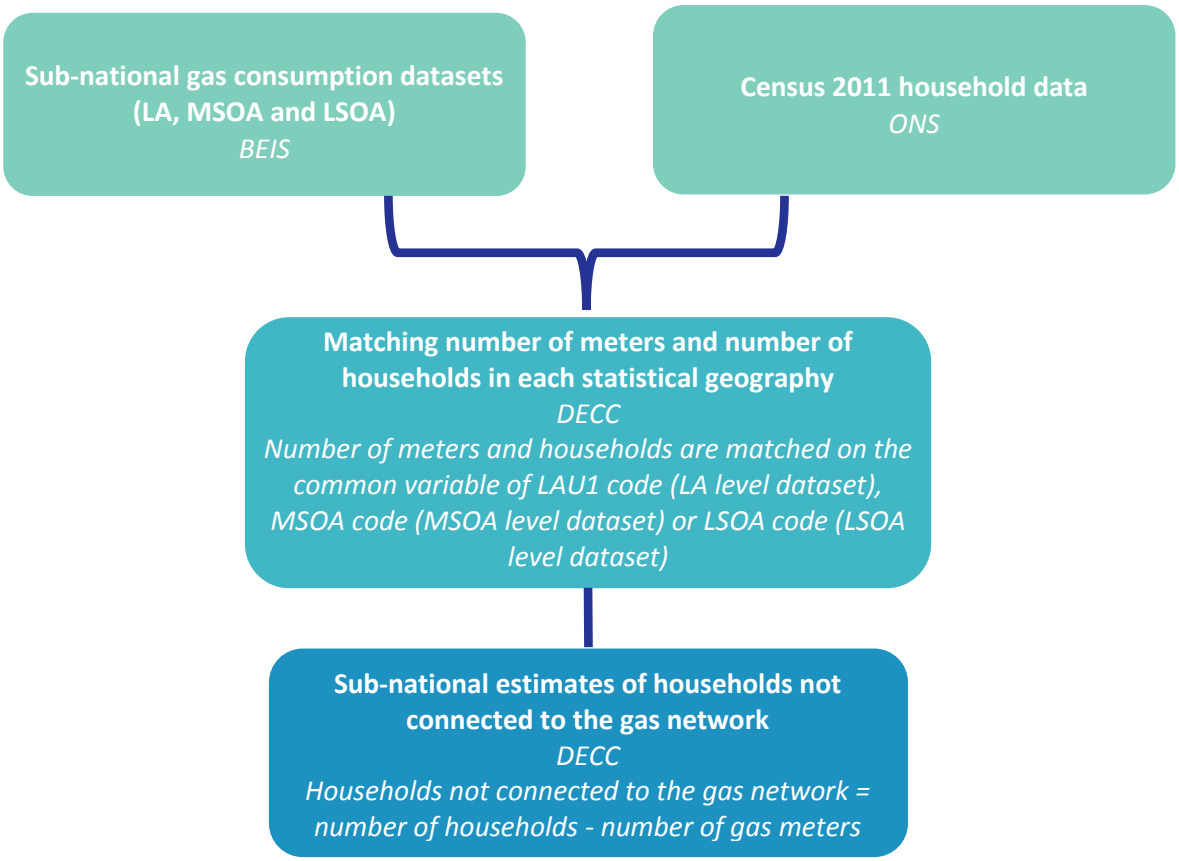
As in the local authority level dataset, some meters cannot be allocated to an LSOA due to insufficient or incomplete address information. These unallocated meters are included in the grand total of the dataset however.

Some LSOA codes have changed since the 2001 Census LSOA boundaries. As a result of this, some LSOAs have been merged in the dataset so as to allow comparison with LSOA boundaries.

As a result of this, a small number of LSOAs have been excluded where there was no information to allow the 2001 LSOA boundaries to be matched to the 2011 LSOA boundaries, leading to an increased number of unallocated meters. This particularly impacts on LSOAs that were merged to prevent disclosure in the sub-national 2011 gas consumption estimates.

2.6.2 Methodology

Chart 3: Flowchart to show the production process of the sub-national estimates of households not connected to the gas network dataset



Sub-national gas consumption datasets (LA, MSOA and LSOA)
BEIS obtains its estimate for the number of households that *are* connected to the gas network from is sub-national gas consumption datasets. These datasets offer an estimate of the number of domestic gas meters in each area. This quantity is then used as a proxy measure for the estimated number of households in each area that are connected to the gas network.

Household estimates based on 2011 Census Data
BEIS estimates the number of households in each area in a given year by taking household figures from the 2011 census, and multiplying by the proportional increase in meter points for each area since 2011. This done by LA[18] , MSOA[19] and LSOA[19]).

Matching number of meters and number of households in each statistical geography
Using the datasets mentioned above; BEIS can estimate the number of households not connected to the gas network by subtracting the number of gas meters from the number of households in each area:

2.6.2.1 Limitations of the dataset

While these datasets give a strong indication of areas that have little or no connection to the gas network, there are some limitations that users should be particularly aware of:

- Until recently the gas meter point consumption data was not supplied with a domestic indicator and instead BEIS used the gas industry cut off threshold of 73,200kWh to determine whether a gas meter is domestic or not, with all meters with consumption of 73,200 kWh or below assumed to be domestic. This means a number of smaller commercial/industrial consumers are allocated as domestic and therefore estimates of the number of households without gas is an underestimate of the true number. The impact of this assumption on estimates will vary by area. Headline estimates are still produced on this basis, but BEIS is currently consulting on use of the industry supplied flag[20].
- Some meters cannot be allocated to a local authority or LSOA due to insufficient or incomplete address information[21]. Approximately 0.3 per cent of domestic meters could not be allocated to a local authority in 2016.
- In some cases incorrect address information may mean meters are allocated to the wrong area. The number of meters which are incorrectly allocated will vary by area.
- In this dataset, there is no differentiation between properties which do not have a gas meter because they are in an area which is off the gas grid and those which are in an area on the gas grid but have a property which is not connected to it (such as inner city blocks of flats).

[18] The Census 2011 household estimates for local authorities can be accessed from Table H01 at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/2011censuspopulationandhouseholdestimatesforenglandandwales
[19] The Census 2011 household estimates for MSOAs and LSOAs can be accessed from Table PHP01 at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/2011censuspopulationandhouseholdestimatesforwardsandoutputareasinenglandandwales
[20] Link to Sub-national gas estimates using the industry supplied flag can be found here: https://www.gov.uk/government/statistical-data-sets/gas-sales-and-numbers-of-customers-by-region-and-local-authority
[21] These meters are included in the overall estimates for Great Britain, but are aggregated in the 'unallocated' row in the sub-national statistics outputs.

- For these estimates it is assumed that each property always has one gas meter. Occasionally a property may have more than one gas meter, which would again mean the estimates provided are an underestimate of the true value. In 2013, approximately one per cent of properties allocated as domestic in this dataset had more than one meter.
- Data refer to the data collection during 2016 and therefore does not include any changes which may have occurred since 2016.

2.6.3 Comparability

A comparison of the sub-national estimates with Xoserve[22] and NEED[23] data have been summarised in Table 2 below. For a more detailed comparison of the differences between the two datasets, the user should refer to the article in the December 2013 issue of Energy Trends (page 68) entitled "Areas and types of properties off the gas grid"[24]

Table 2: Summary of dataset comparisons

	BEIS off gas estimates	Xoserve off gas postcodes	NEED off gas estimates
Strengths	• Provides assessment of level of gas connection in an area, helping to identify general areas and indication for inner city as well as rural areas • Covers domestic only; helps with domestic policies.	• Lower level geography (postcode). • Includes gas supply even if no meter yet installed. • Domestic and non-domestic (strength depending on purpose).	• Only source of information about types of properties and occupants.
Weaknesses	• Information not available at postcode level. • No information on gas supply if no meter installed. • Domestic cut-off based on arbitrary consumption figure used by industry.	• Binary variable.	• Limited detail on geography.

[22] Xoserve provides centralised information and data services for gas transporters and shippers in Great Britain.
[23] NEED estimates of the number of properties without a gas meter by property attributes and household characteristics are available from: https://www.gov.uk/government/collections/national-energy-efficiency-data-need-framework .
[24] This December 2013 issue of Energy Trends can be found at the following location: https://www.gov.uk/government/statistics/energy-trends-december-2013

When to use	• To identify areas with low numbers of households with a gas meter.	• To identify whether a specific geographic location has a gas supply.	• To identify types of properties, which may benefit from support.

3 Electricity consumption statistics

Sub-national electricity consumption statistics (2016)

Dates covered:	Non-Half Hourly: 31st January 2016 to 30th January 2017
	Half Hourly: 1st January 2016 to 31st December 2016
Sectors covered:	Domestic and non-domestic
Features:	Annualised, not weather corrected
Years available:	2003 to 2016
Source:	Data aggregators (on behalf of electricity suppliers)

Statistical releases:

English region and devolved administration (NUTS1) and local authority (LAU1):

Latest release: December 2017 (2016 data) [Revised in January 2018]

Next release: December 2018 (2017 data)

MSOA/IGZ and LSOA:

Latest release: January 2018 (2016 data)

Next release: January 2019 (2017 data)

https://www.gov.uk/government/collections/sub-national-electricity-consumption-data

3.1 Overview (2005 to 2016 datasets)

3.1.1 Coverage of data

The datasets include:

- Non-Half Hourly (NHH) electricity consumption from 31st January 2016 to 30th January 2017 and Half Hourly (HH) electricity consumption over a calendar year in Great Britain (please see section 3.2 for more information).
- An aggregated total for unallocated consumption, that is, consumption that was not able to be matched to an area due to incomplete or a lack of postcode information (this usually accounts for less than 1 per cent of consumption).

The datasets exclude:

- Consumption for Northern Ireland, for which separate datasets and analysis are produced (for guidance, please see chapters 5 and 6).
- Central Volume Allocation (CVA) users; large industrial consumers who receive their electricity through high voltage lines of the transmission system and hence have different arrangements with their electricity suppliers than HH and NHH metered customers. Consumption by CVA users generally account for 1.5 to 2 per cent of electricity sales.
- Electricity used by companies that generate their own electricity and consume it without passing over the public distribution network. In 2013, this amounted to 20.5 TWh in the UK – 5 per cent of total final electricity consumption in the UK. Much of this "auto-generation" is from Combined Heat and Power (CHP) schemes and an indication of the regional importance of such schemes can be obtained from Energy Trends[25].

Unallocated data

Meter consumption data is 'unallocated' if sufficient address information has not been provided to be able to allocate the meter to a local authority with any degree of accuracy. This is due to only a partial postcode being provided by the data suppliers or no postcode information being received at all, and BEIS was able to locate the local authority in which meter lies in, but not the specific MSOA.

Unallocated data, at a local authority level, can also include consumption for street lighting or traffic lights, where the information provided does not indicate a specific local authority.

[25] The article on CHP schemes can be found in the September 2014 edition of Energy Trends: https://www.gov.uk/government/organisations/department-of-energy-climate-change/series/energy-trends.

3.1.2 Sectors

Electricity data is divided between domestic and non-domestic categories according to the meter's profile type. The domestic consumption is based on Non-Half Hourly (NHH) meters with profiles 1 and 2 (these are the standard domestic and economy 7 type tariffs respectively). Industrial and commercial consumption data are based on NHH meters with profiles 3 to 8 and all Half Hourly (HH) meters. In addition, profile 1 and 2 meters are reallocated to the industrial and commercial sector if annual consumption is greater than 100,000 kWh. Also re-allocated to the industrial and commercial sector are those consuming over 50,000 kWh with address information indicating non-domestic consumption.

Domestic reallocations to the non-domestic sector

The automatic cut-off point for non-domestic consumption is **100,000 kWh.**

Domestic consumers with consumption of between **50,000 and 100,000 kWh** is reallocated to the non-domestic sector following a validation process if address information indicates non-domestic consumption is taking place (for example, if an address contains 'plc.' or 'ltd').

3.1.3 Data limitations

The Meter Point Administration Number (MPAN) data used in this analysis consists of approximately 80 per cent actual ("Annual Advance") readings and 20 per cent estimated readings ("Estimated Annual Consumption"). This is explained further in section 3.2. From year-to-year some meter readings supplied by data aggregators change from actual to estimated readings and vice-versa, which can cause extreme values to be created when an estimate is corrected.

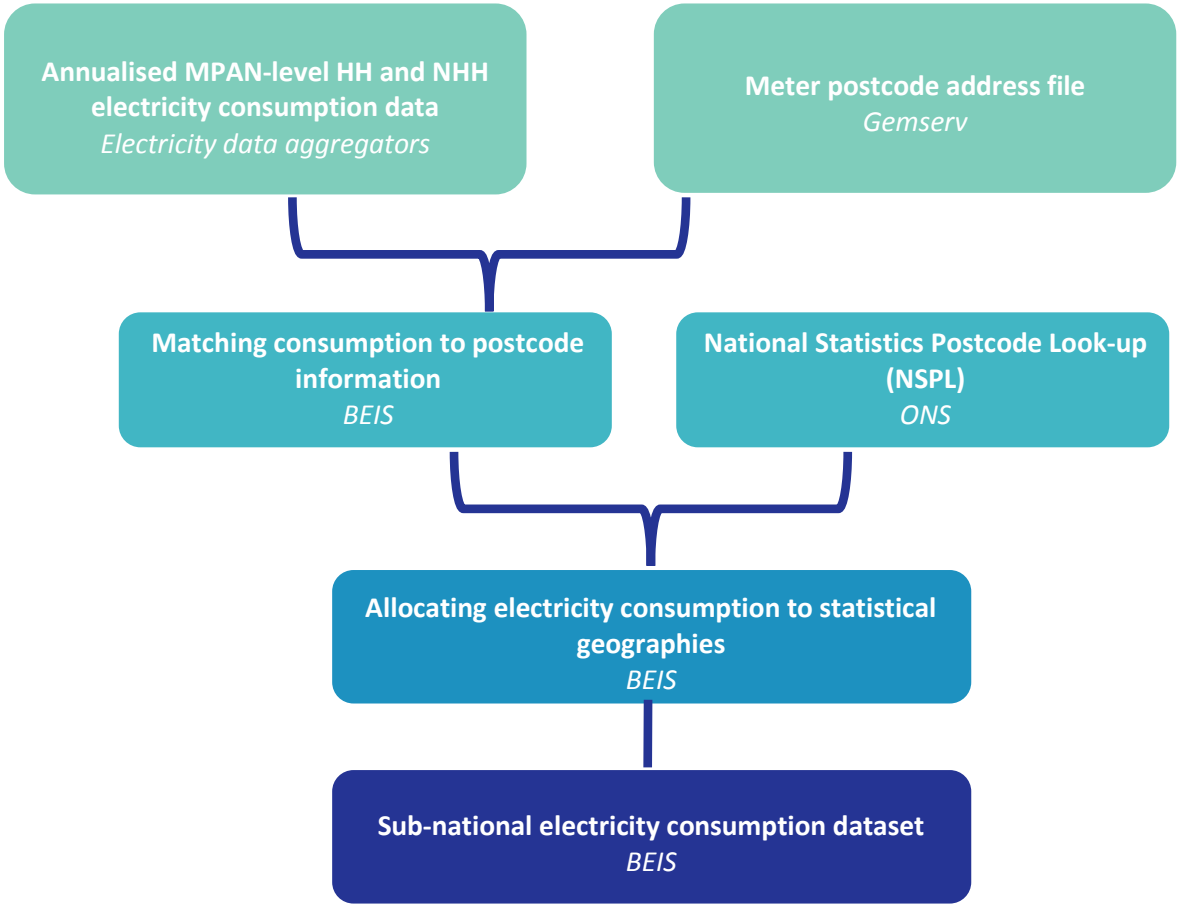
With the exception of Half Hourly (HH) data, it should also be noted that these data are not directly aligned with the calendar year and cover the year 31st January 2016 to 30th January 2017. These dates may vary slightly each year according to when the data extraction process takes place. The dates in previous years are as follows:

Table 3: Coverage of electricity consumption for Non-Half Hourly (NHH) data

Year of NHH electricity consumption	Dates covered
2016	31/01/2016 to 30/01/2017
2015	26/01/2015 to 25/01/2016
2014	01/02/2014 to 31/01/2015
2013	27/01/2013 to 26/01/2014
2012	27/01/2012 to 26/01/2013
2011	28/01/2011 to 27/01/2012
2010	31/01/2010 to 30/01/2011
2009	31/01/2009 to 30/01/2010
2008	30/01/2008 to 29/01/2009
2007	30/01/2007 to 29/01/2008
2006	30/01/2006 to 29/01/2007

3.2 Methodology

Chart 4: Flowchart to show the production process of the sub-national electricity consumption dataset



Annualised MPAN-level electricity consumption data from electricity data aggregators
The data are collected for statistical purposes by BEIS thanks to the full co-operation of the electricity industry. Annualised consumption data are provided by the data aggregators, agents of the electricity suppliers, who collate and aggregate electricity consumption data for each Meter Point Administration Number (MPAN). The electricity consumption data are generated for both Non-Half Hourly (NHH) meters (domestic and small or medium non-domestic customers) and for Half Hourly (HH) meters (larger non-domestic customers).

For the NHH data, annualised estimates are based on either an Annualised Advance (AA) or Estimated Annual Consumption (EAC). The AA is an estimate of annualised consumption based on consumption recorded between two meter readings at least 6 months apart, with the final reading occurring in the reference period. In comparison an EAC is used where two such meter readings are not available and an estimate of annualised consumption is produced by the energy company using historical information and the profile information relating to the meter. These data provide a good approximation of annualised consumption, but do not cover exactly the calendar year. In contrast, for the HH meter consumption estimates, data aggregators are asked to produce a simple report for each MPAN for the relevant calendar year.

Dates for HH and NHH consumption

Non Half-Hourly (NHH) consumption is produced for the period between **31st January 2016 and 30th January 2017**

Half-hourly (HH) data covers consumption over the **calendar year.**

Meter postcode address file from Gemserv

Information is obtained from the Gemserv meter postcode address file, which provides the geographical location of each MPAN, including the full address and postcode. For the 2003, 2004 and 2005 datasets the Gemserv data were from a quarterly-produced extract file produced by the electricity distribution companies' Meter Point Administration System (MPAS). In 2006 the MPAS data moved onto an on-line system named the Electricity Central Online Enquiry Service (ECOES), still managed by Gemserv.

Matching consumption to postcode information by BEIS

The electricity consumption and geographical data are then merged together (using the MPAN as this is common to both datasets) to enable consumption data to be mapped to postcodes and aggregated up to LSOA, MSOA/IGZ, local authority and English region and devolved administration levels. Where the address information within the Gemserv database is incomplete, invalid or missing, the Royal Mail Postcode Address File (PAF) is used, where possible, to obtain a full address and postcode and thus reduce the level of unallocated consumption.

National Statistics Postcode Look-up (NSPL) from ONS

The National Statistics Postcode Look-up (NSPL)[26] is an ONS Geography product which links all United Kingdom postcodes to the geographical areas in which the postcode falls.

Allocating matched electricity and postcode data to statistical geographies by BEIS

To complete the data allocation process, the NSPL is used to allocate MPAN postcodes and the associated consumption to statistical local authority level (LAU1). This implies that any address containing a PO Box number will be assigned to the LAU1 area of the Post Office sorting depot. This is particularly important for interpretation of the data at levels below that of LAU1 (see chapter 4), as consumption may be allocated to a different area than where it is actually taking place. On occasions it has been possible to allocate an MPAN to an LAU1 code, but not at a lower level code.

Sub-national electricity consumption dataset from BEIS

The sub-national electricity dataset covers the years 2005 to 2016 and gives consumption as sales in gigawatt hours (GWh) as well as the number of meters for both domestic and non-domestic (commercial and industrial) consumers. In addition, average domestic and commercial and industrial consumption is given as sales per meter in kilowatt hours (kWh). The data is provided at a local authority level and the dataset also includes English region and devolved administrational totals.

[26] Further information on the NSPL can be accessed at the ONS website: http://geoportal.statistics.gov.uk/

Although total non-domestic consumption is provided in the local authority level dataset, Half Hourly consumption (consumption by the larger non-domestic customers) totals, at a local authority level are provided in the Middle Layer Super Output Area (MSOA) level datasets[27].

Number of meters versus number of properties

The number of meters does not exactly equal the number of properties. The reasons for this are as follows:

1. An apartment building may have a meter for the building complex (used to power building-wide appliances) in addition to each individual apartment having its own meter.
2. Some households may have a 3-rate meter system. A household with such a system will have one meter which measures all consumption at a peak rate and another meter which measures two other rates of off-peak consumption. This is the case for many households in Scotland, but it is extremely rare to find a similar case in England or Wales.
3. Some meters power street lighting or traffic lights rather than a property (many of these are unallocated).

3.3 Comparability

3.3.1 Comparison to sub-national electricity data

Please note that sub-national electricity and gas consumption statistics use varying methodology to compile the datasets and cover slightly different time periods. The most important difference to bear in mind is that electricity consumption data are not weather corrected while gas consumption data has a weather correction factor applied to it. Despite these differences, the combined electricity and gas provide a good indication of overall annual household energy consumption in Great Britain at local authority, MSOA/IGZ and LSOA level, due to the robustness of the data collection and collation process.

For more information on how gas consumption statistics are produced, please see chapter 2.

3.3.2 Comparison to DUKES

It is important to take care when comparing sub-national electricity data to the Digest of United Kingdom energy statistics (DUKES)[28]. DUKES is an annual BEIS publication which provides a detailed and comprehensive picture of energy production and use over the last five years, with extensive tables, charts and commentary covering all the major aspects of energy.

[27] The MSOA dataset can be found here: https://www.gov.uk/government/statistical-data-sets/mlsoa-electricity-and-gas-2011. For guidance, please see chapter 4.
[28] DUKES can be accessed on the BEIS website: https://www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes.

There are differences in reported electricity figures in the sub-national and DUKES publications as DUKES data:

- Are based on a calendar year, whereas 2016 sub-national electricity data cover 31st January 2016 to 30th January 2017.
- Cover consumption for the United Kingdom, whereas the sub-national consumption statistics cover Great Britain.
- Are compiled using a top-down approach, where statistics are gathered by energy companies on a national level, whereas sub-national datasets are created from an initial set of individual MPAN data.
- Include consumption from Central Volume Allocation (CVA) users in its totals, which are not included in the sub-national data (see section 3.1).

Total final consumption (UK)	GWh		
Great Britain total consumption from meter point data			
Domestic	106,220		
Non-domestic	170,800		
	277,020		
Implied UK total consumption			
Great Britain total consumption (above)	277,020		
Plus Northern Ireland[1]	7,630		
Plus Sales direct from high voltage lines[2]	3,373		
Implied UK sales of electricity	288,023		
DUKES total UK sales (DUKES 2017 Table 5.5)	288,129		
Statistical difference	106	0.04%	of UK sales

[1] *Northern Ireland data are based on data for electricity distributed provided by Northern Ireland Electricity.*

[2] *Based on estimates provided by Ofgem.*

3.3.3 Comparison to ECUK

There are also issues when comparing sub-national data to Energy Consumption in the UK (ECUK)[29]. ECUK is an annual BEIS publication which includes a detailed overview of energy consumption at a UK-wide level.

Differences occur between ECUK and sub-national figures as data in ECUK:

- Are, in many cases, modelled and obtained from secondary analysis performed by BEIS on data from a number of sources, including DUKES.

[29] ECUK can be accessed on the DECC website: https://www.gov.uk/government/collections/energy-consumption-in-the-uk.

- Contains a more comprehensive sector split than sub-national statistics and gives information on end use for majority of fuels.

3.3.4 Comparison to NEED

For electricity consumption, the mean consumption is very similar for the published sub-national electricity consumption data and the Nation Energy Efficiency Data Framework (NEED)[30]. This is as expected since both datasets are derived from the same data source. However, the mean consumption is slightly lower in the NEED dataset than the sub-national electricity consumption dataset. These differences occur because:

- In NEED, properties are defined as domestic based on the Valuation Office Agency property attribute database if they have consumption between 100kWh and 25,000kWh, whereas in sub-national data, meters are considered domestic if they are a profile 1 or 2 meter and have a consumption lower than 100,000kWh.
- The NEED dataset has suspected estimated readings removed, whereas sub-national gas consumption estimates do not.
- In NEED, data is matched to other sources by NLPG UPRN[31] at property level, whereas the sub-national data are assigned to a Lower Layer Super Output Area.

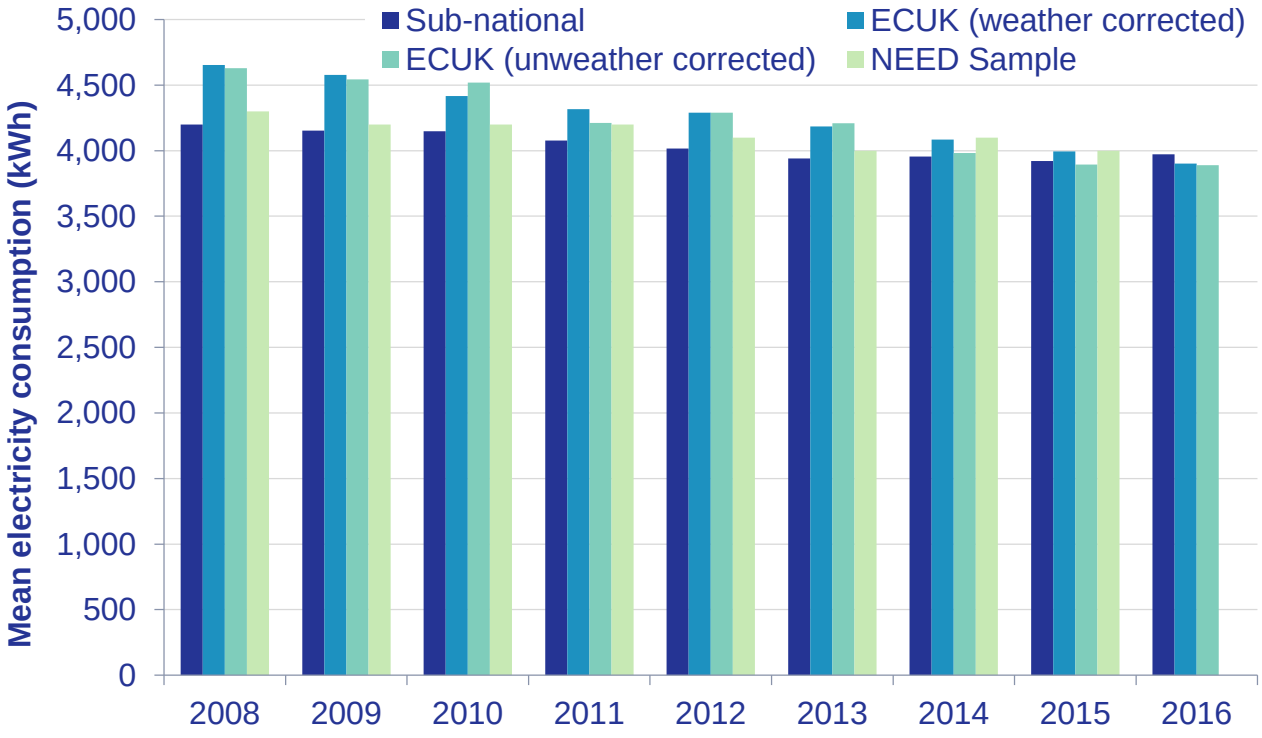
The chart below shows a comparison of the estimates of mean domestic electricity consumption per household taken from each of the different sources mentioned above in order to give a representation of the differences between the datasets.

Note: The latest NEED release only contains consumption data up to 2015, so 2016 NEED data is omitted from the chart.

[30] All NEED publications can be accessed from the following page; https://www.gov.uk/government/collections/national-energy-efficiency-data-need-framework

[31] National Land and Property Gazetteer, Unique Property Reference Number. More info on the NLPG can be found at: http://www.nlpg.org.uk/nlpg/welcome.htm

Chart 5: Comparison of estimates of mean electricity consumption per household



3.4 Pre-2005 datasets

Users should note that there have been a number of methodological changes in the datasets released by BEIS. It is important to recognise that differences in consumption between the 2003, 2004 and 2005 data are more likely to be due to data quality improvements rather than real changes in consumption between the two years. This is particularly relevant to industrial and commercial consumption.

The first set of local and regional electricity consumption estimates were released for 2003 in the December 2004 edition of Energy Trends. A revised set of 2003 local and regional data was released in the March 2005 edition of Energy Trends, after further validation procedures identified a significant number of domestic consumers with very high electricity consumption who were reclassified as industrial and commercial consumers.

When compiling the 2004 dataset a decision was taken to reallocate all domestic NHH meters (profile classes 1 and 2) with annualised consumption greater than 100,000 kWh to the commercial/industrial sector as it was found that that there were a significant number of private addresses consuming between 50,000 and 100,000 kWh, but relatively few over 100,000 kWh. As well as this any domestic meters identified as either unmetered, street lighting, landlord supply, staircase lighting or temporary builders' supply, were transferred to the commercial/industrial sector. The 2005 estimates were produced using the same methodology as 2004 but in 2006 some additional meters were transferred from domestic to commercial if terms such as PLC, Ltd and so on were identified in the address. This methodological change resulted in a small change in consumption levels from year-to-year compared with other improvements to methodology. The method was also implemented for subsequent years.

Users should also note that the quality of the Gemserv postcode address information has improved considerably, which has enabled BEIS to substantially reduce the level of unallocated consumption since 2003. The NSPL (used from 2004) and PAF (used from 2006) have significantly improved the accuracy of the geographical mapping of electricity consumption from postcodes to LAU1 and NUTS1 areas.

The aggregate and average electricity consumption data are more reliable for the domestic sector than for the industrial and commercial sector as the postal address information held on the Gemserv extract file is more complete for the former. However, the quality of the industrial and commercial Gemserv data has improved at a faster rate than the domestic data, inevitably leading to more variability in the annual consumption estimates for the industrial and commercial sector.

Advice on time series analysis

In terms of making historical comparisons for the electricity consumption data, 2005 data should be used as the baseline year, as data from 2005 onwards (classed as National Statistics) have been produced with a consistent methodology. The robustness of post-2005 data mainly reflects the significant improvement in the quality of the postcode address file from Gemserv. Any changes recorded in consumption figures before 2005 are caused mainly by data quality improvements.

It is important to recognise that when making comparisons at local authority level from year to year, total and average consumption levels are influenced by new industrial or commercial establishments or the closure or downsizing of existing business for economic reasons and the extent to which more or less smaller businesses were affected. The impact that these changes have on totals and averages is highly dependent on the size of the business.

3.5 Sub-regional level data (MSOA/IGZ and LSOA)

Electricity consumption data are available below local authority level, with the aim that this will enable councils and others to monitor and target small areas for further interventions as part of their local energy strategies and enhance implementation of energy efficiency programmes, thus reducing carbon dioxide emissions.

Data are released on a Middle Layer Super Output Area (MSOA)/Intermediate Geography Zone (IGZ) and Lower Layer Super Output Area (LSOA) level. For further guidance on MSOA/IGZ and LSOA data, please see chapter 4.

3.6 Further information

For analysis on sub-national electricity consumption data prior to 2011, please see the articles in Energy Trends.[32]

[32] Analysis for 2010 is available in Energy Trends (page 52 of the March 2012 edition). The article can be accessed here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/65933/4782-subnat-electricity-cons-stats-article.pdf.

4 Sub-regional gas and electricity consumption statistics (MSOA/IGZ and LSOA)

Sub-regional consumption statistics (2015)

Dates covered:	Gas: 1st October 2015 to 30th September 2016
	Electricity: 31st January 2016 to 30th January 2017 (Non-half hourly)
	1st January 2016 to 31st December 2016 (Half-hourly)
Sectors covered:	Domestic and non-domestic (domestic only at LSOA level)
Years available:	*MSOA/IGZ:* 2004 to 2016
	LSOA: 2007 to 2016
Features:	*Gas:* Annualised, weather corrected
	Electricity: Annualised, not weather corrected
Source:	*Gas:* Xoserve and independent gas transporters
	Electricity: Data aggregators (on behalf of electricity suppliers)

Statistical releases:

MSOA/IGZ and LSOA data:

Latest release: January 2018 (2016 data)

Upcoming release: January 2019 (2017 data)

https://www.gov.uk/government/collections/sub-national-electricity-consumption-data

4.1 Introduction

4.1.1 Purpose

Gas and electricity consumption data are available below local authority level, with the aim that this will enable councils and others to monitor and target small areas for further interventions as

part of their local energy strategies, and enhance implementation of energy efficiency programmes and thus reduce carbon dioxide emissions.

This chapter provides specific guidance for use of the Middle Layer Super Output Area (MSOA)/Intermediate Geography Zone (IGZ) and Lower Layer Super Output Area (LSOA) level statistics for gas and electricity. BEIS advises that the user gains familiarity with the coverage and methodology of the gas (Chapter 2) and/or the electricity (Chapter 3) datasets before reading further.

The table below outlines the sub-regional data that are currently available.

Table 4: Overview of sub-regional consumption statistics currently available

Sub-national Geography	Area covered	Type of consumption available	Years available and status
Middle Super Output Area (MSOA)	England and Wales	• Domestic gas • Domestic electricity • Non-domestic gas • Non-domestic electricity (excluding half hourly consumers, which is only included at Local Authority)	• 2004 (experimental) • 2005 to 2016(National Statistics)
Intermediate Geography Zone (IGZ)	Scotland	• Domestic gas • Domestic electricity • Non-domestic gas • Non-domestic electricity (excluding half hourly consumers, which is only included at Local Authority)	• 2004 (experimental) • 2005 to 2016 (National Statistics)
Lower Super Output Area (LSOA)	England and Wales	• Domestic gas • Domestic electricity	• 2007 (pilot study for 45 local authorities only) to 2016 (National Statistics)

4.1.2 Statistical geographies

MSOAs and LSOAs are part of a geographical hierarchy that was first introduced in the 2001 census and is expected to eventually become the standard across National Statistics and beyond. Further information regarding SOAs and their constitution can be found in section 1.1 or on the ONS website.[33]

Please note that data is not available at a Parish level. BEIS advises that the user instead uses MSOA data, as they may cover a similar area.

[33] Information regarding Super Output Areas can be found on the ONS website here: https://www.ons.gov.uk/census/2001censusandearlier/dataandproducts/outputgeography/outputareas

Recognising that some local authorities would like data at a more granular level, BEIS is currently in talks with energy suppliers regarding providing data at a lower level soon.

Trying to find out which output area your postcode falls in?

Please see Annex A for a step-by-step guide on how to locate your MSOA/IGZ/LSOA.

4.2 Main data features (2016 data)

4.2.1 Overview

Data for MSOA/IGZ and LSOA is taken from the same base consumption data used to produce the sub-national consumption datasets at a local authority level (as described in Chapters 2 and 3).

Consumption is given in kilowatt hours (kWh) along with the number of meters. Average consumption per meter is also provided.

Important things to note with regards to electricity data

1. Consumption is split between ordinary and economy 7 meters.

   Economy 7 meters differ from ordinary meters in that they have a separate (cheaper) off-peak rate. Economy 7 meters still measure all household consumption however, meaning a household on an economy 7 tariff will still have only one meter.

2. For non-domestic MSOA data, industrial half-hourly (HH) consumption is provided for each local authority but it is not disaggregated further as doing so would break the UK Statistics Authority's Code of practice for Official Statistics relating to data disclosure.

4.2.2 MSOA/IGZ and LSOA

MSOA level data is provided for both gas and electricity consumption by domestic and non-domestic consumers, for England and Wales. For Scotland, gas and electricity consumption by domestic and non-domestic consumers are available on an IGZ level (similar to MSOA).

LSOA level data is provided for gas and electricity consumption in England and Wales as part of the domestic datasets only. Due to the small size of these geographical areas, the majority of the non-domestic consumption would be disclosive and would have to be aggregated. Since the non-domestic consumption is available at MSOA level, BEIS took the decision that publishing non-domestic LSOA level data after aggregation would not add much value for users. In addition, the gas and electricity consumption data at a Data Zone (DZ) level is currently not available for Scotland, as the energy suppliers (who provide us with the data) have not granted BEIS permission to publish consumption at this level for disclosure reasons.

4.2.3 Unallocated consumption

Unallocated consumption refers to consumption from electricity and gas meters which could be allocated to the local authority but not further down to a specific MSOA. This is mainly as a result of BEIS receiving either a partial postcode or no postcode from the data suppliers. 4.2.4 Merged consumption

Merged consumption refers to MSOAs that have been merged together because one or more of them left disaggregated would be disclosive (an SOA is defined as disclosive if it contains 5 or fewer meters). When MSOA needs to be merged, the priority is to merge it with other disclosive MSOAs in the same Local Authority, when this is not possible it is merged with the non-disclosive MSOA in that local authority with the fewest number of meters. It should be noted that the proximity of the MSOAs is not taken into account in this process. The below image shows an example of disclosive MSOAs that have been merged in the local authority King's Lynn and West Norfolk (UKH1308).The same process is carried out for disclosive areas in the LSOA datasets.

3642	King's Lynn and West Norfolk	UKH1308	E02005562, E02005563, E02005564, E02005565
3643	King's Lynn and West Norfolk	UKH1308	E02005566

4.2.5 Socio-economic data

BEIS provides socio-economic census data for each sub-regional geography, which gives further information on population size, geographical size and number of households in these areas. This is to allow users to gain more of an appreciation of the composition of the individual areas. Census information from 2001 can be found alongside the gas and electricity consumption data in pre-2008 datasets and census information from 2011 is available as a separate spreadsheet.[34] Figure 5 below shows an illustration of the LSOA level domestic gas dataset for LSOAs in City of London

[34] Socio-economic data at a sub-regional level is available from the Office for National Statistics 'Neighbourhood Statistics' website using the following link: http://neighbourhood.statistics.gov.uk/dissemination/.

4.3 Data limitations

In a number of cases, there are substantial differences between the number of MPANs and number of households. Whereas the data for the number of MPANs is consistent with the published electricity and gas consumption data, the household data comes from the 2011 census (with the exception of the Scottish data). As such, changes in the housing stock between these periods causes inconsistencies in the data.

Improvements in data accuracy over time can affect consumption and the number of meters in an area from year to year. It is important to take care when performing year-on-year comparisons, as changes in consumption and the number of meters in some super output areas can be attributed to updates caused by an improvement in the address database or more accurate profile type information provided by energy suppliers.

4.4 History of the data collection process

Beginning in late 2005, BEIS ran a pilot scheme with just electricity data for 2004 involving 6 LAs - Crawley Borough Council, Bristol City Council, Redcar and Cleveland Borough Council, Guildford Borough Council, High Peak District Council and Kirklees Metropolitan Council. This was aimed at evaluating both the practicality of producing data at MSOA level and investigating the robustness of the consumption estimates at this level. The results suggested such data would be useful and that the robustness of the data for the domestic sector was sufficient to allow a national roll out (though a fuller evaluation of the reliability of the industrial and commercial data was not undertaken as the data is far more complex to analyse).

The MSOA electricity estimates for the domestic sector were validated using a combination of feedback from the local authorities themselves and the direct comparison of consumption patterns across each authority using socio-economic variables taken from the 2001 census. The variables taken from the census included the levels of economic activity, the size and type of the housing stock and average household size, which were used as proxy measures of the level of economic prosperity in the MSOAs.

On 25th March 2010, BEIS released 2008 LSOA electricity and gas consumption data for domestic consumers within England and Wales. This was the first time that this data has been published for the whole of England and Wales and follows on from a successful pilot carried out during 2009, when the 2007 data were published for 40 local authorities. Since the methodology for producing these data is still developmental, BEIS classes these statistics as experimental.

4.5 Previous datasets

The layout of the spreadsheets differs slightly from year to year, but this does not affect the data comparability. This section provides guidance to interpreting these datasets:

4.5.1 2008 to 2009 data (MSOA/IGZ and LSOA)

The data for 2008 and 2009 are separated according to whether they refer to MSOA/IGZ or LSOA, gas or electricity, and domestic or non-domestic. In other words, for each English Region and Wales, there are 6 separate Excel workbooks, which relate to:

1. MSOA/IGZ domestic electricity consumption
2. MSOA/IGZ domestic gas consumption
3. MSOA/IGZ non-domestic electricity consumption
4. MSOA/IGZ non-domestic gas consumption
5. LSOA domestic electricity consumption
6. LSOA domestic gas consumption

There are 4 separate Excel workbooks for Scotland, as only IGZ level data is available.

4.5.2 2005 to 2007 data (MSOA/IGZ only)

The datasheets for 2005, 2006 and 2007 show electricity and gas consumption data for England, Wales and Scotland. The first 8 rows contain information on the local authority regarding total consumption, number of meters and average consumption levels for domestic and non-domestic users, split by electricity/gas and includes a total of the two. See below an

	Electricity		
	Consumption (kWh)	Number of Meters	Average consumption per meter
Domestic consumption	336,377,168	78,767	4,271
Ind/Com consumption[1]	630,785,869	9,584	65,817
Total consumption	967,163,037	88,351	10,947
Of which electricity Industrial Half hourly	451,237,798	261	1,728,880

example of this, showing electricity statistics for 2006 in the Local Authority of Carmarthenshire:

	MLSOA Allocation		Consumption (kWh)		Combined figures Number of meters		Consumption (kWh)		% domestic gas meters to electricity meters	2001 Census data		
LA Code	MLSOA Cod	MLSOA Name	Electricity	Gas	Electricity	Gas	Domestic	Ind/Com		Population	Area (hectares)	Households
UKL1409	W02000145	Carmarthenshire 004	24,031,366	32,575,380	3,679	1,333	41,519,754	15,086,992	43.3	7,009	32,012	2,943
UKL1409	W02000146	Carmarthenshire 005	21,032,196		3,082		14,039,725	6,992,471		6,411	26,100	2,573
UKL1409	W02000147	Carmarthenshire 006	20,394,765	43,018,194	3,457	1,685	42,861,939	20,551,020	52.8	7,056	12,822	2,864
UKL1409	W02000148	Carmarthenshire 007	11,397,503	43,673,258	2,505	2,021	46,447,858	8,622,903	82.7	5,291	561	2,274
UKL1409	W02000149	Carmarthenshire 008	36,830,761	75,176,621	3,937	2,491	57,100,343	54,907,036	77.7	5,868	2,972	2,719
UKL1409	W02000150	Carmarthenshire 009	25,499,969	25,320,296	3,369	1,163	35,484,911	15,335,354	41.6	6,868	15,536	2,845
UKL1409	W02000151	Carmarthenshire 010	17,038,558	38,835,078	3,606	1,729	49,333,056	5,940,579	50.3	7,159	5,951	3,037
UKL1409	W02000152	Carmarthenshire 011	19,316,854	41,869,041	3,605	1,616	49,267,457	11,918,438	47.2	7,205	3,455	3,024
UKL1409	W02000153	Carmarthenshire 012	24,220,771	12,164,968	3,697	621	28,607,060	7,778,679	19.2	7,378	14,491	3,046
UKL1409	W02000154	Carmarthenshire 013	19,393,118	72,561,687	3,732	2,867	72,626,345	19,328,459	84.2	7,127	1,427	3,082
UKL1409	W02000155	Carmarthenshire 014	19,380,092		2,471		11,906,819	7,473,274		5,151	15,979	2,081
UKL1409	W02000156	Carmarthenshire 015	24,111,922		3,683		15,379,182	8,732,740		7,428	4,558	2,979
UKL1409		Carmarthenshire 003, 005, 014, 015		1,108,837		54	1,108,837					
UKL1409		Carmarthenshire 001, 012 ,015 and Unallocated		6,466,613		13		6,466,613				
UKL1409	W02000157	Carmarthenshire 016	20,903,402	33,369,978	4,199	1,491	48,442,314	5,831,066	37.6	8,585	5,326	3,552
UKL1409	W02000158	Carmarthenshire 017	12,889,114	45,212,660	2,517	2,023	51,747,260	6,354,514	84.2	5,195	2,624	2,159
UKL1409	W02000159	Carmarthenshire 018	14,398,288	40,867,638	2,792	2,018	47,315,538	7,950,387	76.6	5,822	3,154	2,414
UKL1409	W02000160	Carmarthenshire 019	15,600,950	72,615,561	3,317	2,964	70,546,810	17,669,701	91.6	6,944	2,233	2,921
UKL1409	W02000161	Carmarthenshire 020	12,121,212	92,083,089	2,407	2,203	47,358,565	56,845,736	93.6	5,381	480	2,238
UKL1409	W02000162	Carmarthenshire 021	19,318,283	66,787,887	4,131	3,471	76,647,674	9,458,496	88.0	7,957	4,195	3,493
UKL1409	W02000163	Carmarthenshire 022	10,109,119	51,715,765	2,494	2,383	53,684,861	8,140,023	98.4	5,036	159	2,238
UKL1409	W02000164	Carmarthenshire 023	24,708,692	79,087,144	3,688	3,057	72,278,726	31,517,110	92.8	6,985	1,483	3,011
UKL1409	W02000165	Carmarthenshire 024	16,277,781	48,829,061	3,094	2,731	58,952,426	6,154,416	93.6	6,347	234	2,711
UKL1409	W02000166	Carmarthenshire 025	15,401,962	60,165,623	3,567	3,259	72,764,647	2,802,939	94.4	7,367	1,002	3,110
UKL1409		Carmarthenshire 024 and 025		125,398,575		64		125,398,575				
UKL1409	W02000167	Carmarthenshire 026	20,654,055	94,756,501	4,976	4,337	84,010,124	31,400,432	92.0	8,883	459	4,120
UKL1409		Unallocated	3,683,123	6,672,239	512	387	8,747,631	1,607,731	91.3			

From row 13 downwards, the datasheet contains the full breakdown of consumption for each MSOA, identified by the local authority code followed by an individual MSOA code, e.g. UKL1403, W02000142 for Carmarthenshire 001. Data is shown by consumption in kWh (split by ordinary electricity, economy 7 electricity, industrial/commercial electricity, domestic gas and industrial and commercial gas), number of meters and average consumption per meter. An example of this data is displayed below, showing consumption in kWh again for Carmarthenshire in 2006:

			Consumption (kWh)				
	MLSOA Allocation		Electricity			Gas	
LA Code	MLSOA Code	MLSOA Name	Ordinary domestic	Economy7 domestic	Ind/Com	Domestic	Ind/Com[1]
UKL1409	W02000142	Carmarthenshire 001	7,686,631	3,332,427	6,165,341	4,571,315	
UKL1409	W02000143	Carmarthenshire 002	8,427,098	3,640,046	8,820,046	16,173,006	6,826,382
UKL1409	W02000144	Carmarthenshire 003	10,623,102	5,993,763	12,522,930		
UKL1409	W02000145	Carmarthenshire 004	10,895,097	3,737,707	9,398,562	26,886,950	5,688,430
UKL1409	W02000146	Carmarthenshire 005	9,968,846	4,070,879	6,992,471		
UKL1409	W02000147	Carmarthenshire 006	10,691,490	3,586,454	6,116,820	28,583,994	14,434,200
UKL1409	W02000148	Carmarthenshire 007	7,637,703	1,915,541	1,844,259	36,894,614	6,778,644
UKL1409	W02000149	Carmarthenshire 008	9,363,541	3,033,333	24,433,886	44,703,469	30,473,152
UKL1409	W02000150	Carmarthenshire 009	10,166,479	3,135,317	12,198,174	22,183,116	3,137,180
UKL1409	W02000151	Carmarthenshire 010	12,647,741	1,299,615	3,091,201	35,985,700	2,849,378
UKL1409	W02000152	Carmarthenshire 011	12,254,183	2,883,279	4,179,392	34,129,995	7,739,046
UKL1409	W02000153	Carmarthenshire 012	12,092,529	4,349,564	7,778,679	12,164,968	
UKL1409	W02000154	Carmarthenshire 013	11,368,588	1,059,028	6,965,502	60,198,730	12,362,957
UKL1409	W02000155	Carmarthenshire 014	7,344,356	4,562,463	7,473,274		
UKL1409	W02000156	Carmarthenshire 015	13,084,618	2,294,565	8,732,740		
UKL1409		Carmarthenshire 003, 005, 014, 015				1,108,837	
UKL1409		Carmarthenshire 001, 012 ,015 and Unallocated					6,466,613
UKL1409	W02000157	Carmarthenshire 016	14,624,083	2,521,289	3,758,030	31,296,942	2,073,036
UKL1409	W02000158	Carmarthenshire 017	8,834,054	966,413	3,088,647	41,946,793	3,265,867
UKL1409	W02000159	Carmarthenshire 018	9,395,151	996,276	4,006,860	36,924,111	3,943,527
UKL1409	W02000160	Carmarthenshire 019	11,902,271	846,499	2,852,180	57,798,040	14,817,521
UKL1409	W02000161	Carmarthenshire 020	7,677,289	683,909	3,760,013	38,997,366	53,085,723
UKL1409	W02000162	Carmarthenshire 021	13,326,270	1,551,978	4,440,035	61,769,426	5,018,461
UKL1409	W02000163	Carmarthenshire 022	7,491,786	728,954	1,888,379	45,464,121	6,251,644
UKL1409	W02000164	Carmarthenshire 023	10,618,743	1,548,309	12,541,640	60,111,674	18,975,470
UKL1409	W02000165	Carmarthenshire 024	9,070,727	1,052,639	6,154,416	48,829,061	
UKL1409	W02000166	Carmarthenshire 025	11,880,897	718,126	2,802,939	60,165,623	
UKL1409		Carmarthenshire 024 and 025					125,398,575
UKL1409	W02000167	Carmarthenshire 026	12,872,210	1,847,923	5,933,922	69,289,991	25,466,510
UKL1409		Unallocated	1,546,989	528,402	1,607,731	6,672,239	

Following this are some combined figures calculated from the prior data and an indicator showing the percentage of domestic gas meters to domestic electricity meters. In cases where consumption and number of meters are suppressed due to disclosure issues, they are not represented in the combined figures and the percentage of domestic gas to domestic electricity meters will appear blank. Finally, additional socio-economic 2001 census data (unless otherwise specified) regarding population, area sizes (hectares) and the number of households in each MSOA are shown in grey. Again, an example of this is shown below, for Carmarthenshire in 2006:

Below this data there are totals of each column and an indicator of the percentage of each column that is unallocated. This unallocated data is consumption which could be allocated to the LA but not further down to a specific MSOA. This is similar to the data labelled “Unmatched but allocated to LA” in the 2004 data (see below).

4.5.3 2004 data to MSOA electricity only

The 2004 datasheets show electricity consumption data in 2004 for England and Wales. The first 7 rows of each worksheet contain information on the local authority regarding total consumption, number of meters and average consumption levels for domestic and non-domestic users; these are taken from figures published in the December 2005 edition of Energy Trends. Next to this data are figures for the percentage of the total domestic consumption within

the local authority that BEIS were able to allocate to a specific MSOA. Below is an example of this data for the Local Authority of Carmarthenshire:

Local Authority consumption statistics from Energy Trends table Dec 2005					
	Consumption (kWh)	Number of Meters	Average consumption per meter		
Domestic	331,712,105	76,722	4,324	Percentage of domestic consumption allocated to SOA	99.30
Industrial	642,075,781	9,893	64,903		
Total	973,787,886	86,615	11,243		
Of which Industrial Half hourly	473,208,573	239	1,979,952		

Rows 11 to 17 provide summary information on the MSOA data provided in the section below it. Information is provided regarding total consumption, total meters and average consumption for the following headings:

Unmatched but allocated to LA. This relates to consumption that could be allocated to the specified local authority but not any further. This is due to postcode information for some meters being invalid or incomplete, meaning allocation to a specific MSOA was not possible.

Domestic matched but transferred to commercial. This relates to consumers, identified as domestic users, but consuming more than 50,000kWh annually who were judged to have a greater probability of being small commercial/industrial consumers. The super output area analysis does not include this reallocation process, which is only shown at local authority level.

Allocated to LA not to SOA. This relates to consumption that has been allocated to the specified local authority but where additional geographical information below local authority level indicates that the consumption could actually be taking place outside.

Total unallocated. The aggregate value of the consumption relating to the three points above.

SOA allocated. This is all electricity consumption that could be accurately allocated to a specific MSOA in the correct local authority.

Below is an example of this section of the dataset for Carmarthenshire:

	Consumption (kWh)			Number of meters			Average consumption per meter		
Summary statistics of SOA allocation	ORDINARY	ECONOMY7	COMMERCIAL	ORDINARY	ECONOMY7	COMMERCIAL	ORDINARY	ECONOMY7	COMMERCIAL
(1) Unmatched but allocated to LA	478,952		717,031	129		30			
(2) Domestic matched but transferred to commercial	- 315,502		315,502	- 165		165			
(3) Allocated to LA not to SOA	1,170,042	675,407	858,764	269	74	59	4,350	9,127	14,555
(4) Total unallocated [= (1) + (2) + (3)]	2,008,899		1,891,296						
(5) SOA allocated	259,911,518	69,791,688	166,975,912	68,438	7,581	9,226	3,798	9,206	18,098

The section below this shows the full breakdown of consumption data for each MSOA identified by LA code followed by an individual MSOA code, e.g. UKL1403, W02000142 for Carmarthenshire 001. The breakdown includes consumption (in kWh), number of meters, average consumption per meter and 2001 census data regarding population, area and households. See below an example of this section of the dataset for consumption in kWh for Carmarthenshire:

SOA Allocation			Consumption (kWh)		
			ORDINARY	ECONOMY7	COMMERCIAL
UKL1403	W02000142	Carmarthenshire 001	7,615,051	3,983,513	5,471,873
UKL1403	W02000143	Carmarthenshire 002	8,176,670	3,975,644	8,284,425
UKL1403	W02000144	Carmarthenshire 003	10,653,875	6,602,311	12,300,699
UKL1403	W02000145	Carmarthenshire 004	10,475,260	4,103,204	9,761,925
UKL1403	W02000146	Carmarthenshire 005	9,521,331	4,446,721	7,284,813
UKL1403	W02000147	Carmarthenshire 006	10,102,225	4,002,121	5,710,581
UKL1403	W02000148	Carmarthenshire 007	7,532,372	2,294,210	1,904,056
UKL1403	W02000149	Carmarthenshire 008	8,900,220	3,367,540	22,272,492
UKL1403	W02000150	Carmarthenshire 009	9,710,792	3,505,357	10,794,753
UKL1403	W02000151	Carmarthenshire 010	11,880,040	1,660,574	2,840,594
UKL1403	W02000152	Carmarthenshire 011	11,282,543	3,170,048	4,564,959
UKL1403	W02000153	Carmarthenshire 012	11,385,715	4,756,562	7,949,250
UKL1403	W02000154	Carmarthenshire 013	10,848,859	1,269,670	6,600,431
UKL1403	W02000155	Carmarthenshire 014	6,972,739	5,248,946	7,599,611
UKL1403	W02000156	Carmarthenshire 015	12,507,004	2,718,382	6,951,416
UKL1403	W02000157	Carmarthenshire 016	13,665,939	2,849,337	3,559,572
UKL1403	W02000158	Carmarthenshire 017	8,242,277	1,065,407	3,574,506
UKL1403	W02000159	Carmarthenshire 018	8,793,608	1,258,167	3,540,209
UKL1403	W02000160	Carmarthenshire 019	11,192,784	966,691	2,777,886
UKL1403	W02000161	Carmarthenshire 020	7,351,032	768,119	3,309,933
UKL1403	W02000162	Carmarthenshire 021	12,915,027	1,769,922	4,044,326
UKL1403	W02000163	Carmarthenshire 022	7,244,238	888,702	2,255,033
UKL1403	W02000164	Carmarthenshire 023	10,506,009	1,728,058	11,034,691
UKL1403	W02000165	Carmarthenshire 024	8,765,473	1,166,180	4,793,707
UKL1403	W02000166	Carmarthenshire 025	11,129,818	870,045	2,194,468
UKL1403	W02000167	Carmarthenshire 026	12,540,619	1,356,260	5,599,705

4.5.4 Limitations

In 2004, data is only available for England and Wales It was not possible to produce electricity consumption data for IGZs due to technical difficulties in allocating electricity consumption into the appropriate intermediate geography zones. These difficulties have been overcome for the datasets from 2005 onwards.

Quality issues meant that in 2004, BEIS was only able to match 40 per cent of consumption to a specific MSOA. This was due to a lack of complete postcode information for some electricity meters. Data quality has improved in successive years.

5 Northern Ireland domestic electricity consumption statistics

Sub-national Northern Ireland domestic electricity consumption statistics (2015)

Dates covered: 1st April 2015 to 31st March 2016 (financial year)

(Earlier data cover the calendar year)

Years available: 2008 to 2015

Features: Experimental

Source: Northern Ireland Electricity (NIE) Networks

Statistical releases:

Latest release: September 2017 (2015 data)

Next release: September 2018 (2016 data)

https://www.gov.uk/government/collections/sub-national-electricity-consumption-data

5.1 Overview (2008 to 2015 data)

These datasets include:

- Electricity consumption covering the 26 District Councils of Northern Ireland, a similar level of disaggregation to the local authority level data that BEIS has published for Great Britain since 2005.
- Consumption covering the financial year (1st April 2015 to 31st March 2016). Data for 2008 to 2010 covered the calendar year. As Northern Ireland statistics are experimental, year-on-year comparisons should be treated with caution.
- An aggregated total for unallocated consumption, that is, consumption that was not able to be matched to an area due to incomplete or a lack of postcode information.

These datasets exclude:

- Customers on 'Power NI farm popular' and 'farm night saver' tariffs. Although classified by Northern Ireland Electricity (NIE) as domestic these tariffs do not fall into this category for the production of energy statistics.

5.2 Background and methodology

On the 1 November 2007, the Single Electricity Market (SEM) was introduced to Northern Ireland to help provide a stable, transparent and competitive energy market. This reflected the opening up of markets under EC legislation, and built upon the privatisation of the electricity supply market following the Electricity (Northern Ireland) Order 1992.

The data are based on billed units from customers that have been connected for at least 12 months. As the data that is provided is billed information as opposed to the sales information reported, unbilled units are excluded and both meters and consumption numbers have been uplifted to match annual sales data.

To produce the 2012 estimates onwards, data was derived from information held on NIE's Distribution Use of System (DUoS) Billing system. The change to the new recording system resulted in a change from data reported on a calendar year basis, to a financial year basis (for example, 2015 data covers the period 1st April 2015 to 31st March 2016) and are based on billed units and relate to final consumption at the point when it was derived. The new system also provides better address information – resulting in fewer meters being 'unallocated'.

5.3 Comparison to Great Britain electricity consumption data

Northern Ireland electricity data is not directly comparable with electricity consumption for Great Britain. This is due to the difference in market structure and hence the varying methodologies used to collect the data.

6 Northern Ireland non-domestic electricity consumption statistics

Sub-national Northern Ireland non-domestic electricity consumption statistics (2012 and 2014)

Dates covered:	1st April 2015 to 31st March 2016 (financial year)
	(Earlier data cover the calendar year)
Years available:	2008 to 2015
Features:	Experimental
Source:	Northern Ireland Electricity (NIE) Networks

Statistical releases:

Latest release: September 2017 (2015 data)

Next release: September 2018 (2016 data)

https://www.gov.uk/government/collections/sub-national-electricity-consumption-data

6.1 Overview (2008 to 2015 data)

6.1.1 Coverage of data

The datasets include:

- Electricity consumption covering the 26 District Councils of Northern Ireland, a similar level of disaggregation to the local authority level data that BEIS has published for Great Britain since 2005.
- Consumption covering the dates 1st April 2015 to 31st March 2016. However, these dates are subject to change for future years, as this dataset is currently experimental.
- An aggregated total for unallocated consumption, that is, consumption that was not able to be matched to an area due to incomplete or a lack of postcode information.
- Both actual readings and estimated readings of electricity consumption. From year-to-year some meter readings change from actual to estimated readings and vice-versa, which can cause extreme values to be created when an estimate is corrected.
- Some meter points which have low or no consumption (explained further in section 6.1.2).

The datasets exclude:

- Electricity produced by companies that generate their own electricity and consume it without it passing over the public distribution network.

6.1.2 Data limitations

The datasets include some meter points which have low or no consumption. These meter points represent sites that have been vacant for a short period of time, landlord's supply (for example, lights in apartment blocks), sites that have been de-energised throughout the year, and also meter points in, for example, church halls, playing fields and car parks where use is less than in industry. There are also some meter points which have no consumption attached to them. These are still included with this analysis.

6.2 Background and methodology

On the 1 November 2007, the Single Electricity Market (SEM) was introduced in Northern Ireland to help provide a stable, transparent and competitive energy market. This reflected the opening up of markets under EC legislation, and built upon the privatisation of the electricity supply market following the Electricity (Northern Ireland) Order 1992.

To produce the 2012 estimates onwards, data was derived from information held on NIE's Distribution Use of System (DUoS) Billing system. The change to the new recording system resulted in a change from data reported on a calendar year basis, to a financial year basis (for example, 2015 data covers the period 1st April 2015 to 31st March 2016) and are based on billed units and relate to final consumption at the point when it was derived.
The new system also provides better address information – resulting in fewer meters being 'unallocated'.

6.3 Comparability to Great Britain electricity consumption data

Northern Ireland electricity data is not directly comparable with electricity consumption for Great Britain. This is due to the difference in market structure and the varying methodologies used to collect the data.

7 Road transport fuel consumption statistics

Sub-national road transport fuel consumption statistics (2015)

Dates covered: 1st January 2015 to 31st December 2015

Sectors covered: Road transport (all users)

Features: Modelled

Years available: 2002 to 2015

Source: Ricardo Energy & Environment

Statistical releases:

English region and devolved administration (NUTS1) and local authority (LAU1):

Latest release: June 2017 (2015 data)

Next release: June 2018 (2016 data)

https://www.gov.uk/government/collections/road-transport-consumption-at-regional-and-local-level

7.1 Overview (2002 – 2015 data)

7.1.1 Coverage of data

The datasets include:

- Road transport fuel consumption in the United Kingdom between 1 January and 31 December.
- Estimates of fuel (petrol and diesel) consumption by type of vehicle (bus, motorcycle, car, HGV and LGV). Buses, diesel cars, HGV and diesel LGV are all classed as diesel-consuming vehicles, while petrol cars, motor-cycles and petrol LGV are classed as petrol-consuming vehicles.
- Estimates of fuel consumption for each type of vehicle by road type (motorways, A roads and minor roads).
- Modelled consumption down to English region and devolved administration and local authority level. The estimates are based on where the fuel was consumed rather than where it was purchased, in order to make the dataset more comparable with both the gas and electricity datasets (based on consumption from individual meters). Therefore road fuel purchased abroad and consumed in the UK is included whereas road fuel purchased in the UK and consumed abroad has been excluded.
- Consumption is given in tonnes of oil equivalent (by energy content) as opposed to the tonnes of petrol and diesel fuel (by weight).

The datasets exclude:

- Road transport consumption of biofuels – the estimates only take account of emissions arising from fossil fuels, making it difficult to know where exactly biofuels are being consumed.
- Liquefied petroleum gases (LPGs) – there are no reliable figures available on consumption of this fuel by vehicles and there is also a lack of geographical information.
- Electricity – there is a lack of geographical information needed to map regional consumption of this fuel.

Fuels included in road transport fuel consumption statistics

Please note that this dataset covers road transport consumption of **petrol** and **diesel** only.

Figure 1 Road transport consumption estimates for local authorities in Wales

Road transport energy consumption at regional and local authority level, 2015[1]

LA Code[2]	LAU1 Area	Personal											
		Buses				Diesel Cars				Petrol Cars			
		Motorways	A roads	Minor roads	Total consumption	Motorways	A roads	Minor roads	Total consumption	Motorways	A roads	Minor roads	Total consumption
W06000019	Blaenau Gwent	-	427	281	**708**	-	4,870	3,309	**8,179**	-	5,212	3,114	**8,325**
W06000013	Bridgend	310	898	1,012	**2,220**	12,162	9,123	10,108	**31,393**	7,452	9,948	11,954	**29,354**
W06000018	Caerphilly	-	782	1,478	**2,260**	-	12,136	13,238	**25,374**	-	12,023	15,613	**27,636**
W06000015	Cardiff	307	2,658	3,026	**5,991**	13,595	24,255	30,277	**68,127**	8,445	27,775	38,603	**74,823**
W06000010	Carmarthenshire	54	2,587	2,011	**4,651**	2,320	25,095	12,991	**40,406**	1,427	24,255	12,752	**38,434**
W06000008	Ceredigion	-	1,228	1,001	**2,230**	-	8,632	6,186	**14,819**	-	8,325	5,945	**14,271**
W06000003	Conwy	-	1,593	893	**2,487**	-	18,722	6,651	**25,373**	-	18,005	7,196	**25,201**
W06000004	Denbighshire	-	1,170	678	**1,848**	-	13,049	5,220	**18,269**	-	12,717	5,403	**18,120**
W06000005	Flintshire	-	1,455	1,371	**2,826**	-	25,311	10,408	**35,719**	-	25,346	11,468	**36,815**
W06000002	Gwynedd	-	2,243	772	**3,016**	-	20,618	6,241	**26,858**	-	19,686	6,100	**25,785**
W06000001	Isle of Anglesey	-	764	524	**1,289**	-	8,616	4,301	**12,918**	-	8,198	4,208	**12,406**
W06000024	Merthyr Tydfil	-	622	227	**850**	-	6,734	2,366	**9,100**	-	6,579	2,788	**9,367**
W06000021	Monmouthshire	432	872	772	**2,076**	9,312	14,796	8,123	**32,231**	5,787	14,108	7,915	**27,810**
W06000012	Neath Port Talbot	308	1,034	537	**1,880**	11,833	12,372	5,535	**29,740**	7,416	12,748	6,507	**26,670**
W06000022	Newport	757	793	1,448	**2,998**	23,944	8,886	12,566	**45,396**	14,892	10,025	15,539	**40,456**
W06000009	Pembrokeshire	-	1,425	1,474	**2,899**	-	12,282	9,007	**21,289**	-	11,852	9,074	**20,925**
W06000023	Powys	-	1,902	1,635	**3,537**	-	19,731	10,266	**29,997**	-	18,824	9,908	**28,733**
W06000016	Rhondda, Cynon, Taff	271	2,623	1,380	**4,273**	7,808	23,067	16,177	**47,052**	4,784	24,190	17,524	**46,499**
W06000011	Swansea	251	1,211	1,690	**3,152**	9,273	12,743	16,742	**38,758**	5,771	14,784	20,749	**41,304**
W06000020	Torfaen	-	450	798	**1,248**	-	6,232	7,357	**13,589**	-	6,729	9,071	**15,800**
W06000014	The Vale of Glamorgan	114	766	1,200	**2,080**	3,580	7,420	12,381	**23,381**	2,193	7,759	13,948	**23,899**
W06000006	Wrexham	-	1,048	894	**1,942**	-	13,170	7,856	**21,025**	-	13,207	8,145	**21,352**
	TOTAL WALES	2,805	28,553	25,102	**56,460**	93,828	307,862	217,306	**618,997**	58,168	312,293	243,523	**613,984**

7.1.2 Data limitations

Road transport fuel estimates are modelled

The estimates are based on the use of a number of different information sources. As a result, the estimates are subject to potential modelling inaccuracies.

Although LGVs are classed as freight vehicles, some consumption may be related to personal travel

LGVs can be used for a number of tasks such as carrying freight, providing transport, carrying equipment or for private use.

7.2 Methodology

The estimates published by BEIS are produced by Ricardo Energy & Environment as part of contract work for the regional energy project. Fuel consumption by road vehicles is calculated by the methodology used to estimate total UK emissions for road transport in the National Atmospheric Emissions Inventory (NAEI) and Greenhouse Gas Inventory (GHGI), and is consistent with internationally agreed procedures and guidelines for reporting emission inventories.

Calculating fuel consumption

The methodology for calculating fuel consumption combines traffic activity data (from Department for Transport's (DfT) national traffic census) with fleet composition data and fuel consumption/emission factors.

The vehicle fleet composition data are based on licensing statistics and new evidence from Automatic Number Plate Recognition (ANPR) data from DfT. These provide an indication of the vehicle mix by engine size, vehicle size and age, engine and exhaust treatment technology, Euro emission standards and fuel type as observed on different road types.

Fuel consumption factors are based on a combination of published compilations of factors derived from vehicle emission test data from European sources and factors from industry on the fuel efficiency of cars sold in the UK. In the former case, representative samples of vehicles are tested over a range of drive cycles associated with different average speeds on different road conditions. Average vehicle speed is one of many parameters that affect the amount of fuel a vehicle uses, so the NAEI uses functions that relate fuel consumption to average speed. In previous versions of the inventory, these functions were developed by Transport Research Laboratory (TRL) on behalf of DfT in 2009. However, the source of fuel consumption factors changed this year and factors for all vehicle types are now derived from the fuel consumption-speed relationships given in the COPERT 4v11 source. COPERT 4 "Computer Programme to Calculate Emissions from Road Transport" is a model and database of vehicle emission factors developed on behalf of the European Environment Agency and is used widely by other Member States to calculate emissions from road transport.

For LGVs, the DfT/TRL functions are used as provided in combination with average speed data and vehicle kilometre data for different road types and fleet composition information representative of the national fleet.

For HGVs, the fuel consumption factors are based on the fleet-averaged fuel efficiencies for different weight classes of HGVs from DfT's Continuing Survey of Road Goods Transport (CSRGT). The shape of the DfT/TRL speed-related functions are then used to define the variation, relative to the averaged value, in fuel consumption factor with speed and hence road type.

For buses and coaches, the principal data source used was figures from DfT on the Bus Service Operators Grant (BSOG) system. This is an audited subsidy, directly linked to the fuel consumed on local bus services. From BSOG financial figures, DfT were able to calculate the costs and hence quantity of fuel (in litres) used for local bus services going back to 1996 and using additional bus km data were able to derive implied fuel consumption factors for local service buses. DfT believe that the BSOG data provide a relatively robust estimation of fuel consumption on local bus services and would be based on a larger evidence base than the DfT/TRL speed-related functions which are derived from a relatively small sample of buses and coaches tested. However, the BSOG data do not cover rural bus services and coaches. For these, an approach similar to that used for HGVs was used by utilising the DfT/TRL functions to define how the fuel efficiency of the average bus and coach in the UK fleet varied with average speed and road type and year.

Mapping fuel consumption

The base map of the UK road network is derived from the Ordnance Survey Meridian 2 dataset, which provides locations of all roads in Great Britain. A dataset of roads in Northern Ireland was obtained from the Land & Property Services which is responsible for all Ordnance Surveys of Northern Ireland. Traffic flow data is available on a census count point basis for Great Britain and Northern Ireland. Once the base maps and traffic flow data were combined in order to map vehicle movements, fuel consumption factors were applied.[35]

7.3 Comparison to DUKES and ECUK

Users should note that there are differences between the national figures presented in this factsheet and those reported in the Digest of United Kingdom Energy Statistics (DUKES). Sub-national statistics are based on fuel consumption (which is derived from traffic activity) while DUKES figures are based on fuel sales.

The difference between sub-national and DUKES figures varies year from year but the difference is considered well within the uncertainty of the factors used to derive the fuel consumption from traffic activity. The gaps are due to:

- Model uncertainty, including uncertainties in the vehicle km data and fleet information used (in particular the fuel consumption factors based on samples of vehicles taken to represent the fleet), as well as unmeasured characteristics such as driving conditions (for example, idling, acceleration, deceleration and cruising modes all have different consumption rates).
- Road transport consumption in the UK as reported by DUKES includes consumption of LPG propane, while LPGs are not included in the sub-national statistics.
- DUKES figures on petrol and DERV consumption include off-road applications, such as lawn mowers, portable generators and inland waterway vessels etc., and also in the Crown Dependencies. The sub-national methodology excludes an estimated total for these off-road applications from the overall road transport total.
- The sub-national statistics include biofuels, which are not included in the petrol and diesel estimates given in DUKES.
- Other factors such as ‘fuel tourism’ effects (this occurs when vehicles consume fuel on UK roads that has been purchased abroad).

Users should note that there is a difference between sub-national estimates and figures for road transport energy consumption found in Energy Consumption in the UK (ECUK)[36]. The values in ECUK are based on DUKES data, which in addition to consumption of petroleum, give consumption of electricity and biofuels for road transport purposes.

[35] For more information please see Ricardo Energy & Environment methodology note which can be found at: https://www.gov.uk/government/organisations/department-of-energy-climate-change/series/road-transport-consumption-at-regional-and-local-level.

[36] ECUK table 2.1 ‘Transport energy consumption by type of transport and fuel 1970 to 2015’ is available on the BEIS website: https://www.gov.uk/government/publications/energy-consumption-in-the-uk.

7.4 Methodological changes impacting data comparability over time

Users should note that there have been methodological improvements made to the information used to calculate the 2015 time series in fuel consumption and emissions by road transport. These were summarised in the latest National Greenhouse Gas Inventory report (NIR) at http://naei.beis.gov.uk/reports/reports?report_id=932

The main changes are summarised as follows:

- Updates to some of the vehicle km (from DfT) and fleet composition data for London (from TfL).
- Revisions to vehicle km data for Northern Ireland including the split between road types. This affected the whole time-series.

Advice on time series analysis

In terms of making historical comparisons for the road transport fuel consumption data, **2005 data** (classed as National Statistics) should be used as the baseline year. This is due to the significant improvements in fuel consumption factors and detailed speed data, and hence the reliability of the road transport consumption estimates, since 2005 compared to the earlier datasets.

8 Residual fuel consumption statistics

Sub-national residual fuel consumption statistics (2015)

Dates covered: 1st January 2015 to 31st December 2015

Sectors covered: All (except aviation and national navigation)

Features: Modelled

Years available: 2003 to 2015

Source: Ricardo Energy & Environment

Statistical releases:

English region and devolved administration (NUTS1) and local authority (LAU1):

Latest release: September 2017 (2015 data)

Next release: September 2018 (2016 data)

https://www.gov.uk/government/collections/sub-national-consumption-of-other-fuels

8.1 Overview (2005 – 2015 data)

The datasets cover:

- Residual (non-gas, non-electricity, non-road transport) fuel consumption in the United Kingdom between 1 January and 31 December.
- Estimates of consumption by fuel type and consuming sector. The following levels of disaggregation enable the data to be presented in the most robust manner.

Table 5: Fuel types and consuming sectors displayed in residual fuels datasets

Fuel Type	Consuming Sector
Petroleum Products	Industrial Domestic Rail Public Administration Commercial Agriculture
Coal	Industrial & Commercial Domestic
Manufactured solid fuels	Industrial & Commercial

	Domestic
Bioenergy & Wastes	All sources (no sectoral breakdown)

The datasets exclude:

- Fuel combusted from aviation, shipping and power stations, as this information cannot be allocated to regions and local authorities. Where possible, fuels used for fuel transformation are excluded.

8.2 Methodology

The local and regional estimates for the remaining fuels are produced by BEIS's contractor Ricardo Energy & Environment and are calculated from a number of different information sources. The main source used to calculate residual fuels are CO_2 estimates taken from the **National Atmospheric Emissions Inventory (NAEI)** database. The NAEI uses a combination of point and area source data at a 1km by 1km level to model estimates for a number of sources and fuels.

Other sources of data used to calculate estimates include:

- ONS Inter-Departmental Business Register (IDBR) data on employment at business unit level by Standard Industrial Classification (SIC) code.
- BEIS's Energy Consumption in the UK data for industrial and service sector fuel usage.
- EA Pollution Inventory, Scottish Pollutant Release Inventory, Northern Ireland Department of the Environment Inventory of Statutory Releases, Welsh Emissions Inventory, EU Emissions Trading System data (among others) on site-specific fuel consumption.
- Xoserve's Off-Gas Postcode dataset.
- Business Register and Employment Survey (BRES) annual employment estimates for the UK split by Region and Broad Industry Group (SIC2007).
- BEIS sub-national energy consumption statistics.
- Ordnance Survey Address Base Premium.
- ONS 2011 Census household and central heating statistics.
- DCLG (Department for Communities and Local Government) House building statistics: permanent dwellings started and completed
- BEIS National Household Model
- BEIS Sub-national gas connections data by area for England, Scotland & Wales
- For Northern Ireland the following additional sources were used:
  - Ordnance Survey of Northern Ireland (OSNI) Pointer
  - Northern Ireland Statistics and Research Agency (NISRA) - cross-tabulated records
  - Gas connections information for domestic properties from SSE Airtricity and Firmus Energy.

For a more detailed description as to how these data sources are used in Ricardo Energy & Environment's modelling process, please see the Ricardo Energy & Environment methodology report for 2014[37].

Data limitations

BEIS advises users to recognise the limitations of the information contained in the datasets as they are based on modelled rather than real data, and as such are subject to potential modelling error.

8.3 Comparison to DUKES and ECUK

Residual fuel consumption from the sub-national datasets differs slightly from the statistics produced in the Digest of UK Energy Statistics (DUKES)[38]. DUKES is an annual BEIS publication which provides a detailed and comprehensive picture of energy production and use over the last five years, with extensive tables, charts and commentary covering all the major aspects of energy. DUKES figures are based on information from UK energy suppliers, whilst Ricardo Energy & Environment has used a variety of data sources to produce their estimates (see section 8.2).

The underlying factors for the differences between the two data sources are as follows:

[37] This report can be accessed here: https://www.gov.uk/government/statistics/energy-consumption-for-2005-2010-sub-national-estimates-of-non-gas-non-electricity-and-non-road-transport

[38] DUKES can be accessed on the BEIS website: https://www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes

Table 6: Comparison between the allocation of fuel types in DUKES and estimates by Ricardo Energy & Environment

Fuel Type	DUKES	Ricardo Energy & Environment
Heat (generation)	Heat generation is listed as separate category.	Heat generation is allocated to final users, so sub-national consumption figures for industry and other sectors are higher than those in DUKES.
Coal	Coal used in auto generation is classed as transformational use and not included in industrial consumption.	Coal used in auto generation is included in industrial consumption, as auto generators cannot be disaggregated from the NAEI and GHGI databases.
Fuel Oil	DUKES aggregates total fuel oil, gas oil and burning oil consumption to industry level.	Ricardo Energy & Environment reallocates fuel oil, gas oil and burning oil consumption from industry to power stations to ensure consistency with operator data.
Petroleum coke	Some industrial petroleum coke is classed as non-energy use and not included in final consumption.	Based on industry-reported fuel use, a greater proportion of petroleum coke is allocated to energy uses in the GHGI than the DUKES data indicates. Some non-energy use of petroleum coke remains.
Manufactured solid fuels	The DUKES aggregated energy balance includes all manufactured solid fuels including benzole, coal tars, coke oven gas and blast furnace gas.	Benzole and coal tars are treated as non-energy consumption, whilst coke oven gas and blast furnace gas are categorised as transformation fuel uses.
Waste and renewables	DUKES does not take account of consumption of waste solvents, tyres and other wastes.	Consumption of waste solvents, tyres and other wastes are included in estimates.

Much of the data in Energy Consumption in the UK[39] is modelled and obtained from secondary analysis performed by BEIS on data from a number of sources, including DUKES. Additionally, ECUK provides a more comprehensive sectoral split than the sub-national statistics and gives information on end use for the majority of fuels. However, this data is only available on a national level. For these reasons, sub-national consumption and ECUK statistics are not comparable.

8.4 Key methodological changes over time

The methodology for updating the Sub-national residual fuel consumption statistics is reviewed on a yearly basis, so that the most up to date information is used for assigning this data. A major change in the latest LA dataset is a reallocation in wood use in the residential sector. BEIS undertook a survey of residential wood use during 2015 and this provides estimate of wood users for 2014 at Regional level as well as data on technology splits of these users, among other statistics. The number of wood fuel users by Region from the summary results18 has allowed additional assessment of the wood use allocation to LAs. In addition, a revision of the assumption that Coal and Wood are only used outside Smoke Control Areas has had the greatest impact on local authority fuel consumption estimates which are reflected across the full time-series from 2005 onwards.

For further details on the updates to the 2015 GHGI datasets see section 10 of the National Inventory Report (NIR) at http://naei.beis.gov.uk/reports/reports?report_id=932.

[39] ECUK can be accessed on the BEIS website: https://www.gov.uk/government/collections/energy-consumption-in-the-uk.

9 Total final energy consumption statistics

Sub-national total fuel consumption statistics (2015)

Dates covered: Various.

Sectors covered: All (except aviation and national navigation)

Years available: 2003 to 2015

Source: Various

Statistical releases:

English region and devolved administration (NUTS1) and local authority (LA Code):

Latest release: September 2017 (2015 data)

Next release: September 2018 (2016 data)

https://www.gov.uk/government/collections/total-final-energy-consumption-at-sub-national-level

9.1 Overview (2005 to 2015 data)

The total final energy dataset brings together results from the four data exercises (gas, electricity, road transport and residual fuels) which take place over the year. See Chapters 2, 3, 7 and 8 respectively for more information on these datasets. It presents total fuel consumption by English region and devolved administration and local authority with the following level of disaggregation.

Table 9: Fuel types and consuming sectors included in residual fuels datasets

Fuel type	Consuming sector
Petroleum products	**Industrial and commercial**
	Domestic
	Rail
	Road transport
Coal	**Industrial and commercial**
	Domestic
Manufactured solid fuels	**Industrial and commercial**
	Domestic
Gas	**Industrial and commercial**
	Domestic
Electricity	**Industrial and commercial**
	Domestic
Bioenergy and waste	**All (no sectoral breakdown is given)**

Although the dataset covers the United Kingdom, there are no local authority gas or electricity data included for Northern Ireland. This is due to the differences in the market structure. For Northern Ireland data and related guidance, please see chapters 5 (domestic data) and 6 (non-domestic data).

The datasets exclude some sectors and fuels. It was recognised that it would not be meaningful to allocate energy consumption locally or regionally for some energy uses, in particular aviation (air transport) and shipping (national navigation). As a result a decision was made to exclude these uses from the analysis. It was also not possible to model non–energy use of petroleum products and natural gas; nor was it practical to allocate heat sold at local or regional level since the source for this information is already heavily modelled.
The below table gives the overall quantity of fuel consumed in these sectors as stated in the Digest of United Kingdom energy statistics (DUKES), and with it, its share of total final energy consumption as stated in DUKES (for example, 322 ktoe of derived gases were consumed by the industrial sector in 2011 and this represented 0.2 per cent of total final energy consumption in the UK).

Table 10: Fuels not included in sub-national total final energy consumption statistics in 2011[40]

Fuel	Consumption sector	Quantity (ktoe)	Share of total final energy consumption
Derived gases	Industrial	322	0.2%
Petroleum products	Air transport	12,802	9%
Petroleum products	National navigation	376	0%
Heat sold	All sectors	1,206	1%
Petroleum and natural gas	Non-energy use	8,447	6%
Total	**All**	**23,154**	**15%**

9.2 Methodology

To produce the total dataset, the results from the gas, electricity, road transport and residual fuel exercises are converted to a common unit and combined. We advise that the user becomes familiar with the methods used to produce each of the individual datasets. Details are provided earlier in this guidance booklet (see chapters 2, 3, 7 and 8).

[40] Statistics in the table are from DUKES. Figures for derived gases are found in table 2.5 and the remaining fuels listed in the table can be found in table 1.2. These can be accessed online here:
https://www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes.

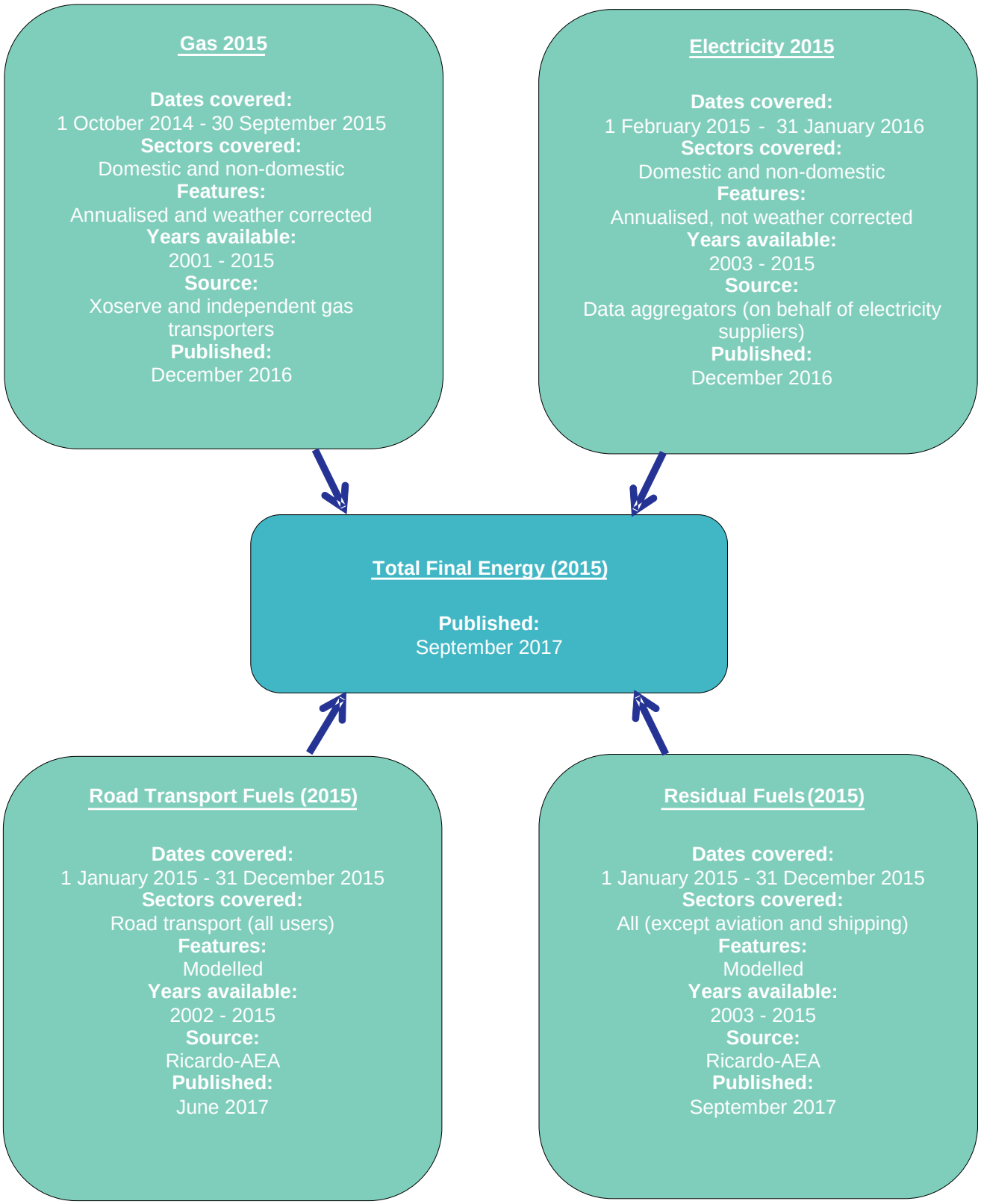
In summary:

- **Gas consumption statistics** are produced by collecting consumption data for all gas meters within Great Britain from Xoserve and the independent gas transporters, aggregating them to a local and regional level and then mapping to statistical geographies using information held on the National Statistics Postcode Look-up (NSPL) file.
- **Electricity consumption statistics** are produced by collecting consumption data for all electricity meters within Great Britain from the electricity data aggregators, aggregating them to a local and regional level and then allocating these to LAU1 areas using the NSPL and the Postcode Address File (PAF).
- **Road transport fuels** figures are modelled for BEIS by Ricardo-ENERGY & ENVIRONMENT using information on emissions from the National Atmospheric Emissions Inventory (NAEI) combined with traffic flow data produced by the Department for Transport (DfT).
- **Residual fuels** are also modelled by Ricardo-ENERGY & ENVIRONMENT using data produced for the NAEI and a range of other spatial data sources.

Before being included in the total final energy dataset, gas and electricity statistics (given in Gigawatt hours) are converted to the common unit of thousand tonnes of oil equivalent (ktoe) using the standard conversion factor of 1 ktoe to 11.63 GWh. Road transport fuels (given in thousand tonnes of fuel) are converted to thousand tonnes of oil equivalent using estimated average gross calorific values of fuels, and residual fuel statistics (already given in thousand tonnes of oil equivalent) do not need to be converted.[41]

[41] Standard conversion factors can be found on page 231 and estimated average gross calorific values of fuels can be found on page 233 of this DUKES publication:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/338752/Annex_A.pdf

Chart 6: An illustration of the composition of total final energy dataset



9.3 Data limitations and interpretation

It is important to note that the various data limitations on individual fuel source estimates will impact the reliability of total energy consumption estimates.

- Statistics in the individual datasets are based on the aggregation of data from different sources of information. Electricity and gas data are based on real consumption recorded from meters which is then aggregated upwards to local authority and regional level. Road transport fuel and residual fuel data are modelled using fuel consumption and emissions estimates gathered on a national level and then disaggregated throughout the United Kingdom using spatial data.
- The dates covered by each dataset differ, and so the total final energy consumption statistics dataset does not cover a fixed annual period.
- The dataset does not provide complete coverage of total final energy consumption in all regions and local authorities in the United Kingdom; consumption within Northern Ireland is excluded from the gas and electricity datasets (due to the difference in market structure), as is consumption of some very large industrial users and power stations (for disclosure reasons).
- Gas consumption data is weather corrected, whereas all other fuel sources are unadjusted.
- Central Volume Allocation (CVA) users (very large industrial consumers receiving electricity via the high voltage system) are not covered in the local and regional electricity statistics.

Advice on time series analysis

In terms of making historical comparisons for the gas consumption data, **2005 data** (classed as National Statistics), should ideally be used as the baseline due to the reliability of the different datasets from this year onwards.

It is also important to bear in mind the change in the underlying employment data used to produce mapping distributions in the residual fuels dataset for data from 2008 onwards. This is further explained in section 8.4.

In general, the user should note the variability of the data quality of the different datasets and that they do not provide comprehensive coverage of all final energy consumption.

9.4 Data accuracy

BEIS is committed to producing accurate, high-quality information. The data used are based on either the administrative data systems of energy suppliers, or on statistical models.

Data are quality assured at all stages of the data process and year-on-year comparisons are used to measure trends in order to make sure data is reliable. Another important way in which BEIS assesses the reliability of sub-national consumption data is through comparisons to DUKES.

Sub-national total final energy consumption is reconciled to data from the Digest of UK Energy Statistics (DUKES), and this analysis can be found at the bottom of each dataset.

A detailed table explaining differences between the datasets for each individual fuel type (gas, electricity, road transport fuels and residual fuels) and figures found in DUKES and Energy Consumption in the UK (ECUK) are explained in detail in Annex C of this methodology booklet.

Gas and electricity consumption information is obtained from the administrative systems used by the energy companies for operating purposes including the production of bills. However the sub-national data are calculated using different time periods to that used for DUKES, and as such there are valid reasons why the totals from the two data sources differ.

Road transport fuel consumption and residuals fuels are closely compared with DUKES data, and extensive work is performed by Ricardo-ENERGY & ENVIRONMENT, BEIS's contractors who produce the data, to ensure that sub-national figures match those provided in DUKES.

9.5 Further information

For analysis on sub-national total fuel consumption data prior to 2010, please see the articles in Energy Trends. Analysis for 2009 can be found on page 81 of the December 2011 edition of the publication.[42]

[42] Analysis for 2009 is available in Energy Trends (page 81 of the December 2011 edition). This article can be accessed here: https://www.gov.uk/government/organisations/department-of-energy-climate-change/series/energy-trends.

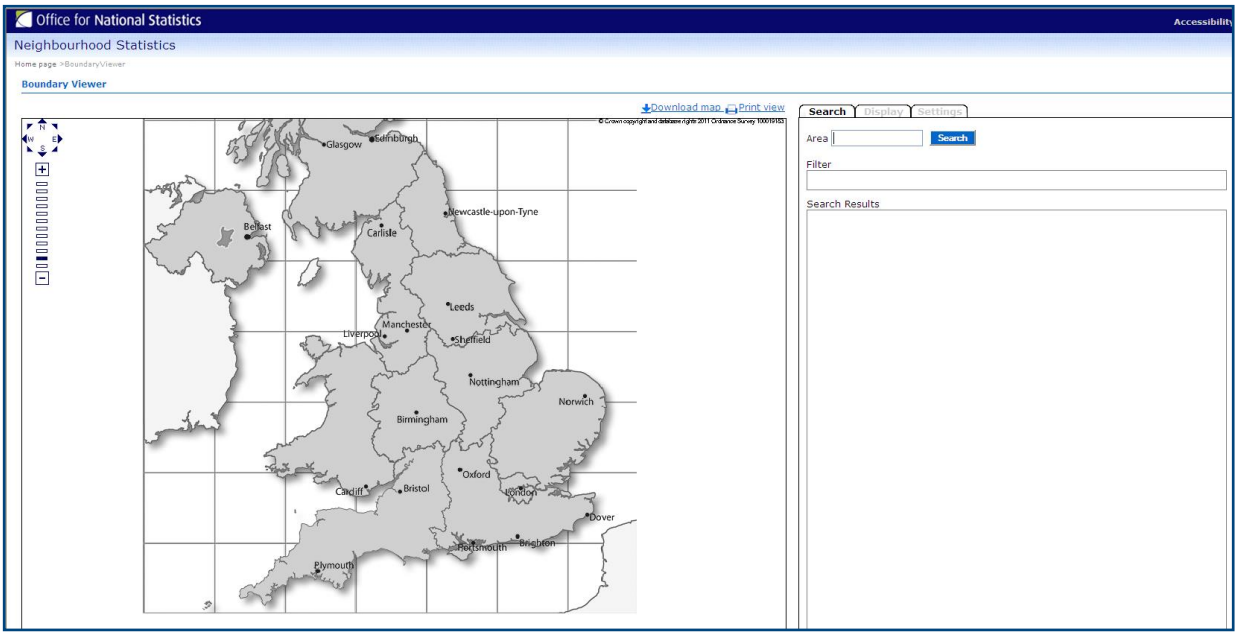
Annexes

Annex A Step-by-step guide to statistical areas

This step-by-step guide shows you how to:

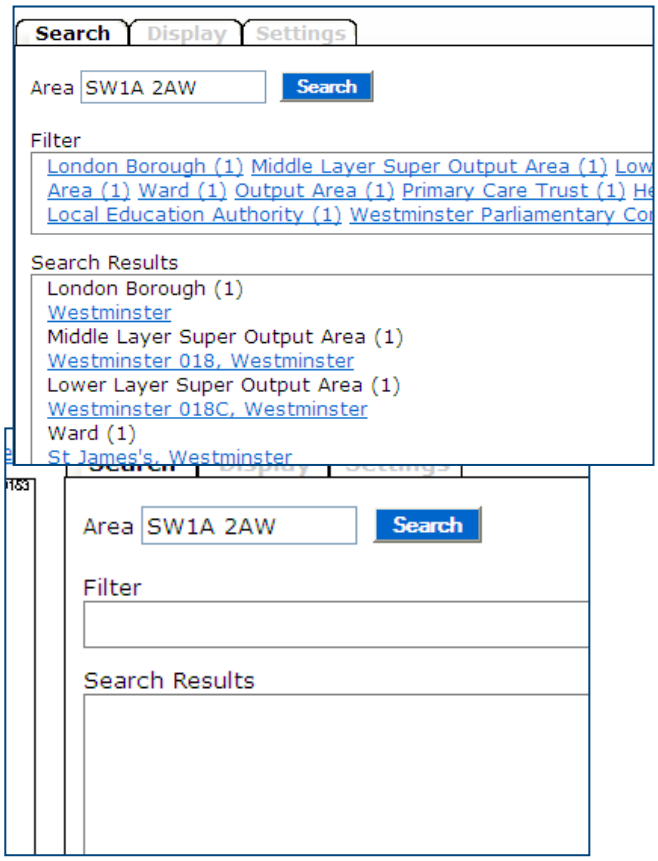
- Find your MSOA/IGZ or LSOA name using a postcode.
- View output areas on a map.
- Use MSOA/IGZ or LSOA names to find consumption statistics.

Find your MSOA/IGZ or LSOA name using a postcode.
Go to the Office for National Statistics (ONS) Boundary Viewer:
http://www.neighbourhood.statistics.gov.uk/dissemination/LeadBoundaryViewer.do?xW=1600&xH=1200



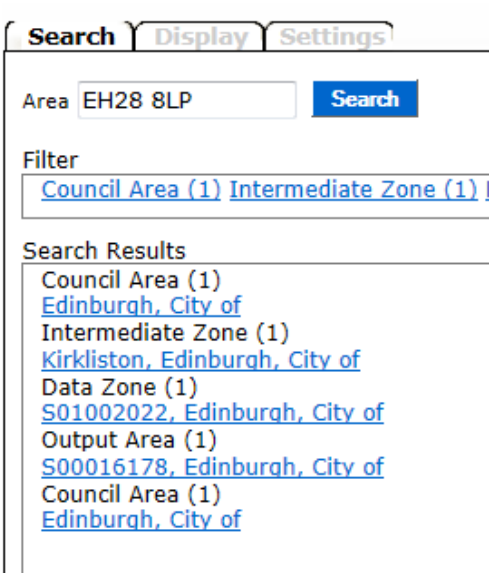
Enter your postcode in the “Area” field under search on the right hand side, and click “Search”.

The search results will present a range of geographical and statistical areas within which your postcode falls.



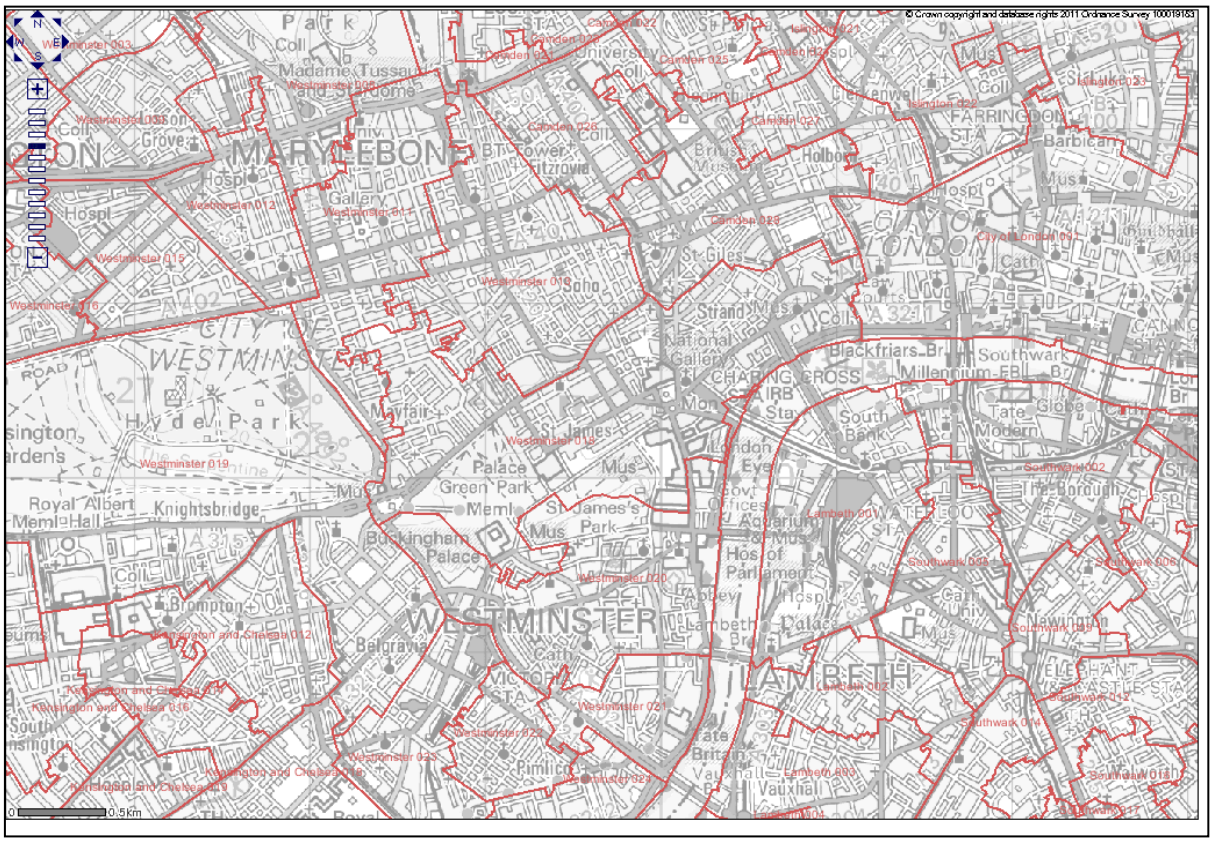
The MSOA name under which the postcode SW1A 2AW falls is **Westminster 018** and the LSOA name is **Westminster 018C**.

Please note that for Scotland, the IGZ names can be found under the “Intermediate Zone” category. Postcode EH28 8LP would fall under IGZ name **Kirkliston**, for example.



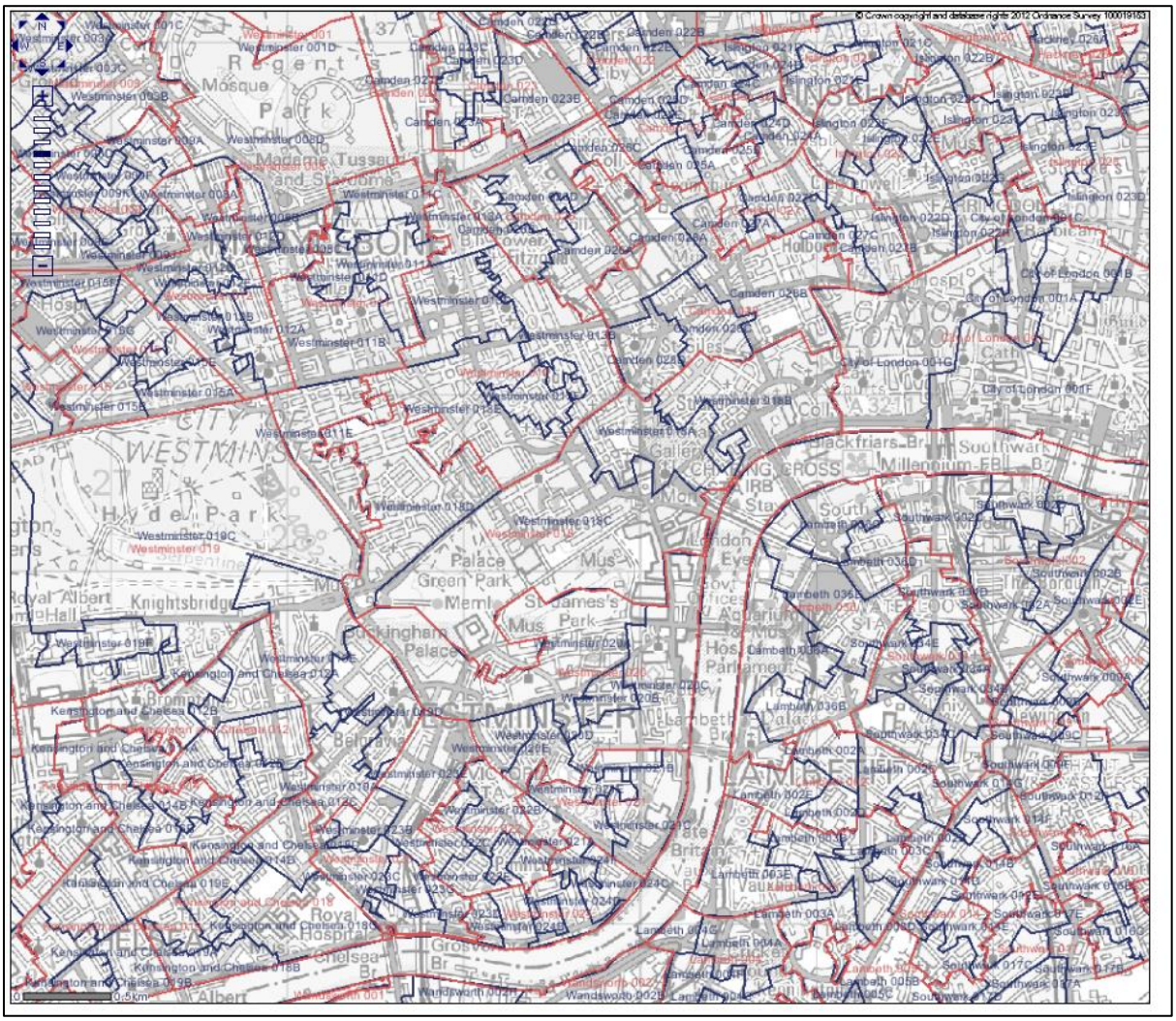
View output areas on a map

Select any of these in order to see the areas on a map. For example, if choosing to view Westminster 018 will lead to a map of MSOAs on the left hand side, with Westminster 018 in the middle.



It is possible to also view LSOAs on this map by selecting “Lower SO Areas 2011” and clicking

“Update Map” on the right hand side.



Use MSOA/IGZ or LSOA names to find consumption statistics

BEIS's MSOA/IGZ and LSOA data uses the MSOA/IGZ/LSOA code as a reference, rather than the MSOA/IGZ/LSOA name given by the ONS boundary viewer.

Westminster 018 will be used as an example to find domestic MSOA gas data in 2011.

Go to BEIS's 'Socio-economic data for MSOA, IGZ and LSOA electricity and gas estimates' page: https://www.gov.uk/government/statistical-data-sets/socio-economic-data-for-MSOA-igz-and-LSOA-electricity-and-gas-estimates

Open the socio-economic data spreadsheet.

Select the 'MSOA England Wales' tab and search 'Westminster 018'.

	A	B	C	D	E
1			Census data[1] (2011)		
2	MLSOA Code	MLSOA Name	Population (all usual residents)	Area (hectares)	Households (households with at least one usual resident)
3	E02004297	County Durham 001	7,900	1,558	3,550
4	E02004290	County Durham 002	5,981	884	2,518
5	E02004298	County Durham 003	9,703	1,878	4,178
6	E02004299	County Durham 004	8,474	898	3,758
7	E02004291	County Durham 005	6,787	787	3,131
8	E02004300	County Durham 006	7,686	1,195	3,491
9	E02004292	County Durham 007	7,916	662	3,523

4388	E02000973	Westminster 014	10,090	54	5,312
4389	E02000974	Westminster 015	8,794	69	4,380
4390	E02000975	Westminster 016	8,757	48	4,621
4391	E02000976	Westminster 017	9,946	46	5,041
4392	E02000977	Westminster 018	7,490	251	3,895
4393	E02000978	Westminster 019	9,270	359	3,882
4394	E02000979	Westminster 020	8,081	139	3,892
4395	E02000980	Westminster 021	8,684	45	4,498
4396	E02000981	Westminster 022	8,991	36	4,853

We now have the corresponding MSOA Code that will be used to find the energy statistic that we are looking for (domestic gas consumption in 2010). This is '**E02000977**'.

Go to the 'MSOA electricity and gas: 2011' page on BEIS's website:
https://www.gov.uk/government/statistical-data-sets/mlsoa-electricity-and-gas-2011

Open the 'Middle Layer Super Output Area (MSOA) domestic gas estimates 2011: All data' file.

Middle Layer Super Output Area (MSOA) domestic electricity estimates 2011 Look-up spreadsheets

Ref: 13D/069
MS Excel Spreadsheet, 2.17MB

This file may not be suitable for users of assistive technology. Request a different format.

Middle Layer Super Output Area (MSOA) domestic gas estimates 2011 All data

Ref: 13D/046
MS Excel Spreadsheet, 623KB

This file may not be suitable for users of assistive technology. Request a different format.

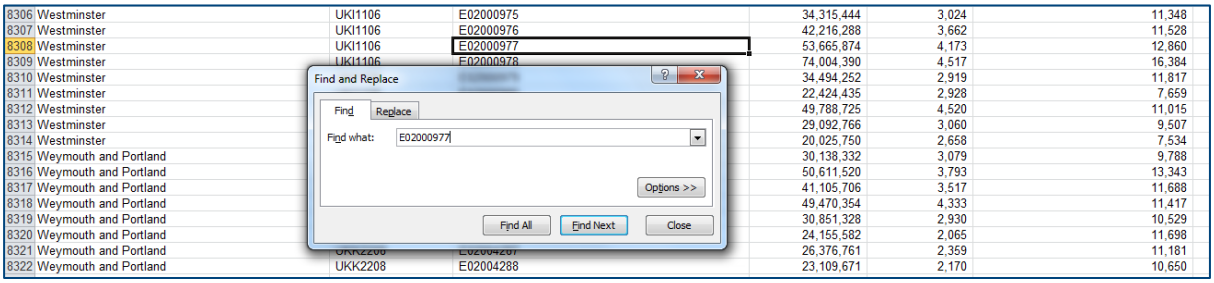
Middle Layer Super Output Area (MSOA) domestic gas estimates 2011 Look-up spreadsheets

Ref: 13D/072
MS Excel Spreadsheet, 1.46MB

This file may not be suitable for users of assistive technology. Request a different format.

	A	B	C	D	E	F
1	Local Authority Name	Local Authority Code	Middle Layer Super Output Area (MSOA) Code	Consumption (kWh)	Number of meters	Average consumption (kWh per meter)
2	Aberdeen City	UKM5001	S02000001	18,428,322	1,235	14,922
3	Aberdeen City	UKM5001	S02000002	31,814,236	1,981	16,060
4	Aberdeen City	UKM5001	S02000003	29,338,023	1,747	16,793
5	Aberdeen City	UKM5001	S02000004	60,386,803	2,238	26,982
6	Aberdeen City	UKM5001	S02000005	21,636,342	1,476	14,659
7	Aberdeen City	UKM5001	S02000006	27,728,013	1,781	15,569
8	Aberdeen City	UKM5001	S02000007	31,676,335	1,202	26,353
9	Aberdeen City	UKM5001	S02000008	27,612,016	2,087	13,230
10	Aberdeen City	UKM5001	S02000009	37,131,777	1,747	21,255
11	Aberdeen City	UKM5001	S02000010	33,717,414	2,257	14,939
12	Aberdeen City	UKM5001	S02000011	39,467,153	2,088	18,902
13	Aberdeen City	UKM5001	S02000012	32,496,932	2,690	12,081
14	Aberdeen City	UKM5001	S02000013	43,032,249	2,164	19,886
15	Aberdeen City	UKM5001	S02000014	45,319,358	1,975	22,947
16	Aberdeen City	UKM5001	S02000015	22,150,302	2,043	10,842
17	Aberdeen City	UKM5001	S02000016	29,299,199	2,636	11,115
18	Aberdeen City	UKM5001	S02000017	52,059,969	3,168	16,433

Search ‘E02000977’.



8306	Westminster	UKI1106	E02000975	34,315,444	3,024	11,348
8307	Westminster	UKI1106	E02000976	42,216,288	3,662	11,528
8308	Westminster	UKI1106	E02000977	53,665,874	4,173	12,860
8309	Westminster	UKI1106	E02000978	74,004,390	4,517	16,384
8310	Westminster			34,494,252	2,919	11,817
8311	Westminster			22,424,435	2,928	7,659
8312	Westminster			49,788,725	4,520	11,015
8313	Westminster			29,092,766	3,060	9,507
8314	Westminster			20,025,750	2,658	7,534
8315	Weymouth and Portland			30,138,332	3,079	9,788
8316	Weymouth and Portland			50,611,520	3,793	13,343
8317	Weymouth and Portland			41,105,706	3,517	11,688
8318	Weymouth and Portland			49,470,354	4,333	11,417
8319	Weymouth and Portland			30,851,328	2,930	10,529
8320	Weymouth and Portland			24,155,582	2,065	11,698
8321	Weymouth and Portland			26,376,761	2,359	11,181
8322	Weymouth and Portland	UKK2208	E02004288	23,109,671	2,170	10,650

We now have the data we were looking for. In the MSOA Westminster 018 (or E02000977) in 2011, domestic gas consumption was 53,665,874 kWh, there were 4,173 meters and average consumption was 12,860 kWh.

Annex B Frequently Asked Questions (FAQ)

This section provides answers to the most commonly asked questions from users of the sub-national consumption statistics.

General

How do sub-national energy consumption statistics compare to ECUK?
Sub-national energy consumption statistics should not be compared to statistics in Energy Consumption in the UK (ECUK)[43]. Sub-national gas and electricity are aggregated from a meter point-level and road transport and residual fuel consumption statistics are modelled by Ricardo-ENERGY & ENVIRONMENT. Much of the data in ECUK is modelled and obtained from secondary analysis performed by BEIS on data from a large number of sources. ECUK data (available only on a national level) also provides a more comprehensive sectoral split than the sub-national statistics and gives information on end use for the majority of fuels.

Which fuels are not included in sub-national energy consumption statistics?
Fuels not included in the sub-national energy consumption datasets are derived gases consumed in the industrial sector, petroleum products used by air transport and national navigation, heat sold in all sectors and non-energy use of petroleum and natural gas. More information on this and a numerical breakdown of these fuels can be found in section 9.1.

What are unallocated meters/consumption?
Unallocated gas or electricity meters are meters with insufficient address information, therefore consumption for these meters is unable to be allocated to a local authority, MSOA or LSOA. This is due to either incomplete postcode information being provided by the data suppliers, or no postcode information being received at all. In some cases BEIS is able to identify the local authority in which consumption was taking place, but not the specific MSOA (please see chapter 4 or the statistical geographies section (1.2) for more information on super output areas). Unallocated electricity data at local authority level can also include consumption for street lighting or traffic lights, where the information provided does not indicate a specific local authority.

Where can I go to access statistical products from the Office for National Statistics?
Users can search for ONS statistical products on the newly launched Open Geography Portal here: https://geoportal.statistics.gov.uk/geoportal/catalog/main/home.page.

Statistical geographies

How can I find out which geographical area my postcode falls in?
BEIS has produced a step-by-step guide on how to find out which geographic area a postcode falls in, and this can be found in Annex A.

[43] ECUK can be accessed here: https://www.gov.uk/government/collections/energy-consumption-in-the-uk.

How can I find out which postcodes are included in a geographical area?
The ONS Postcode Directory will provide you with this information. To access it, please visit the ONS website here: http://www.ons.gov.uk/ons/guide-method/geography/products/postcode-directories/-nspp-/index.html.

Gas

How is gas consumption allocated between domestic and non-domestic consumers?
BEIS uses the gas industry cut-off point of 73,200 kWh. All consumers using less than this figure are classed as domestic consumers and those using more are classed as non-domestic consumers. For more information, guidance on gas consumption statistics can be found in chapter 2.

Electricity

How is electricity consumption allocated between domestic and non-domestic consumers?
The automatic cut-off point for domestic consumption is 100,000 kWh; all consumers using more than this figures are classed as non-domestic. Domestic consumption between 50,000 kWh and 100,000 kWh is reallocated to the non-domestic sector following a validation process if address information indicates non-domestic consumption is taking place (for example, if an address contains ‘plc.’ or ‘ltd’). For more information, guidance on electricity consumption statistics can be found in chapter 3.

Do domestic electricity consumers on an economy 7 tariff have two meters (one measuring peak consumption and the other measuring off-peak consumption)?
No. Consumers on an economy 7 tariff will have one meter, and this meter will measure both peak and off-peak rates of consumption.

What is the difference between NHH and HH consumption?
Non-Half Hourly (NHH) consumption refers to electricity consumption by domestic consumers and small and medium businesses while Half Hourly (HH) consumption refers to electricity consumption by the larger non-domestic consumers. For 2016, NHH consumption covered the period 31st January 2016 to 30th January 2017 (these dates may change from year to year, and guidance on this is provided in section 3.1.3).

What is the reason for the difference in the number of electricity meters and the number of properties?
The number of electricity meters does not exactly equal the number of properties. One reason for this is that an apartment building may have a meter for the building complex (used to power building-wide appliances) in addition to each individual apartment having its own meter. Another is that some households may have a 3-rate meter system. A household with such a system will have one meter which measures all consumption at a peak rate and another meter which measures two other rates of off-peak consumption. This is the case for many households in Scotland, but it is extremely rare to find a similar case in England or Wales. Additionally, some meters are used to power street lighting or traffic lights as opposed to a property (many of these are unallocated). Please see chapter 3 for further guidance on electricity consumption statistics.

Road transport

Where can I find information on the number of licensed vehicles on the road?
Vehicle licensing statistics are available from the Department for Transport. These can be found here: https://www.gov.uk/government/organisations/department-for-transport/series/vehicle-licensing-statistics.

For more information, please contact the Vehicle Licensing team at: vehicles.stats@dft.gsi.gov.uk.

Annex C Table for differences between sub-national consumption data, DUKES and ECUK

Fuel type	Sub-national	DUKES	ECUK
Gas	Statistics are available on a sub-national level.	Statistics are available on a national level.	Statistics are available on a national level.
	Based on the gas year (01/10/2009 - 30/09/2010 for the year 2010).	Based on a calendar year.	Based on a calendar year.
	Weather corrected.	Not weather corrected.	Not weather corrected.
	Cover Great Britain.	Cover the United Kingdom.	Cover the United Kingdom.
	Statistics are aggregated up from an meter-point level data.	Statistics are produced using a top-down approach.	Statistics are modelled and obtained after secondary analysis using a number of data sources (including DUKES).
	Statistics are split by domestic and non-domestic consumers.	Statistics are split by a wider range of sectors (for example industry, public administration, commercial and others).	Statistics are split by a wider range of sectors (for example domestic, industry, services and others) and also include information on end use.
Electricity	Statistics are available on a sub-national level.	Statistics are available on a national level.	Statistics are available on a national level.
	Covers the dates 31/01/2010 - 30/01/2011 for the year 2010.	Based on a calendar year.	Based on a calendar year.
	Cover Great Britain.	Cover the United Kingdom.	Cover the United Kingdom.
	Statistics are aggregated up from an meter-point level data.	Statistics are produced using a top-down approach.	Statistics are modelled and obtained after secondary analysis using a number of data sources (including DUKES).
	Statistics are split by domestic and non-domestic consumers.	Statistics are split by a wider range of sectors (for example industry, public administration, commercial and others).	Statistics are split by a wider range of sectors (for example domestic, industry, services and others) and also include information on end use.
	Excludes consumption from some Central Volume Allocation (CVA) users.	Includes consumption from CVA users.	Includes consumption from CVA users.
Road transport	Statistics are available on a sub-national level.	Statistics are available on a national level.	Statistics are available on a national level.
	Statistics are split by vehicle type.	Statistics are split by vehicle type.	Statistics are split by vehicle type and end user.
	Estimates are modelled from a national level using a fuel consumption, emissions and traffic flow data.	Estimates are based on sales volume data recorded by UK energy suppliers.	Statistics are modelled and obtained after secondary analysis using a number of data sources (including DUKES).
Residual fuels	Statistics are available on a sub-national level.	Statistics are available on a national level.	Statistics are available on a national level.
	Statistics are split by fuel type and sector.	Statistics are split by fuel type and sector.	Statistics are split by fuel type, sector and end use.
	Estimates are modelled using a fuel consumption, emissions and spatial data.	Figures are based on information from UK energy suppliers.	Statistics are modelled and obtained after secondary analysis using a number of data sources (including DUKES).
	Differences in the underlying datasets used in sub-national estimates are DUKES are:		
	Heat generation is allocated to final users, so sub-national consumption figures for 'industry' and 'other' sectors are high than those in DUKES.	Heat generation is listed as a separate category.	
	Coal used in autogeneration is included in industrial consumption, as autogenerators cannot be disaggregated.	Coal used in autogeneration is classed as transformational use and is not included in industrial consumption.	
	Ricardo-AEA reallocates fuel oil, gas oil and burning oil consumption from industry to power stations to ensure consistency with operator data.	DUKES aggregates total fuel oil, gas oil and burning oil consumption to industry level.	
	Petroleum coke used by industry is included in the estimates.	Some industrial petroleum coke is classed as 'non-energy use' and not included in final consumption.	
	Benzole and coal tars are treated as non-energy consumption and coke oven gas and blast furnace gas are categorised as transformation fuel uses. These are excluded from the estimates.	Benzole, coal tars, coke oven gas and blast furnace gas are included in final consumption. Additionally, coke consumed by sinter production differs from information provided for the sub-national estimates.	
Total	Statistics are available on a sub-national level.	Statistics are available on a national level.	Statistics are available on a national level.
	Based on a variety of dates.	Based on a calendar year.	Based on a calendar year.
	Statistics are based both on data aggregated up from a meter-point level and data gathered at a national level.	Statistics are produced using a top-down approach.	Statistics are modelled and obtained after secondary analysis using a number of data sources (including DUKES).
	Differences between sub-national, DUKES and ECUK estimates for each fuel type above also apply.		

Annex D Tools available to aid users in interpreting the datasets

Sub-national electricity and gas statistics analysis tool
The sub-national electricity and gas analytical tool has been produced to help local authorities (LAs) and other users of BEIS's sub-national data to better understand changes in consumption over time. The data presented in the tool comes from BEIS's sub-national gas and electricity consumption estimates for Great Britain.

These datasets present total consumption, number of meter and average consumption estimates at an LA level, and the tool enables comparisons to be made with other LAs and can be split into two distinct sections of analysis:

1. Individual LA data as a time series in order to identify trends and significant changes.

2. Comparison of a selected LA with up to eight other LAs.

The tool is available here: https://www.gov.uk/government/publications/sub-national-electricity-and-gas-consumption-statistics-analysis-tool-2005-to-2009.

Published alongside the tool is a user guide, which can be accessed here:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/278781/sub_national_electricity_and_gas_consumption_statistics_analysis_tool_user_guide.pdf

Interactive maps
BEIS have published a series of interactive maps which bring together BEISs local authority datasets into one place allowing users to view trends in fuel poverty, energy use and energy efficiency measures. These maps are available here: http://tools.BEIS.gov.uk/en/content/cms/statistics/local_auth/interactive/interactive.aspx.

The sub-national electricity and gas consumption maps are available here:

http://tools.BEIS.gov.uk/en/content/cms/statistics/local_auth/interactive/domestic_ge/index.html

Look-up files
The MSOA and LSOA electricity and gas datasets are large datasets and in order to help our users quickly and easily pull out the data they are interested in, we have developed a series of look up files. These are available for the most recent data and are published alongside the data. The MSOA electricity and gas look-up files can be accessed from here:

https://www.gov.uk/government/publications/mlsoa-electricity-and-gas-2012.

The LSOA electricity and gas look-up files can be accessed from here:

https://www.gov.uk/government/publications/llsoa-electricity-and-gas-2012-experimental.

Annex E Related BEIS statistical publications

BEIS produces a timetable of all of its planned statistical releases for 12 months ahead. This can be found at the following location: https://www.gov.uk/government/publications/statistical-releases-timetable-for-twelve-months-ahead

Quarterly and monthly consumption statistics
Users of the statistics described in this guide often also have an interest in consumption data on a finer time scale than annual. For example monthly, or quarterly consumption statistics.

For electricity consumption the quarterly publication Energy Trends contains figures of quarterly and monthly electricity consumption split by sector. These statistics can be found in Table 5.5 at the following location: https://www.gov.uk/government/publications/electricity-section-5-energy-trends

Energy Trends also contains quarterly gas consumption statistics. Gas consumption statistics in Energy Trends are also split by sector, however monthly statistics are not available for this fuel. The data can be found in Table 4.1 at the following location: https://www.gov.uk/government/publications/gas-section-4-energy-trends

Electricity and gas are by far the most requested fuels for quarterly or monthly data – however users should note that quarterly consumption data is also available in Energy Trends for both solid fuels and petroleum products; these can be found at the links below: https://www.gov.uk/government/publications/solid-fuels-and-derived-gases-section-2-energy-trends

https://www.gov.uk/government/publications/oil-and-oil-products-section-3-energy-trends

These are the smallest time scales under which BEIS produces consumption data, some users have in the past requested daily or hourly consumption data but these are not available. Quarterly or monthly consumption statistics are also unfortunately not available at the regional levels discussed in this guide (such as local authority or super output areas).

Sub-national greenhouse gas emissions statistics
Many users of the sub-national energy consumption outputs are also interested in emissions statistics for the geographical areas they are investigating. These statistics are produced by BEIS independently of sub-national consumption statistics and so are not described in detail in this booklet.

The sub-national greenhouse gas emissions statistics produced by BEIS can be found at the following location: https://www.gov.uk/government/collections/sub-national-greenhouse-gas-emissions-statistics.

This page contains links to emissions statistics a regional and local level along with accompanying methodology and user guidance documents. Any enquires about these statistics should be sent to climatechange.Statistics@BEIS.gsi.gov.uk.

Electricity generation statistics
Electricity generation statistics are not available at sub-national geography levels, however energy generation statistics for the UK can be found in section 5 of Energy Trends, which can be accessed at the following location: https://www.gov.uk/government/publications/electricity-section-5-energy-trends.

This data is available on a quarterly basis, as opposed to sub-national energy consumption statistics which are only published annually.

Any enquiries about these statistics should be sent to electricitystatistics@BEIS.gsi.gov.uk.

National Energy Efficiency Data Framework (NEED)
The National Energy Efficiency Data-Framework (NEED) was set up by BEIS to provide a better understanding of energy use and energy efficiency in domestic and non-domestic buildings in Great Britain.

The data framework matches gas and electricity consumption data, collected for BEIS sub-national energy consumption statistics, with information on energy efficiency measures installed in homes, from the Homes Energy Efficiency Database (HEED). It also includes data about property attributes and household characteristics, obtained from a range of sources.

Datasets and further information about NEED can be accessed from:
https://www.gov.uk/government/collections/national-energy-efficiency-data-need-framework.
Any enquiries about these statistics should be sent to EnergyEfficiency.Stats@BEIS.gsi.gov.uk.

Quarterly Energy Prices (QEP)
Quarterly Energy Prices (QEP) is a quarterly statistical release published by BEIS, which covers energy prices and bills for both domestic and industrial consumers, across all major fuel types. The publication also contains comparisons of fuel prices in the EU and the IEA countries, and wider statistics on UK retail energy markets.

Further information, along with the QEP datasets and all other related documents can be found at the following location:

https://www.gov.uk/government/collections/quarterly-energy-prices

Any enquiries about these statistics should be directed to:

- Household Energy Prices: Nicholas.Simmons@BEIS.gov.uk
- Industrial Energy Prices and Petrol Prices: Anwar.Annut@BEIS.gov.uk
- International Energy Prices: Novica.Petrovic@BEIS.gov.uk

Digest of UK Energy Statistics (DUKES)

Digest of UK Energy Statistics (DUKES) is an annual publication, which is an essential source of energy information. It contains extensive tables, charts and commentary, which details a comprehensive picture of energy production and use over the last five years, with key series taken back to 1970. DUKES is split into separate sections on coal, petroleum, gas, electricity, renewables and combined heat and power.

It is advised that DUKES estimates for total final energy consumption are used for headline and overall UK consumption estimates, whilst the sub-national estimates should be used where estimates at a lower geographical level are required.

Further information can be found on the following link:

https://www.gov.uk/government/statistics/digest-of-united-kingdom-energy-statistics-dukes-2014-printed-version

Any enquiries about these statistics should be directed to EnergyEfficiency.Stats@BEIS.gsi.gov.uk

We are seeking feedback and comments about the publication so we can tailor it to our users in the future. Responses to the following survey would be much appreciated: https://www.surveymonkey.co.uk/r/TN28XL3

Department for Business, Energy & Industrial Strategy
1 Victoria Street, London, SW1H 0ET
www.gov.uk/beis