



Department for  
Business, Energy  
& Industrial Strategy



# Sub-National Consumption Statistics

Methodology and guidance booklet

December 2020



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# 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)<sup>1</sup> 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<sup>2</sup> level and datasets for electricity and gas 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<sup>3</sup> 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.

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<sup>1</sup> Prior to BEIS's creation in 2017; sub-national work was carried out by the Department for Energy and Climate Change (2009 onwards), Department for Business, Enterprise and Regulatory Reform (2007 - 2008) and the Department of Trade and Industry (pre-2007).

<sup>2</sup> 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.

<sup>3</sup> Northern Ireland's District Councils are similar to local authorities within Great Britain.

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- 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](mailto:EnergyEfficiency.Stats@beis.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>

## 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 summary of key points.

## Table 1 Key information for sub-national consumption datasets

Consumption dataset	Dates covered	Coverage	Key points
Gas	Mid May 2019 to Mid May 2020	Great Britain  Regional (NUTS1) and local authority (LAU1)  MSOA/IGZ and LSOA (domestic only)	Latest publication: LA data in December 2020 (2019/20 data); SOA data in December 2020 (2019/20 data) Next publication: LA data in December 2021 (2020/21 data); SOA data in December 2021 (2020/21 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	Latest publication: LA data in December 2020 (2019/20 data); SOA data in December 2020 (2019/20 data) Next publication: LA data in December 2021 (2020/21 data); SOA data in December 2021 (2020/21 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.
Gas: Northern Ireland	May 2019 to May 2020	Northern Ireland  District council (similar to local authority)	Latest publication: December 2020 (2019/20 data). Next publication: December 2021 (2020/21 data). Annual consumption data provided by Northern Ireland Assembly. 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.
Electricity: Northern Ireland	1st April to 31st March	Northern Ireland	Latest publication: December 2020 (2019 data). Next publication: December 2021 (2020 data). Annual consumption data provided by Northern Ireland Electricity (NIE). These statistics are experimental, so year-on-year analysis should be done with caution.

		District council (similar to local authority)	Not directly comparable with Great Britain statistics due to differences in market structure. 2009 and 2010 data cover the calendar year. See section 5.1.
Road transport	1st January to 31st December	United Kingdom Regional (NUTS1) and local authority (LAU1)	Latest publication: June 2020 (2018 data). Next publication: June 2021 (2019 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)	Latest publication: September 2020 (2018 data). Next publication: September 2021 (2019 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). Residual fuels data are not weather corrected.
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)	Latest publication: September 2020 (2018 data). Next publication: September 2021 (2019 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 total dataset.



## 1.2 Statistical geographies<sup>4</sup>

### 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.

### Local authorities

A local authority is an administrative body in local government. There are 314 local authorities in England, 22 local authorities in Wales and 32 local authorities in Scotland. There are 11 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 several output areas (OAs). They are used on the Neighbourhood Statistics<sup>5</sup> 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 properties 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

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

<sup>5</sup> The Neighbourhood Statistics site can be accessed here: <http://neighbourhood.statistics.gov.uk/dissemination/>.

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constrained by the Standard Table wards<sup>6</sup> used for 2011 Census outputs. They have a minimum size of 1,000 residents or 400 households and have an average of 1,500 residents.

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.

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.

## 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<sup>7</sup>.

## 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.

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<sup>6</sup> More information on Standard Table wards can be found at the following location: <https://www.ons.gov.uk/methodology/geography/ukgeographies/censusgeography>.

<sup>7</sup> For more information on Scottish statistical geographies, please see the Scottish Neighbourhood Statistics website: <http://www.sns.gov.uk/>.

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- 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.

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)<sup>8</sup>.

They also form the basis of responses to 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 improved address matching or where a data supplier has made BEIS aware of an error in a data point. Annual revisions are made to the road transport, residuals and total final energy publications, and these revisions are explained in the relevant chapters.

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 because 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.

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<sup>8</sup> 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 (2019/20)**

**Dates covered:** mid-May 2019 to mid-May 2020

**Sectors covered:** Domestic and non-domestic

**Features:** Annualised and weather corrected

**Years available:** 2005 to 2019/20

**Source:** Xoserve

### **Statistical releases:**

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

**Latest release:** December 2020 (2019/20 data)

**Next release:** December 2021 (2020/21 data)

### **MSOA, LSOA and Postcode:**

**Latest release:** December 2020 (2019/20 data)

**Next release:** December 2021 (2020/21 data)

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

## 2.1 Overview (2005 to 2019/20 datasets)

### 2.1.1 Coverage

The datasets cover annual gas consumption in Great Britain. Data are published at sub-national level including 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 mid-May and mid-May.
- All gas distributed through all Local Distribution Zones (LDZ).
- Gas consumers whose consumption data is recorded daily and are known as Daily Metered (DM) customers.

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## 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.
- Unique Site meters (also known as “Non-Standard Sites”, which are billed under a different system to other meters)

## Break in trends:

Gas meter readings are received by BEIS from Xoserve, who compile these data from gas shippers who receive the data from gas suppliers. Xoserve calculate an Annual Quantity (AQ) by taking two meter readings between 6 months and 18 months apart and calculate the amount of gas in kWh used by a meter for one-year. If any meter reading does not progress through one of these stages, then BEIS’ record of the AQ isn’t updated and the older AQ is used in the subnational figures.

In 2016, Xoserve introduced a new data collection system. Due to this, a large proportion of meters which had not reported for some time had their AQs updated in the 2017 gas consumption figures. This large update led to an increase in the total AQ reported in 2017 gas consumption. With the majority of gas meters now providing timely meter readings, the figures from 2017 onwards are a truer reflection of gas consumption.

Because a significant proportion of meters did not submit readings for multiple years prior to 2017, the figures for these years likely underestimate the total gas used. The figures from 2017 are a break in trends, with the gas consumption not being comparable to previous years.

## 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 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.

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## 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, the 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 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

An AQ is an estimate of annualised consumption using consumption recorded between two meter readings at least six months apart (with a maximum span of 18 months).

The user should note that there are some MPRNs where Xoserve do not receive an updated meter reading. Xoserve use a previous AQ until a new meter reading is received for an MPRN, in 2019/20 there were 2 million MPRNs that had the same AQ as 2018/19.

Due to the large number of meter readings, some error meter readings and AQs are observed. Xoserve automatically assign an AQ of 1 to an AQ that they consider an error or if no gas consumption has been detected in the meter readings submitted. In 2019 there were around 370,000 MPRNs with an AQ assigned as 1 by Xoserve. To reduce the number of these error AQs, BEIS undertook an imputation program to identify AQ errors. BEIS used a variety of sources including electricity consumption data, meter installation records and land registry data to identify if an AQ was an error and imputed the previous year AQ where an error was believed to have arisen.

### National Statistics Postcode Look-up (NSPL)<sup>9</sup> 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.

### Sector allocation

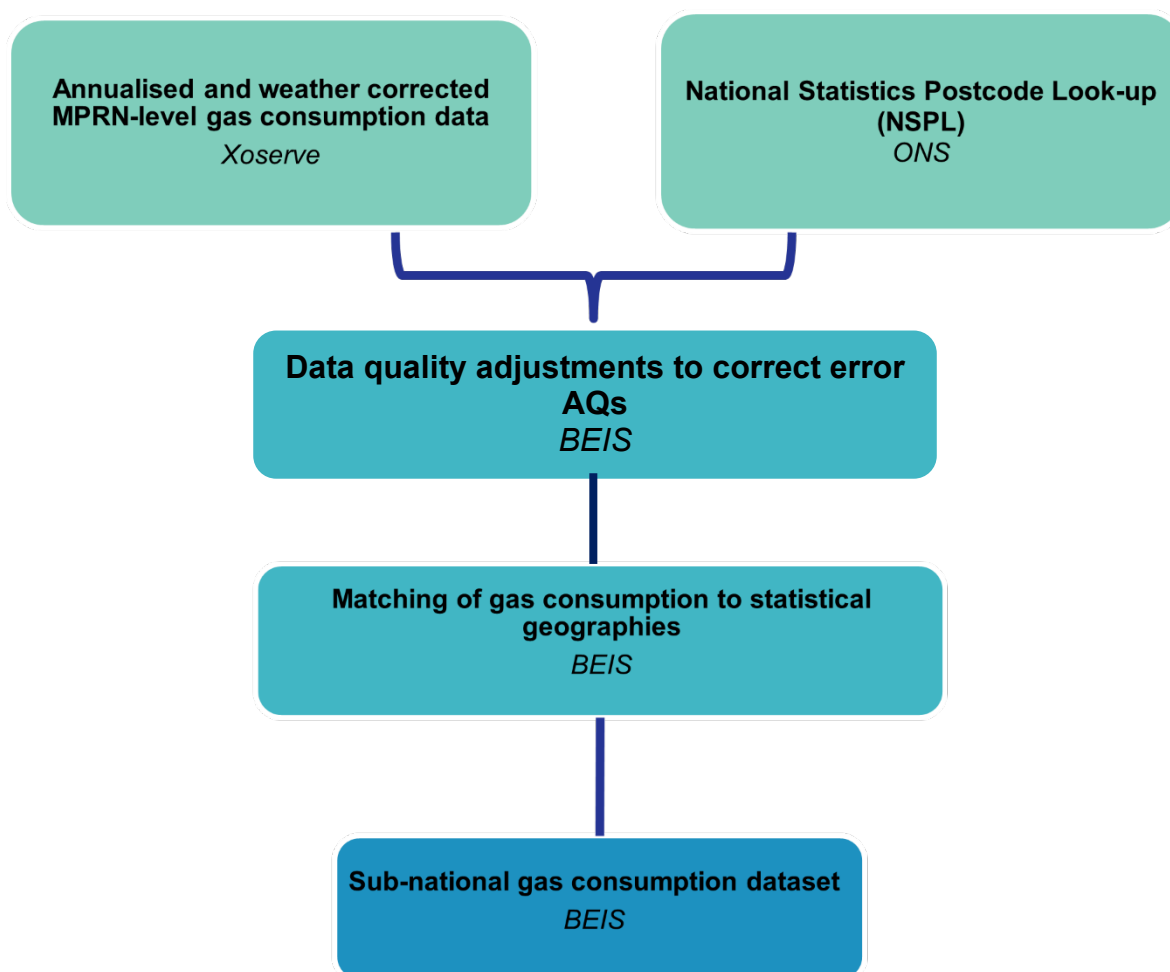
BEIS uses the gas industry standard “Annual Quantity” (AQ) cut-off point of 73,200 kWh and classifies all consumers using under that annual consumption as domestic consumers. Unfortunately, this classification incorrectly allocates many small businesses to the domestic sector and, conversely, a small number of larger domestic consumers to the non-domestic sector. This also mean that a small number of meters change sector from year to year.

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<sup>9</sup> For further information on the NSPL and how to access it, please visit the ONS website: <http://geoportal.statistics.gov.uk/>

## 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

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). Xoserve adjust the AQ using a weather correction factor which accounts for regional temperature and wind speed and incorporates trends<sup>10</sup>. BEIS has combined this consumption information together with associated information on the location of the meters (also provided by Xoserve)

### Dates for gas period

Gas consumption statistics have historically covered the gas year (1st October to 30th September). For example, 2015 data covers the period from 1 October 2014 to 30 September 2015. However, from 2016 the period covered by gas consumption has changed due to a new data collection method implemented by Xoserve. The gas period for 2017 was mid-June 2017 –

<sup>10</sup> 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>.



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mid June 2018. For 2018 the gas year shifted to mid-May 2018 to mid-May 2019 and for 2019 the gas year remained to mid-May to mid-May.

## Matching of gas consumption to statistical geographies by BEIS

The gas consumption data are then matched to other geography codes using postcode information.

## 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 administrative 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 different time periods. A 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)<sup>11</sup>. 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:

- Are based on a calendar year, whereas sub-national data covers various periods (see section 2.2)
- 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.

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<sup>11</sup> DUKES can be accessed at the following page: <https://www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes>.



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- 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)<sup>12</sup>. 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.
- ECUK reports UK level consumption estimates, whereas subnational provides country, regional, local authority, SOA and postcode level consumption estimates.

### 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 National Energy Efficiency Data Framework (NEED)<sup>13</sup>. 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 100 kWh and 50,000 kWh, whereas in sub-national data, meters are considered domestic if they have a consumption lower than 73,200 kWh.
- The NEED dataset has suspected estimated readings removed, whereas sub-national gas consumption estimates do not remove these.
- In NEED, data is matched to other sources by National Land and Property Gazetteer, Unique Property Reference Number<sup>14</sup> at property level, and meters which are not successfully matching are not added to NEED, and thus excluded from the analysis.

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<sup>12</sup> ECUK can be accessed at the following page: <https://www.gov.uk/government/collections/energy-consumption-in-the-uk>.

<sup>13</sup> All NEED publications can be accessed from the following page: <https://www.gov.uk/government/collections/national-energy-efficiency-data-need-framework>

<sup>14</sup> NLPG UPRN. More info on the NLPG can be found at: <http://www.nlpg.org.uk/nlpg/welcome.htm>

## 2.4 Estimates of properties not connected to the gas network

### Sub-national estimates of homes not connected to the gas network (2019/20)

Dates covered: mid-May 2019 to mid-May 2020

Sectors covered: Domestic

Features: Derived from sub-national gas and electricity consumption statistics, and estimate of properties in each local authority (published by ONS)

Years available:

- LA: 2015/16 to 2019/20
- MSOA: 2015/16 to 2019/20
- LSOA: 2015/16 to 2019/20

Source:

- Xoserve and independent gas transporters
- Electricity data aggregators
- Valuation Office Agency (VOA)
- Scottish Government

Statistical releases:

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

Latest release: December 2020 (2019/20 data)

Next release: December 2021 (2020/21 data)

MSOA and LSOA:

Latest release: December 2020 (2019/20 data)

Next release: December 2021 (2020/21 data)

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

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## 2.4.1 Overview

This dataset is based on the gas meter point data used to produce BEIS's sub-national gas consumption estimates and provides estimates of the number of properties within each local authority, MSOA and LSOA without a gas meter.

The datasets include:

- Estimates for the number of properties without a gas meter in Great Britain between mid-May 2019 to mid-May 2020.

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 properties only.

### 2.4.1.1 Local authority and SOA level datasets

This dataset contains estimates of the number and proportion of properties without a gas meter in Great Britain. Estimates of properties without a gas connection are calculated by subtracting the number of domestic meters from the number of properties in a region. The number of non-gas properties is reported as a proportion of the housing stock in an area.

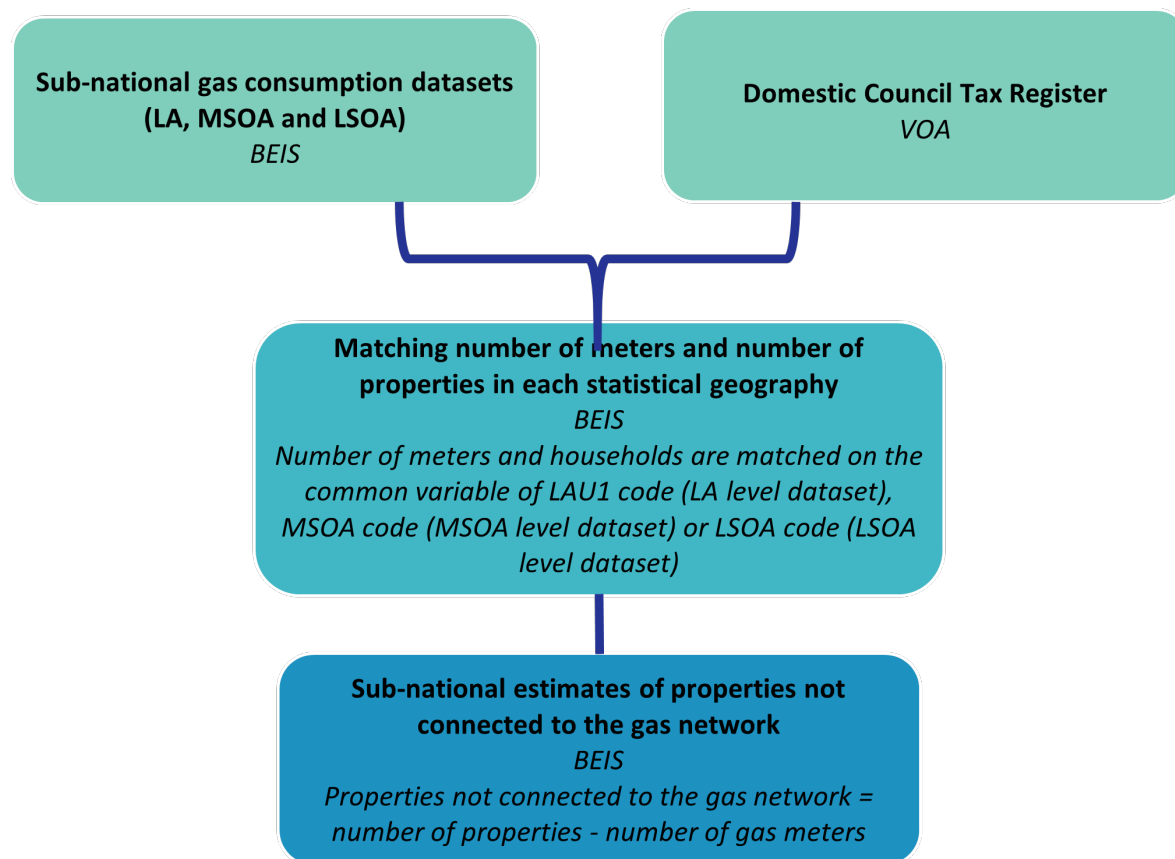
#### Unallocated meters

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 0.2 percent of domestic meters could not be allocated to a local authority in the 2019/20 data. These meters are included in the overall estimates for Great Britain.

Consumption data that is deemed to be disclosive at a geographical level is also classed as 'unallocated'. A meter is disclosive if the top two consuming meters at a geographical level have >90% of the total consumption of a geographical area. There are a few cases where some meters are around the 90% mark and can change from being disclosive to non-disclosive over time due to changes in consumption at that site or across the rest of the geographical area. Disclosure is also applied where the number of meters in a geographical area is equal to 5 meters or less.

## 2.4.2 Methodology

Chart 2: Flowchart to show the production process of the sub-national estimates of properties not connected to the gas network dataset



### Property estimates based on Valuation Office Agency (VOA) domestic property register

BEIS estimates the number of properties in each area each year by taking the number of properties that are registered for domestic council tax. The VOA publish data at the LA, MSOA and LSOA level<sup>15</sup>.

### Matching number of meters and number of properties in each statistical geography

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

<sup>15</sup>VOA council tax statistics: <https://www.gov.uk/government/collections/valuation-office-agency-council-tax-statistics>

### 2.4.2.1 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:

BEIS use the gas industry cut off threshold of 73,200 kWh 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 properties without gas is an underestimate of the true number.

Some meters cannot be allocated to a local authority or LSOA due to insufficient or incomplete address information. Approximately 0.2 per cent of domestic meters could not be allocated to a local authority in 2019.

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).

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.

Some meters cannot be allocated to a local authority or LSOA due to insufficient or incomplete address information. Approximately 0.3 per cent of domestic meters could not be allocated to a local authority in 2017.

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.

### 2.4.3 Comparability

A comparison of the sub-national estimates with Xoserve<sup>16</sup> and NEED<sup>17</sup> 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”<sup>18</sup>

<sup>16</sup> Xoserve provides centralised information and data services for gas transporters and shippers in Great Britain.

<sup>17</sup> NEED estimates of the number of properties without a gas meter by property attributes and property characteristics are available from: <https://www.gov.uk/government/collections/national-energy-efficiency-data-need-framework>.

<sup>18</sup> This December 2013 issue of Energy Trends can be found at the following location: <https://www.gov.uk/government/statistics/energy-trends-december-2013>

Table 2: Summary of dataset comparisons

	BEIS off gas estimates	Xoserve off gas postcodes	NEED off gas consumption estimates
Strengths	<p>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</p> <p>Covers domestic only; helps with domestic policies.</p>	<p>Lower-level geography (postcode).</p> <p>Includes gas supply even if no meter yet installed.</p> <p>Domestic and non-domestic (strength depending on purpose).</p>	<p>Only source of information about types of properties and occupants.</p>
Limitations	<p>Information not available at postcode level.</p> <p>No information on gas supply if no meter installed.</p> <p>Domestic cut-off based on arbitrary consumption figure used by industry.</p>	<p>Binary variable.</p>	<p>Limited detail on geography.</p>
When to use	<p>To identify areas with low numbers of properties with a gas meter.</p>	<p>To identify whether a specific geographic location has a gas supply.</p>	<p>To identify types of properties, which may benefit from support.</p>

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## 3 Electricity consumption statistics

### Sub-national electricity consumption statistics (2019)

**Dates covered:** Non-Half Hourly: 31st January 2019 to 30th January 2020

Half Hourly: 1st January 2019 to 31st December 2019

**Sectors covered:** Domestic and non-domestic

**Features:** Annualised, not weather corrected

**Years available:** 2005 to 2019

**Source:** Data aggregators (on behalf of electricity suppliers)

#### Statistical releases:

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

Latest release: December 2020 (2019 data)

Next release: December 2021 (2020 data)

#### MSOA, LSOA and Postcode:

Latest release: December 2020 (2019 data)

Next release: December 2021 (2020 data)

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

### 3.1 Overview (2005 to 2019 datasets)

#### Sub-national electricity consumption dataset from BEIS

The sub-national electricity dataset covers the years 2005 to 2019 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 administrative totals.

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Where non-domestic consumption is provided at the Middle Layer Super Output Area (MSOA) level. Half-hourly meter point (consumption by larger non-domestic customers) totals are not reported at the MSOA level, but are aggregated to the local authority level <sup>19</sup>.

### 3.1.1 Coverage of data

The datasets include:

Non-Half Hourly (NHH) electricity consumption from 31st January 2019 to 30th January 2020 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. Some of this “auto-generation” is from government schemes and an indication of the regional importance of such schemes can be obtained from Energy Trends<sup>20</sup>.

### 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.

Consumption data that is deemed to be disclosive at a geographical level is also classed as ‘unallocated’. A meter is disclosive if the top two consuming meters at a geographical level have 90% of the total consumption of a geographical area. There are a few cases where some meters are around the 90% mark and can change from being disclosive to non-disclosive over time due to changes in consumption at that site or across the rest of the geographical area. Disclosure is also applied where the number of meters in a geographical area is equal to 5 meters or less.

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<sup>19</sup> 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.

<sup>20</sup> 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>.



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.

### 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.

Except for 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 2018 to 30th January 2019. These dates may vary slightly each year according to when the data extraction process takes place. To illustrate this, a selection of past dates are shown in Table 3 below.

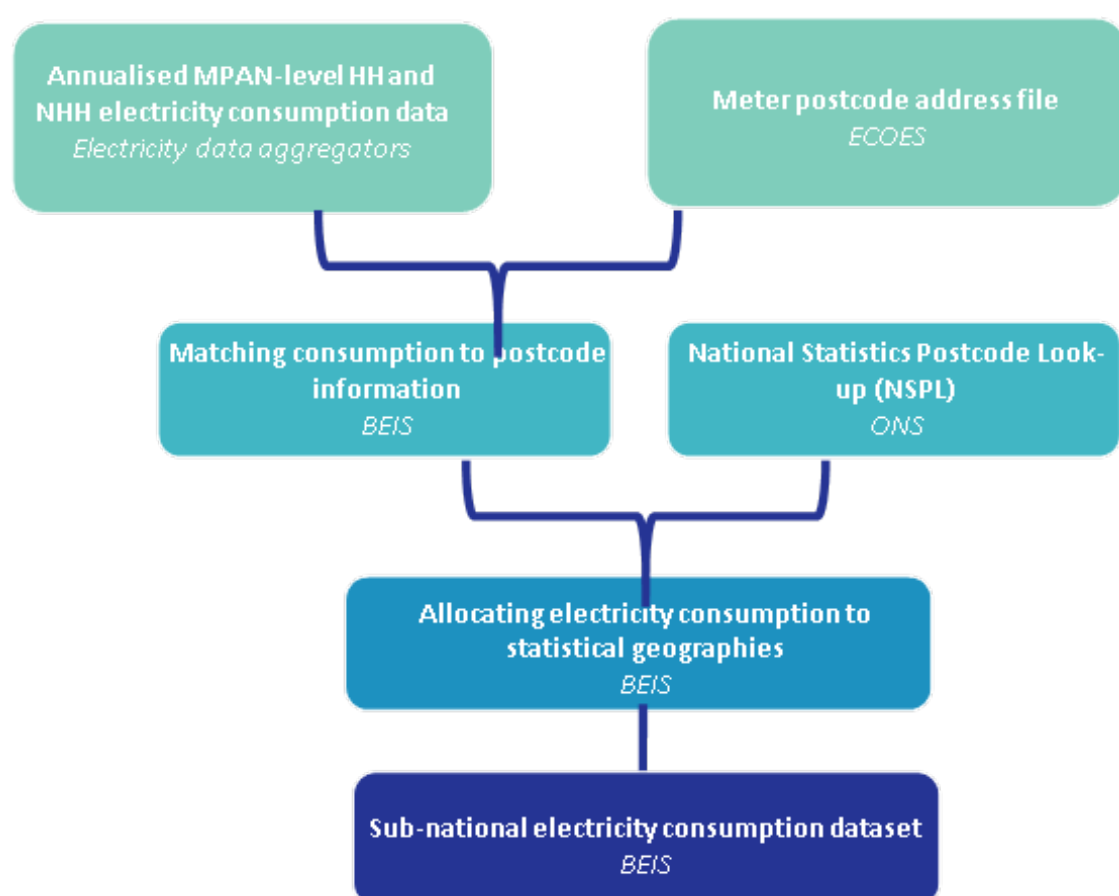
Table 3: Coverage of electricity consumption for Non-Half Hourly (NHH) data

Year of NHH electricity consumption	Dates covered
2019	31/01/2019 to 30/01/2020
2018	31/01/2018 to 30/01/2019
2017	31/01/2017 to 30/01/2018
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

## 3.2 Methodology

Chart 3: 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).

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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 2019 and 30th January 2020
- Half-hourly (HH) data covers consumption over the calendar year.

## Meter postcode address file from ECOES

Geographic data is obtained for each meter from the Electricity Central Online Enquiry Service (ECOES) data file, which includes the address and postcode of each MPAN.

## Matching consumption to postcode information by BEIS

The electricity consumption and geographical data are then merged (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

## National Statistics Postcode Look-up (NSPL) from ONS

The National Statistics Postcode Look-up (NSPL)<sup>21</sup> 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 taking place. On occasions it has been possible to allocate an MPAN to an LAU1 code, but not at a lower-level code.

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<sup>21</sup> Further information on the NSPL can be accessed at the ONS website: <http://geoportal.statistics.gov.uk/>

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## 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:

- An apartment building may have a meter for the building complex (used to power communal electricity uses such as lighting) in addition to each individual apartment having its own meter.
- 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 less common to find a similar case in England or Wales.
- 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

Sub-national electricity and gas consumption statistics use varying methodologies to compile the datasets and cover different time periods. A key 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 figures provide a good indication of overall annual household energy consumption in Great Britain at local authority, MSOA/IGZ and LSOA level.

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)<sup>22</sup>. 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 electricity figures in the sub-national and DUKES publications as DUKES data:
  - Are based on a calendar year, whereas 2019 sub-national electricity data cover 31st January 2019 to 30th January 2020.
  - Covers consumption for the United Kingdom, whereas the sub-national consumption statistics cover Great Britain.

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<sup>22</sup> DUKES can be accessed on the BEIS website:  
<https://www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes>.

- 
- 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).

### 3.3.3 Comparison to ECUK

There are also issues when comparing sub-national data to Energy Consumption in the UK (ECUK)<sup>23</sup>. 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 several sources, including DUKES.
- 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 National Energy Efficiency Data Framework (NEED)<sup>24</sup>. 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 100 kWh and 25,000 kWh, whereas in sub-national data, meters are considered domestic if they are a profile 1 or 2 meter and have a consumption lower than 100,000 kWh.

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<sup>25</sup> at property level, whereas the sub-national data are assigned to a Lower Layer Super Output Area.

## 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

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<sup>23</sup> ECUK can be accessed on the BEIS website: <https://www.gov.uk/government/collections/energy-consumption-in-the-uk>.

<sup>24</sup> All NEED publications can be accessed from the following page: <https://www.gov.uk/government/collections/national-energy-efficiency-data-need-framework>

<sup>25</sup> 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>

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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 ECOES.

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 businesses were affected. The impact that these changes have on totals and averages is dependent on the size of the business.

### 3.4 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.

### 3.5 Further information

For analysis on sub-national electricity consumption data prior to 2011, please see the articles in Energy Trends.<sup>26</sup>

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<sup>26</sup> 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](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/65933/4782-subnat-electricity-cons-stats-article.pdf).

# 4 Northern Ireland gas consumption statistics (domestic and non-domestic)

## Sub-national Northern Ireland gas consumption statistics (2019)

**Dates covered:** Mid-May 2019 to Mid-May 2020

**Years available:** 2015 to 2019

**Features:** Experimental

**Source:** Northern Ireland Gas Distribution Operators

**Statistical releases:**

**Latest release:** December 2020 (2019/20 data)

**Next release:** December 2021 (2020/21 data)

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

## 4.1 Overview (2015 – 2019 data)

The data cover annual gas consumption in Northern Ireland. Gas consumption data are also provided for the 11 local authorities in Northern Ireland (equivalent to local authority level in GB).

The data include gas consumption for all domestic and non-domestic meters in Northern Ireland relating to the following periods:

- 2015 (1st October 2014 to 30th September 2015)
- 2016 (15th July 2016 to 15th July 2017)
- 2017 (15th June 2017 to 15th June 2018)
- 2018 (15th May 2018 to 15th May 2019)
- 2019 (15th May 2019 to 15th May 2020)

## 4.2 Background and methodology

### Consumption

The consumption data provided by the gas network operators in Northern Ireland are derived from annual quantities (AQs) for each meter point which are then weather corrected using a 5-year average of seasonal normal temperatures. These values are then aggregated and

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provided at postcode level. District council and local authority markers are then added, and the data aggregated for publication. It should be noted that this process is similar to that in Great Britain but the weather correction adjustment factors differ.

The data excludes gas consumption fed directly to power stations<sup>27</sup>.

## Meter numbers

The meter count data is a count of the number of meters in Northern Ireland and for the eleven District Council Areas in Northern Ireland split by tenure type (domestic or non-domestic).

Two of the three suppliers provided meter count data relating to the end of the consumption period as outlined above (September 2015, July 2017 and June 2018 for 2015, 2016 and 2017 respectively). One supplier was unable to provide meter counts for these periods and provided meter count data relating to October 2015, October 2017 and October 2018, for 2015, 2016 and 2017 respectively.

## Unallocated meters

Full postcode information for all meters is provided by each of the data suppliers. Therefore, all meters are assigned to a District Council Area and there are no unallocated meters.

## Postcode Lookup

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

The August 2019 version of the NSPL was used to allocate local authority to the postcode information for each gas meter in Northern Ireland.

## Meter classification

All gas meters in Northern Ireland have a profile marker to indicate if the meter relates to a domestic or non-domestic consumer. For each new connection to the gas network, the new customer is required to fill in and sign a Gas Application Form (GAF). This process determines whether the new meter is classified as domestic or non-domestic.

Following the completion of the new connection, the Asset Register (held by the Gas Network Operator for that area) will be updated with the new meter details and its classification recorded. Should a customer request a change from domestic to non-domestic, an updated commercial GAF would then be signed by the customer and an 'asset register update' made, ensuring the meter is registered as non-domestic.

The tenure type of all new meters are subject to verification via a site visit by a sales advisor and any changes to type would require the customer to provide appropriate evidence of the change (e.g., from Northern Ireland Land & Property Services).

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<sup>27</sup> Information on gas consumption by the power sector in Northern Ireland can be found on page 15 of <http://gmo-ni.com/assets/documents/Final-NIGCS-18-19-to-2027-28-3.12.18.pdf>



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## 4.3 Comparison to Great Britain gas consumption data

The above is different to the situation in Great Britain. 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. This classification incorrectly allocates many small businesses to the domestic sector. This also means that a small number of meters change sector from year to year, and it is estimated that around 2 million small businesses are incorrectly classed as domestic using this cut-off threshold.

Because of the difference in classification described above gas consumption in Northern Ireland and Great Britain are not directly comparable.

More information on the gas transmission, distribution and supply system in Northern Ireland is available from the [Utility Regulator](#) and [NorthernIreland.gov.uk](#), and in the [Northern Ireland Gas Capacity Statement](#).

# 5 Northern Ireland domestic electricity consumption statistics

### **Sub-national Northern Ireland domestic electricity consumption statistics (2019)**

**Dates covered:** 1st April 2019 to 31st March 2020 (financial year)

(Earlier data cover the calendar year)

**Years available:** 2009 to 2019

**Features:** Experimental

**Source:** Northern Ireland Electricity (NIE) Networks

**Statistical releases:**

**Latest release:** December 2020 (2019/20 data)

**Next release:** December 2021 (2020/21 data)

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

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## 5.1 Overview (2008 to 2019 data)

These datasets include:

Electricity consumption covering the 11 local authorities 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 2019 to 31st March 2020). Data for 2009 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, 2016 data covers the period 1st April 2016 to 31st March 2017) 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 Road transport fuel consumption statistics

## Sub-national road transport fuel consumption statistics (2018)

**Dates covered:** 1st January 2018 to 31st December 2018

**Sectors covered:** Road transport (all users)

**Features:** Modelled

**Years available:** 2002 to 2018

**Source:** Ricardo Energy & Environment

**Statistical releases:**

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

**Latest release:** June 2020 (2018 data)

**Next release:** June 2021 (2019 data)

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

## 6.1 Overview (2002 – 2018 data)

### 6.1.1 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, heavy goods vehicle (HGV) and light goods vehicle (LGV)). Buses, diesel cars, HGV and diesel LGV are all classed as diesel-consuming vehicles, while petrol cars, motorcycles 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.

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- 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.

## 6.1.2 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 several tasks such as carrying freight, providing transport, carrying equipment or for private use.

## 6.2 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 the 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 evidence from Automatic Number Plate Recognition (ANPR) data from DfT; these provide an indication of the vehicle mix by engine size, vehicle size, age, engine and exhaust treatment technology, Euro emission standards, and fuel type as observed on different road types. Fuel consumption

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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: there are many parameters that affect the amount of fuel a vehicle uses and average vehicle speed is one of them, so the NAEI uses functions that relate fuel consumption to average speed.

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. These factors are derived from the fuel consumption-speed relationships given in the COPERT 5 source. COPERT 5 “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.

There have been no major recalculations to the 2018 estimates of national fuel consumption by vehicle type. However, one small recalculation has occurred for the following reason: An update to the percentage of diesel cars in Northern Ireland in 2016 and 2017. This leads to an approximate 1-2% increase in UK emissions from petrol cars and an approximate <1% decrease in UK emissions from diesel cars.

## Mapping fuel consumption

The base map of the UK road network used for calculating hot exhaust road traffic emissions has been developed from two mapping datasets. The Ordnance Survey Open Roads (OSOR) dataset provides locations of all roads (motorways, A-roads, B-roads and unclassified roads) in Great Britain. Prior to 2017 the Ordnance Survey’s Meridian 2 (OSM2) road network was used, but this has been superseded by OSOR and the NAEI has adopted OSOR as part of continual improvement of the mapping process. For Northern Ireland (NI) a dataset of roads was obtained from Ordnance Survey of Northern Ireland, part of Land & Property Services Northern Ireland.<sup>28</sup>

## 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.

## 6.3 Comparison to DUKES and ECUK

Users should note that there are differences between the national figures presented in these sub-national tables and those reported in the Digest of United Kingdom Energy Statistics

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<sup>28</sup> 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>.

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(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)<sup>29</sup>. 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.

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<sup>29</sup> 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>.

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# 7 Residual fuel consumption statistics

## **Sub-national residual fuel consumption statistics (2018)**

**Dates covered:** 1st January 2018 to 31st December 2018

**Sectors covered:** All (except aviation and national navigation)

**Features:** Modelled

**Years available:** 2005 to 2018

**Source:** Ricardo Energy & Environment

**Statistical releases:**

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

**Latest release:** September 2020 (2018 data)

**Next release:** September 2021 (2019 data)

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

## 7.1 Overview (2005 – 2018 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. In 2020, coal use was separated out to Industrial, Domestic, Rail, Public administration, Commercial and Agriculture Coal use and Bioenergy and Wastes was split into Industrial and Domestic Bioenergy and Wastes in the published tables.

Table 4: 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 Domestic Rail Public Administration Commercial Agriculture
Manufactured solid fuels	Industrial & Commercial Domestic
Bioenergy & Wastes	Industrial Domestic
<b>Note: residual fuels data are not weather corrected.</b>	

## 7.2 Methodology

Ricardo Energy & Environment compiles fuel consumption and emissions estimates for a large number of sources at 1x1km and Local Authority level on an annual basis. This work forms part of the NAEI and GHGI programme of work for Defra and BEIS. Estimates of the distribution of fuel consumption from sources other than gas, electricity and road transport are available from the mapping work currently undertaken within this contract. The methodology used to compile these maps is described in the NAEI's mapping methodology report<sup>30</sup>.

Source sector and fuel combinations mapped by this study are shown in Table 4 above. It is recognised, however, by BEIS and Ricardo Energy & Environment that it is not meaningful to allocate energy consumption locally or regionally for some activities. Therefore, fuel consumption from aviation, shipping and power stations are excluded from this study. In addition, for some fuel and sector combinations, no information is available for spatial mapping purposes. Where possible, fuels used for fuel transformation are excluded, (e.g., coal used in coke ovens and blast furnaces, and coal and oils used in power stations). However, actual end-use of fuels is not always obvious from the raw datasets available.

<sup>30</sup> UK Emission Mapping Methodology report: [https://naei.beis.gov.uk/reports/reports?report\\_id=973](https://naei.beis.gov.uk/reports/reports?report_id=973)



For a more detailed description as to how these data sources are used in Ricardo Energy & Environment’s modelling process, please see the UK sub-national residual fuel consumption methodology report for 2018:

<https://www.gov.uk/government/statistics/sub-national-residual-fuel-consumption-2005-to-2018>

## 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.

## 7.3 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)<sup>31</sup>. 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:

Table 5: 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.

<sup>31</sup> DUKES can be accessed on the BEIS website:  
<https://www.gov.uk/government/collections/digest-of-uk-energy-statistics-dukes>

Fuel Type	DUKES	Ricardo Energy & Environment
Fuel Oil	DUKES aggregate 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 UK32 is modelled and obtained from secondary analysis performed by BEIS on data from several sources, including DUKES. Additionally, ECUK provides a more comprehensive sectoral split than the sub-national statistics and gives information on end use for most fuels. However, this data is only available on a national level. For these reasons, sub-national consumption and ECUK statistics are not comparable.

## 7.4 Key methodological changes over time

Each year, the GHGI data, which underpin the fuel consumption estimates presented in this report, are updated and extended.

<sup>32</sup> ECUK can be accessed on the BEIS website: <https://www.gov.uk/government/collections/energy-consumption-in-the-uk>.

Updating entails revision of emission estimates, most commonly because of revision to the core energy statistics presented in DUKES but may also cover adoption of revised methodologies. Updates, particularly involving revised methodologies, may affect the whole time-series, so estimates of emissions for a given year may differ from estimates of emissions for the same year reported previously. Therefore, comparisons between submissions should take account of whether there have been changes to the following:

- The methodology used to estimate emissions; and/or
- The activity data.

The time series of the inventory is extended by including a new inventory year. For further details on the updates to the 2018 GHGI datasets see section 10 of the National Inventory Report (NIR) at [https://naei.beis.gov.uk/reports/reports?report\\_id=1000](https://naei.beis.gov.uk/reports/reports?report_id=1000) .

## 8 Total final energy consumption statistics

### **Sub-national total fuel consumption statistics (2018)**

**Dates covered:** Various.

**Sectors covered:** All (except aviation and national navigation)

**Years available:** 2005 to 2018

**Source:** Various

**Statistical releases:**

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

**Latest release:** September 2020 (2018 data)

**Next release:** September 2021 (2019 data)

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

### 8.1 Overview (2005 to 2018 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 2-7 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. The 2020 publication now includes Northern Ireland gas and electricity consumption data covering 2015 to 2018.

Table 6: Fuel types and consuming sectors included in residual fuels datasets

Fuel Type	Consuming Sector
Petroleum Products	Industrial Domestic Rail Public Administration Commercial Agriculture
Coal	Industrial Domestic Rail Public Administration Commercial Agriculture
Manufactured solid fuels	Industrial & Commercial Domestic
Bioenergy & Wastes	Industrial Domestic
Gas	Industrial & Commercial Domestic
Electric	Industrial & Commercial Domestic
<b>Note: residual fuels data are not weather corrected.</b>	

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, 1872 ktoe of derived gases were consumed by the industrial sector in 2018 and this represented 1.5 per cent of total final energy consumption in the UK).

Table 10: Fuels not included in sub-national total final energy consumption statistics in 2018<sup>33</sup>

Fuel	Consuming Sector	Quantity (ktoe)	Share of total final energy consumption
Derived gases	Industrial	1872	1.5%
Petroleum products	Air transport	13560	10.6%
Petroleum products	National navigation	911	0.7%
Heat sold	All sectors	1591	1.2%
Petroleum and natural gases	Non-energy use	8221	6.4%
Total	All	26154.7	20.5%

## 8.2 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).

### 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.

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).

<sup>33</sup> 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>.

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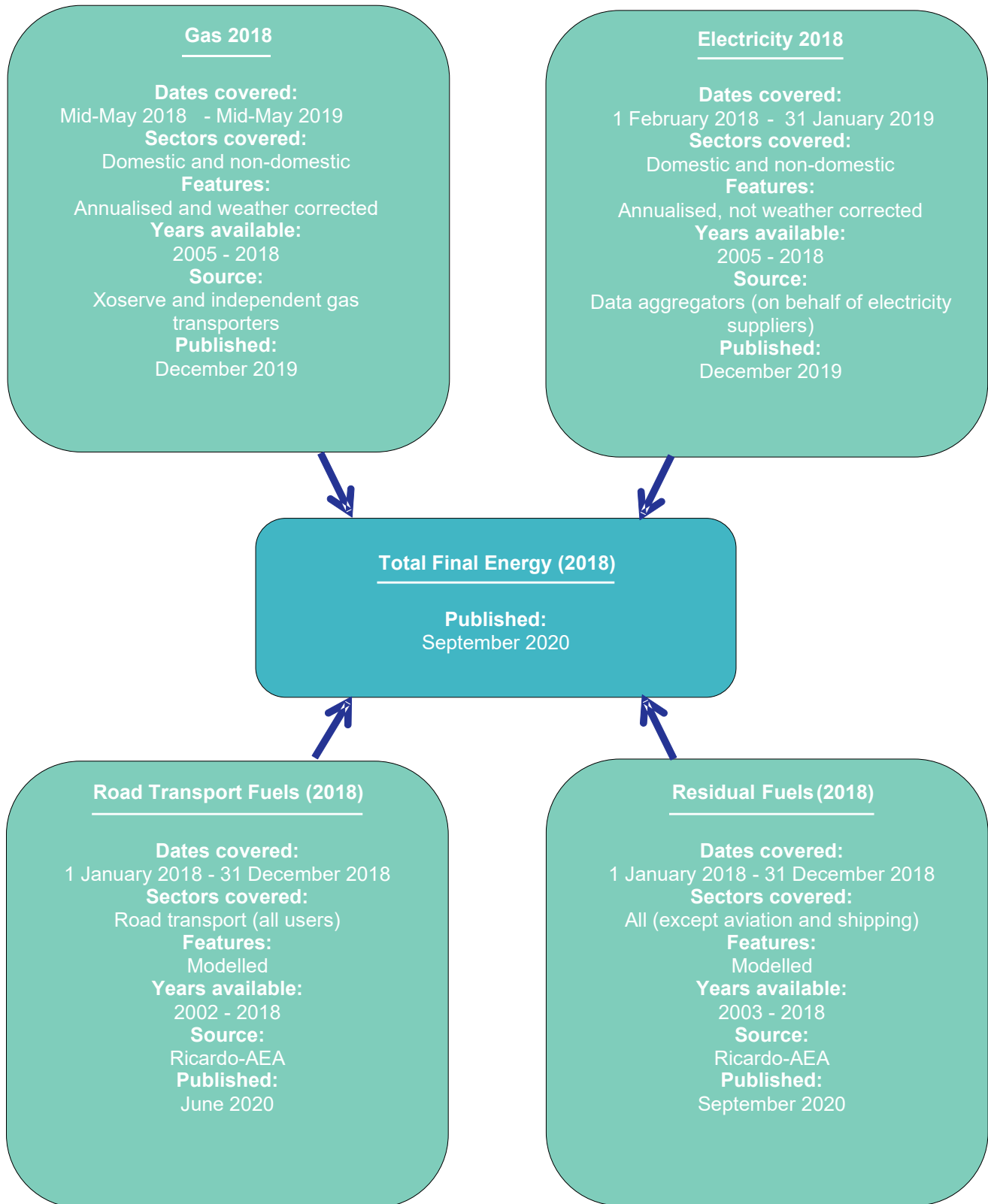
Residual fuels are also modelled by Ricardo-ENERGY & ENVIRONMENT using data produced for the NAEI and a range of other spatial data sources.

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.<sup>34</sup>

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<sup>34</sup> 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](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



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## 8.3 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 fuel's 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.

## 8.4 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 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.



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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.

## 8.5 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.<sup>35</sup>

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<sup>35</sup> 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 use MSOA or LSOA names to find consumption statistics. BEIS use ONS MSOA and LSOA code as a reference.

Westminster 018 will be used as an example to find domestic MSOA gas data in 2010-18.

Go to BEIS's 'MSOA gas estimates' data:

<https://www.gov.uk/government/statistics/lower-and-middle-super-output-areas-gas-consumption>

### Documents



#### [LSOA domestic gas 2010-2018](#)

MS Excel Spreadsheet, 25.21MB

This file may not be suitable for users of assistive technology.

▶ [Request an accessible format.](#)



#### [LSOA domestic gas: csv files](#)

ZIP, 8.14MB

This file may not be suitable for users of assistive technology.

▶ [Request an accessible format.](#)



#### [MSOA domestic gas 2010-2018](#)

MS Excel Spreadsheet, 4.66MB

This file may not be suitable for users of assistive technology.

▶ [Request an accessible format.](#)



#### [MSOA domestic gas: csv files](#)

ZIP, 1.75MB

This file may not be suitable for users of assistive technology.

▶ [Request an accessible format.](#)

Open the 'MSOA domestic gas 2010-2018 file.

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/868749/MSOA\\_domestic\\_gas\\_2010-18.xlsx](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/868749/MSOA_domestic_gas_2010-18.xlsx)

Select the 'MSOA Name' tab and search 'Westminster 018'.

	A	B	C	D	E
1			<b>Census data<sup>1</sup> (2011)</b>		
2	<b>MSOA Code</b>	<b>MSOA Name</b>	<b>Population (all usual residents)</b>	<b>Area (hectares)</b>	<b>Households (households with at least one usual resident)</b>
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). This is 'E02000977'.

Go to BEIS's 'MSOA gas estimates' data:

<https://www.gov.uk/government/statistics/lower-and-middle-super-output-areas-gas-consumption>

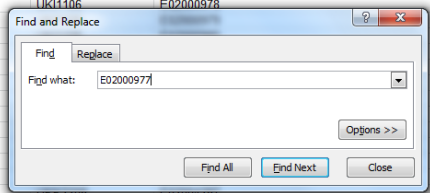
Open the 'MSOA domestic gas 2010-2018 file.

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/868749/MSOA\\_domestic\\_gas\\_2010-18.xlsx](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/868749/MSOA_domestic_gas_2010-18.xlsx)

	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	SO2000001	18,428,322	1,235	14,922
3	Aberdeen City	UKM5001	SO2000002	31,814,236	1,981	16,060
4	Aberdeen City	UKM5001	SO2000003	29,338,023	1,747	16,793
5	Aberdeen City	UKM5001	SO2000004	60,386,803	2,238	26,982
6	Aberdeen City	UKM5001	SO2000005	21,636,342	1,476	14,659
7	Aberdeen City	UKM5001	SO2000006	27,728,013	1,781	15,569
8	Aberdeen City	UKM5001	SO2000007	31,676,335	1,202	26,353
9	Aberdeen City	UKM5001	SO2000008	27,612,016	2,087	13,230
10	Aberdeen City	UKM5001	SO2000009	37,131,777	1,747	21,255
11	Aberdeen City	UKM5001	SO2000010	33,717,414	2,257	14,939
12	Aberdeen City	UKM5001	SO2000011	39,467,153	2,088	18,902
13	Aberdeen City	UKM5001	SO2000012	32,496,932	2,690	12,081
14	Aberdeen City	UKM5001	SO2000013	43,032,249	2,164	19,886
15	Aberdeen City	UKM5001	SO2000014	45,319,358	1,975	22,947
16	Aberdeen City	UKM5001	SO2000015	22,150,302	2,043	10,842
17	Aberdeen City	UKM5001	SO2000016	29,299,199	2,636	11,115
18	Aberdeen City	UKM5001	SO2000017	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).

## Annex B Frequently Asked Questions (FAQ)

This section provides answers to the most 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)<sup>36</sup>. 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 many 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 most 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 can 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 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/-nsp-/-index.html>.

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<sup>36</sup> ECUK can be accessed here:

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

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## 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 figure 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 2017, NHH consumption covered the period 31st January 2017 to 30th January 2018 (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/collections/vehicles-statistics>.

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For more information, please contact the Vehicle Licensing team at: [vehicles.stats@dft.gov.uk](mailto:vehicles.stats@dft.gov.uk).

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

Fuel Type <sup>37</sup>	Sub-National	DUKES	ECUK
<b>Gas</b>	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 mid-May to mid-May	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 meter-point level data.	Statistics are produced using a top-down approach.	Statistics are modelled and obtained after secondary analysis using several 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 include information on end use.
<b>Electricity</b>	Statistics are available on a sub-national level.	Statistics are available on a national level.	Statistics are available on a national level.
	Based on year Non-Half-Hourly meters (1st February - 31st January) and Half-Hourly meters calendar year.	Based on a calendar year.	Based on a calendar year.
	Cover Great Britain.	Cover the United Kingdom.	Cover the United Kingdom.
	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 include information on end use.
	Excludes consumption from CVA users.	Includes consumption from CVA users.	Includes consumption from CVA users.
	Statistics are aggregated up using meter-point level data.	Statistics are produced using a top-down approach.	Statistics are modelled and obtained after secondary analysis using several data sources (including DUKES).
<b>Road Transport</b>	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 several data sources (including DUKES).
<b>Residual Fuels</b>	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 approach.	Figures are based on information from UK energy suppliers.	Statistics are modelled and obtained after secondary analysis using several data sources (including DUKES).
	Heat generation is allocated to final users, so subnational consumption figures for 'industry' and 'other sectors are higher than those in DUKES.	Heat generation is listed as a separate category.	
	Coal used in auto generation is included in industrial consumption, as auto generators cannot be disaggregated.	Coal used in auto generation 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.		
<b>Total</b>	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 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 several data sources (including DUKES).

<sup>37</sup> 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 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>.

## 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/statistics/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/statistics/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/statistics/solid-fuels-and-derived-gases-section-2-energy->



[trends.](#)

<https://www.gov.uk/government/statistics/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/uk-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](mailto: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/statistics/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](mailto: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](mailto: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: [Energyprices.stats@beis.gov.uk](mailto:Energyprices.stats@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/collections/digest-of-uk-energy-statistics-dukes>.

- Any enquiries about these statistics should be directed to [energyefficiency.stats@beis.gov.uk](mailto:energyefficiency.stats@beis.gov.uk)

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This publication is available from: <https://www.gov.uk/government/publications/regional-energy-data-guidance-note>

If you need a version of this document in a more accessible format, please email [enquiries@beis.gov.uk](mailto:enquiries@beis.gov.uk). Please tell us what format you need. It will help us if you say what assistive technology you use.