Guidance note for the DECC MLSOA/IGZ electricity and gas consumption data

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DECC[1] middle layer super output area (MLSOA) and intermediate geography zone (IGZ) electricity and gas consumption analysis

Introduction

The aim in producing these new estimated electricity and gas consumption data below local authority (LA) level is to allow LAs and other interested bodies to more easily target specific areas as part of the implementation and monitoring of local energy strategies. This information has been produced following a DECC seminar in 2005 at which users of the sub national energy data confirmed that the most appropriate geographical level to produce more disaggregated energy consumption estimates would be at middle layer super output area (MLSOA) and intermediate geography zone (IGZ) level[2]. MLSOAs are part of a geographical hierarchy that was first introduced in the 2001 census and is expected to eventually become the standard across National Statistics and beyond. There are several advantages to using MLSOAs; they are relatively consistent in terms of population (minimum population of 5,000 equating to around 2,000 households), they are more static in terms of boundary changes and also geographical mapping software for SOAs is already available from the Office for National Statistics (ONS). Whilst DECC recognises some authorities would like data down to postcode level, data quality and disclosure issues prevent such disaggregation. Further information regarding SOAs and their constitution can be found through the ONS website: http://neighbourhood.statistics.gov.uk/dissemination/Info.do?page=aboutneighbourhood/geography/superoutputareas/soalookupfiles/soa-constitutions.htm

Beginning in late 2005, DECC ran a pilot scheme with just electricity data for 2004 involving 6 LAs - Crawley Borough Council, Bristol City Council, Redcar and Cleveland Borough Council, Guildford Borough Council, High Peak District Council and Kirklees Metropolitan Council. This was aimed at evaluating both the practicality of producing data at MLSOA level and investigating the robustness of the consumption estimates at this level. The results suggested such data would be useful and that the robustness of the data for the domestic sector was sufficient to allow a national roll out (though a fuller evaluation of the reliability of the industrial/commercial data was not undertaken as the data is far more complex to analyse). The MLSOA electricity estimates for the domestic sector were validated using a combination of feedback from the local authorities themselves and the direct comparison of consumption patterns across each authority using socio-economic variables taken from the 2001 census. The variables taken from the census included the levels of economic activity, the size and type of the housing stock and average household size, which were used as proxy measures of the level of economic prosperity in the MLSOAs. A map of MLSOAs in Crawley is provided at end of this summary to show how they relate to actual geographical areas within the boundary of a local authority.

As part of ongoing work by DECC to improve the usefulness of this data to LAs and other interested bodies, DECC have produced gas and electricity consumption data down to MLSOA for 2005, 2006 and 2007 as well as electricity consumption data for 2004.

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[1] The Department of Energy and Climate Change (DECC) was created on 3rd October 2008 and formed by Energy group from the Department for Business, Enterprise and Regulatory Reform (BERR) and Climate Change group from the Department of Environment, Food and Rural Affairs. Antecedently, work on energy policy was taken on by the newly formed BERR when the Department for Trade and Industry (DTI) was disbanded in June 2007. Throughout this document DECC has been used to refer to both DECC and its former bodies, BERR and DTI.

[2] MLSOAs only cover England and Wales, IGZs are the equivalent areas in Scotland. MLSOAs are often just referred to as SOA.

Datasheets

A workbook has been produced for Wales, Scotland[3] and each of the nine Government Office Regions in England. Within each workbook are worksheets giving details of electricity and gas consumption (or just electricity consumption for 2004) down to MLSOA level for each LA in that region. The layout of the spreadsheets differ slightly from year to year so the different layouts are discussed separately below.

2004 data

The 2004 datasheets show electricity consumption data in 2004 for England and Wales. The first 7 rows of each worksheet contain information on the LA regarding total consumption, number of meters and average consumption levels for domestic and non-domestic users; these are taken from figures published in the December 2005 edition of Energy Trends. All consumption is given in kWh for the entire year. Also included is a figure for industrial half hourly meter consumption (relating to larger business consumers) within the LA; this data cannot be disaggregated to MLSOA as doing so would break the UK Statistics Authority's Code of Practice for official statistics relating to data disclosure (since in many MLSOAs there are less than 20 consumers on such a tariff). Next to this data is a figure for the percentage of the total domestic consumption within the LA that DECC were able to allocate to a specific MLSOA[4].

Rows 11 to 17 provide information at LA level aggregated from the MLSOA data below. Information is provided regarding total consumption, total meters and average consumption for the following headings:

- Unmatched but allocated to LA: This relates to consumption that could be allocated to the specified LA but not any further. Postcode information for some meters provided by Gemserv, the company responsible for holding the postcode address file of meters on behalf of the electricity distributors, were either invalid or incomplete[5] meaning allocation to a specific MLSOA was not possible.
- Domestic matched but transferred to commercial: This relates to consumers, identified as domestic users, but consuming more than 50,000kWh annually who were judged to have a greater probability of being small commercial/industrial consumers. The super output area analysis does not include this reallocation process, which is only shown at LA level.
- Allocated to LA not to SOA: This relates to consumption that has been allocated to the specified local authority but where additional geographical information below LA level indicates that the consumption could actually be taking place outside the LA boundary, or where the additional geographical information is not available.
- Total unallocated: This is simply the aggregate value of the consumption relating to the three bullet points above.
- SOA allocated: This is all electricity consumption that could be correctly allocated, i.e. both matched to a postcode on the AFPD and also to a specific MLSOA in the correct LA.

Row 22 and below shows the full breakdown of consumption data for each MLSOA identified by LA code followed by an individual MLSOA code, e.g. UKI2301, E02000024 for Barnet 001. Data is shown by total consumption (kWh), number of customers (meters) and average consumption per meter for domestic standard, domestic economy 7 and NHH (non-half-hourly) commercial meters. Next to this in grey is shown additional socio-economic 2001 census data regarding population, area sizes (hectares) and the number of households in each MLSOA. Further socio-economic data at MLSOA level is also available from the Office for National Statistics 'Neighbourhood Statistics' website using the following link:

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[3] Issues concerning the 2004 Scottish electricity data which are discussed further on in this document mean data for Scotland is only from 2005.

[4] Issues concerning inability to allocate to a MLSOA are discussed further on in this document.

[5] For example only partial postcodes, street names, towns or cities were provided.

http://neighbourhood.statistics.gov.uk/dissemination/

All data, which can be allocated to a MLSOA within the selected LA forms part of the total shown in row 17. For each local authority there is also a small level of additional electricity consumption that could not be allocated to a MLSOA within the relevant local authority area. This includes consumption that was allocated to a MLSOA outside the correct local authority because of inconsistencies in the geographical mapping data or where no full and valid postcode was available to enable allocation of consumption below local authority level. There was also some manual reallocation of larger domestic consumers to the industrial/commercial sector at local authority level, which could not be further disaggregated to MLSOA. All of this consumption forms part of the total given in row 15. The explanation for this is mentioned above under "Allocated to LA not to SOA".

The number of meters shown in the SOA analysis is slightly different to figures published in Energy Trends due to a small number of de-energised meters (meters with no recorded consumption in 2004) being excluded from the SOA breakdown.

2005 to 2007 data

The datasheets for 2005, 2006 and 2007 show electricity and gas consumption data for England, Wales and Scotland. Improvements in data quality mean that a lot of the reconciliation undertaken for the 2004 data is no longer necessary in the subsequent datasets. The first 8 rows contain information on the LA regarding total consumption, number of meters and average consumption levels for domestic and non-domestic users. For the 2005 dataset these figures are taken from the June 2007 edition of Energy Trends, in the 2006 and 2007 datasets the figures are published in the December 2007 and December 2008 editions respectively. All consumption is given in kWh for the entire year. Also included is a figure for industrial half hourly meter electricity consumption (relating to larger business consumers) within the LA; this data cannot be disaggregated to MLSOA as doing so would break the UK Statistics Authority's Code of Practice for official statistics relating to data disclosure.

In 2005, 2006 and 2007, the LA and MLSOA datasets were taken from the same base consumption data and aggregated upwards to the relevant level of detail. This means that unlike in 2004, the total LA figures published in Energy Trends should match those given in the MLSOA breakdowns. As such, the reconciliation in rows 11 to 17 of the 2004 dataset is no longer necessary. Instead from row 13 downwards comes the full breakdown of consumption for each MLSOA, identified by LA code followed by an individual MLSOA code, e.g. UKJ2041, EO2006534 for Adur 001. Data is shown by consumption in kWh (split by ordinary electricity, economy7 electricity, industrial/commercial electricity, domestic gas and industrial/commercial gas), number of meters and average consumption per meter. Following this are some combined figures calculated from the prior data and an indicator showing the percentage of domestic gas meters to domestic electricity meters. In cases where consumption and number of meters are suppressed due to disclosure issues, they are not represented in the combined figures and the percentage of domestic gas to domestic electricity meters will appear blank. Finally in grey is shown additional socio-economic 2001 census data (unless otherwise specified) regarding population, area sizes (hectares) and the number of households in each MLSOA. Further socio-economic data at MLSOA level is also available from the Office for National Statistics 'Neighbourhood Statistics' website using the following link:
http://neighbourhood.statistics.gov.uk/dissemination/
Below this MLSOA data there are totals of each column and an indicator of the percentage of each column that is unallocated. This unallocated data is consumption which could be allocated to the LA but not further down to a specific MLSOA. This is similar to the data labelled "Unmatched but allocated to LA" in the 2004 data (see above).

Issues with the data

In 2004 data is only available for England and Wales. It was not possible to produce electricity consumption data for IGZs due to technical difficulties in allocating electricity

consumption into the appropriate intermediate geography zones. These difficulties have been overcome however for the datasets from 2005 onwards.

Whereas for most LAs the percentage of total domestic consumption allocated to a specific MLSOA was very good (over 97.5% in the majority of cases), there were some notable exceptions where in the 2004 data set this figure fell as low as 40%. This was due to a lack of complete postcode information for some electricity meters, notably in the North West of England where a large proportion of the consumption was not reliably allocated to a MLSOA. Data quality has improved in 2005, 2006 and 2007; in the 2007 dataset there were just 6 local authority areas where less than 95% of electric meters could be allocated to a MLSOA, with 2 local areas where a similar proportion of gas meters could be allocated.

In a number of cases, there are substantial differences between the number of MPANs and number of households. Whereas the data for the number of MPANs is consistent with the published electricity and gas consumption data, the household data comes from the 2001 census (with the exception of the Scottish data). As such, changes in the housing stock between these periods causes inconsistencies in the data.

For the gas data, DECC do not receive identification as to whether a meter was domestic or commercial/industrial. As such, DECC used the gas industry standard cut-off of 73,200kWh whereby any gas meters with consumption greater than or equal to 73,200kWh/y were classified as commercial/industrial, whereas those with less were classified as domestic.

Further information
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Map of MLSOAs in Crawley