"*Beyond average consumption*"

Development of a framework for assessing impacts of policy proposals on different consumer groups

Final report to Ofgem

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1 Introduction

Ofgem is seeking to develop a more sophisticated approach to assessing the impact of Government policy proposals on domestic gas and electricity consumers, and particularly on their fuel bills. At present Ofgem uses average (median) consumption levels for its quantitative analysis of these impacts. However, it recognises that the bill impacts are likely to distribute unevenly across the domestic population due to differences between consumers. These differences may relate to a number of household and housing characteristics, such as: tenure; income; age (and including various aspects of vulnerability); fuel types; energy consumption levels and usage patterns; payment method; and level of engagement with the energy market.

To further understanding of these differences between consumers it is possible to use advanced statistical techniques to segment the population of domestic gas and electricity consumers into a number of different groups. This offers two significant improvements to Ofgem's current approach for assessing the impact of policies. Firstly, the average consumption levels of these different groups can be used to underpin Ofgem's quantitative analysis of the impact of their policy proposals on consumer bills (rather than the broad-brush 'average' consumption levels currently used). Secondly, some or all of these groups can be characterised as 'archetypes', providing simple 'pen portrait' descriptions of the types of consumer they represent. Depending on the nature of the archetypes, this potentially enables: (a) a more user-friendly and comprehensive communication of the impacts of policy proposals; and (b) a particular focus on more vulnerable consumer groups.

Ofgem therefore commissioned the Centre for Sustainable Energy (CSE) to develop an 'archetypes' tool to improve its understanding of domestic gas and electricity consumption and the characteristics that drive variation in household usage. The analysis utilises a dataset and modelling tool developed by CSE, as described below.

1.1 The dataset and 'DIMPSA'

The Centre for Sustainable Energy (CSE) has developed an analytical model - DIMPSA ('Distributional Impacts Model for Policy Scenario Analysis') – which is now used under license by DECC for the Government's own assessments of the distributional impacts of policies. DIMPSA enables the assessment of the impact of both the costs and the benefits of policies for domestic energy consumers. Underlying this model is a comprehensive dataset based on the socio-demographically representative sample of UK households surveyed in the ONS Living Costs and Food Survey (LCF). Data from six LCF surveys have been combined (financial years 2004/5, 2005/6, and calendar years 2006, 2007, 2008 and 2009), generating a sample size of over 36,000 cases. CSE has derived household energy consumption values based on survey reported expenditure on fuel bills and known local fuel costs (by payment method) at the time of the survey.

Due to the nature of the LCF survey, the distribution of expenditure - and therefore the derived energy consumption values – cannot be considered accurate. Values at the individual case (household) level in the dataset cannot be used; but mean estimates derived from sufficiently large samples of cases in the dataset can be. Further modelling has therefore been undertaken by CSE on this dataset, to assign valid estimations of consumption of heat and power to every case (using CHAID – see below). This modelling results in a compressed distribution, but gives a reliable estimate

of baseline energy consumption for every household in the dataset, whilst maintaining the original mean value for the dataset as a whole.

Using consumer survey data made available by Ofgem for a previous project[1], CSE has also developed a broad indicator for level of engagement with the energy markets (i.e. 'stickiness') for each case (household) in the dataset, based on relevant consumer characteristics captured in the surveys.

The resulting DIMPSA dataset, which has been used for the analysis in this study, therefore includes:

- Extensive socio-demographic data (as collected by the ONS LCF survey), including household income, household composition (number of adults and children and householder age), employment status, tenure, property type and size (number of bedrooms), settlement type (urban/rural) and UK region, and welfare benefits received.
- Modelled annual household energy consumption (relating to all household fuels), derived from actual stated expenditure on household fuels, and fuel payment method.

1.2 Aims and objectives

The overall aim of this study is to aid the development of a new approach which can be used by Ofgem in assessing the impact of its own and Government policy proposals on different groups of domestic gas and electricity consumers.

The specific objectives are to:

1. Develop a number of 'archetypes' which capture key different groups of domestic energy consumers.
2. Estimate the number of consumers in each archetype.
3. Assign typical annual electricity and (where relevant) gas consumption values to each archetype.

The number of archetypes needs to be kept to a minimum in order to be 'user-friendly' enough to work as a policy tool. They should also identify groups of priority policy concern, such as vulnerable consumers.

1.3 Data health warning

As described above, the analytical model used in this study (DIMPSA) is based on ONS Living Costs and Food survey data on household energy expenditure. The survey expenditure data is converted to fuel consumption (annual kWh) using fuel price look-ups (by survey year, region and method of payment). This figure is then used to produce a modelled total for annual household heat and power consumption. Whilst we have not sought to reconcile these modelled UK totals for fuel consumption with those published in the Digest of UK Energy Statistics (DUKES), the modelled values for total demand have been compared with these, and with mean values from DECC's National Energy Efficiency Data frameworks (NEED) database. DIMPSA modelled values are within +/- 5% of NEED with a maximum range of -9% and +6% by income band.

[1] Consumer Engagement Survey, 2008. Ipsos Mori/ Ofgem.

2 Methodology

Using a subset of the DIMPSA dataset described above (to represent the coverage of Ofgem's regulatory responsibilities, i.e. Great Britain, as opposed to the whole of the UK), the following steps were applied to achieve the project objectives:

1. Undertake high level analysis of the dataset to show mean and median electricity and gas consumption levels for different socio-demographic descriptors (such as income bands, household types, tenure etc), differentiating the population by main household heating fuels (i.e. separating gas and electrically heated properties).
2. Undertake CHAID[2] analysis of the dataset to identify key defining variables ('predictors') with respect to household gas and electricity consumption levels.
3. Quantify the segments identified by the CHAID analysis and draw up 'pen portraits' based on available socio-demographic and energy consumption data to produce an initial draft of potential archetypes.
4. Hold a workshop session with Ofgem staff to explore the results of the CHAID analysis, test the value of emerging archetypes, consider other possible approaches (in terms of changing the dependent variables driving the CHAID and/or key predictor variables of interest), and finalise the archetype list.
5. Undertake a final CHAID analysis based on the outcome the of the workshop session, as appropriate, and produce draft final archetype pen-portraits and all relevant descriptive data (including number of households in each group, average household gas and electricity consumption of each group, and other defining characteristics).
6. Present the findings in a report describing the methodology and descriptions of the proposed archetypes, with full details provided in an accompanying spreadsheet.

This approach was developed preferentially to selecting archetypes independently, or in advance of an understanding of the size and typical energy usage of different segments of the domestic consumer population. This is because energy usage can be used as the 'dependent' variable driving the consumer segmentation analysis. Energy usage is therefore a key dimension of the difference observed between the segments (and similarities within them) underpinning the archetypes.

The CHAID analysis thus has the advantage of:

a) Revealing directly the statistical extent of the differences between different consumer characteristics with respect to energy consumption levels;
b) Providing a basis for an iterative process with Ofgem in making informed choices of meaningful archetypes for analysis and communication purposes;
c) Ensuring the archetypes represent groups of households with much in common as consumers of electricity and/or gas (and are hence fundamentally 'energy consumer archetypes').

[2] CHAID ('Chi-square Automatic Interaction Detection') is a popular analytic technique for performing classification or segmentation analysis. It is an exploratory data analysis method used to study the relationship between a dependent variable and a set of predictor variables. CHAID modelling selects a set of predictors and their interactions that optimally predict the variability in the dependent measure. The resulting CHAID model is a classification tree that shows how major 'types' formed from the independent variables differentially predict a criterion or dependent variable. CHAID analysis has the advantage that it enables more detailed scrutiny of the socio-demographics of households in each category, whilst maintaining a sufficient number of cases to give reliable estimates of scalar values.

3 Results

The analysis presented in this report is designed to be read in conjunction with the detailed spreadsheet of results provided to Ofgem as part of this study. All output tables have been provided in spreadsheet format to facilitate Ofgem's own analysis and scrutiny of policy impacts. The tabs in the spreadsheet are referenced in the relevant results sections presented here. Some high level and summaries of the CHAID models and archetypes are presented in this report. More detailed description of all the nodes (groups) resulting from the CHAID analysis are included in the annexes, with the full suite of results in the accompanying spreadsheet.

As outlined in the methodology, this study adopted an iterative approach, with three key stages to the analysis:

1. (i) Summary, descriptive statistics of energy consumption levels across the population as a whole and (ii) high level analysis of energy consumption levels by key socio-demographic variables: *How does household energy consumption vary by income, heating fuel, household type, etc?*
2. Detailed CHAID analysis (iteration 1) to explore and identify the key defining characteristics in relation to household electricity and gas consumption: *What are the most important socio-demographic predictors of energy consumption in the home?*
3. Refining the CHAID analysis (iteration 2) to develop a smaller number of key archetypal groups.

The headline results to each stage of analysis are presented in its own section.

3.1 Average annual household energy consumption

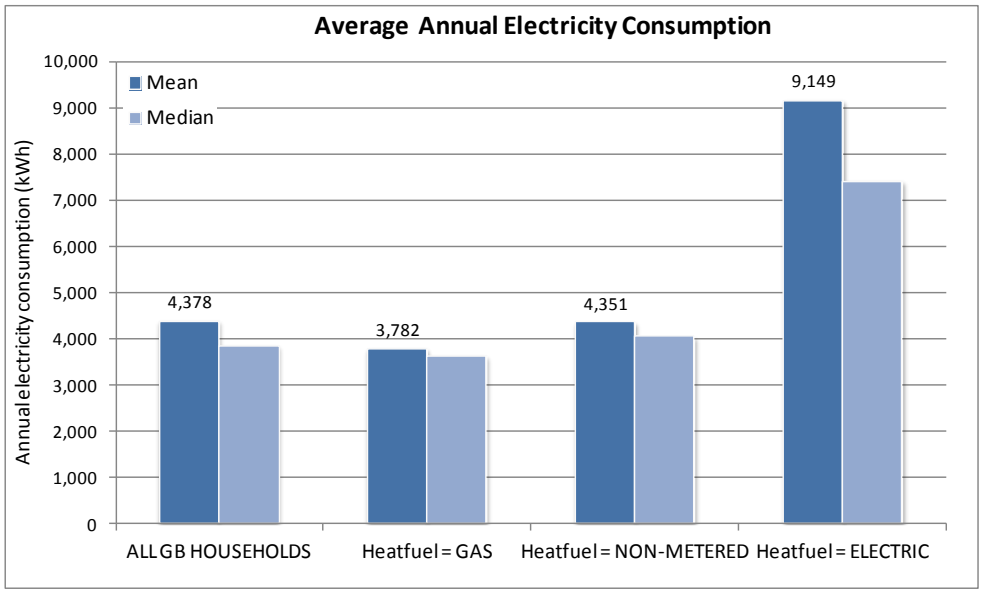
The first tab in the accompanying spreadsheet ("*DIMPSA kWh Values*") shows the mean and median annual energy consumption for all households in Great Britain and broken down by heating fuel[3]. The latter is an important distinction in reviewing electricity consumption values, which are significantly higher in the electrically-heated subset of the population, as shown below.

Table 3.1. Average annual energy consumption in GB households, overall and by heating fuel

Population	Fuel	Count of HHs	Mean	Median
All GB Households	Electricity	24,531,255	4,378	3,840
Gas Heated HHs only	Electricity	20,343,789	3,782	3,624
	Gas	20,343,789	17,100	16,889
	Total Gas + Electricity	20,343,789	20,882	20,400
Electrically Heated HHs only	Power	2,554,154	1,633	1,454
	Heat	2,554,154	7,516	5,896
	Total Electricity	2,554,154	9,149	7,406
Non-Metered Fuel Heated HHs only	Electricity	1,633,311	4,351	4,041
	Heat (non-metered fuels)	1,633,311	20,862	18,901
	Total	1,633,311	25,214	23,222

[3] All figures shown are derived from CSE's 2007-2009 DIMPSA dataset.

Figure 3.1. Average annual electricity consumption in GB households, overall and by heating fuel



3.2 Consumption by socio-demographics

This tab in the accompanying spreadsheet ("*Mean & Med by SocioDems*") provides a vast amount of data on the mean and median annual consumption of electricity and gas in the home by different socio-demographic variables. Figures are shown according to the population breakdown described in Table 3.1 above (i.e. for all GB households; gas-heated households only; electrically-heated households only; and households heated by non-metered fuels). For information the mean and median disposable and equivalised disposable income for each sub-category is also shown.

Disaggregating the dataset in this way results in small sizes for some variable categories. Any sample of less than 200 cases (unweighted count) should not be used. These are highlighted in red in the spreadsheet.

The table and graphs shown below are derived from the data in the accompanying spreadsheet. The figures are presented for illustrative purposes to show some of the information contained therein, and the types of analysis Ofgem may wish to conduct themselves. For example, it shows how average (mean and median) electricity and gas consumption varies by heating fuel, income and household composition. These consumption values could be used in Ofgem's modelling of the impacts of policies.

Table 3.2. Average annual electricity consumption and disposable income by income quintile in all GB households

Disposable income quintile	ALL HOUSEHOLDS (GB)				
		Elec. kWh		Average HH Disposable Income	
	Count	Mean	Median	Mean	Median
1	4,900,338	3,478	2,705	£7,087	£7,377
2	4,901,620	3,903	3,245	£14,303	£14,233
3	4,896,187	4,308	3,839	£22,392	£22,320
4	4,904,616	4,694	4,405	£32,846	£32,509
5	4,928,495	5,502	5,000	£62,325	£52,378

Table 3.3. Average annual electricity and gas consumption by income quintile in gas-heated households

Disposable income quintile	GAS-HEATED HOUSEHOLDS ONY				
		Elec. kWh		Gas kWh	
	Count	Mean	Median	Mean	Median
1	3,758,690	2,588	2,455	12,695	12,220
2	3,953,331	3,157	3,070	14,990	14,875
3	4,105,168	3,700	3,651	16,780	16,765
4	4,228,850	4,234	4,280	18,635	18,212
5	4,297,750	5,033	4,928	21,689	20,154

Table 3.4. Average annual electricity consumption by income quintile in electrically-heated households

Disposable income quintile	ELEC-HEATED HOUSEHOLDS ONLY		
		Elec. kWh	
	Count	Mean	Median
1	877,841	7,458	7,038
2	658,482	8,540	7,385
3	479,461	9,651	7,789
4	325,985	10,691	8,260
5	212,386	14,521	10,640

Table 3.5. Average annual electricity consumption by income quintile in non-metered fuel-heated households

Disposable income quintile	NON-METERED FUELS HOUSEHOLDS ONLY		
		Elec. kWh	
	Count	Mean	Median
1	263,807	2,917	2,705
2	289,807	3,553	3,406
3	311,558	4,087	3,921
4	349,781	4,666	4,574
5	418,359	5,742	5,748

Figure 3.2. Average annual electricity and gas consumption by income decile and heating fuel

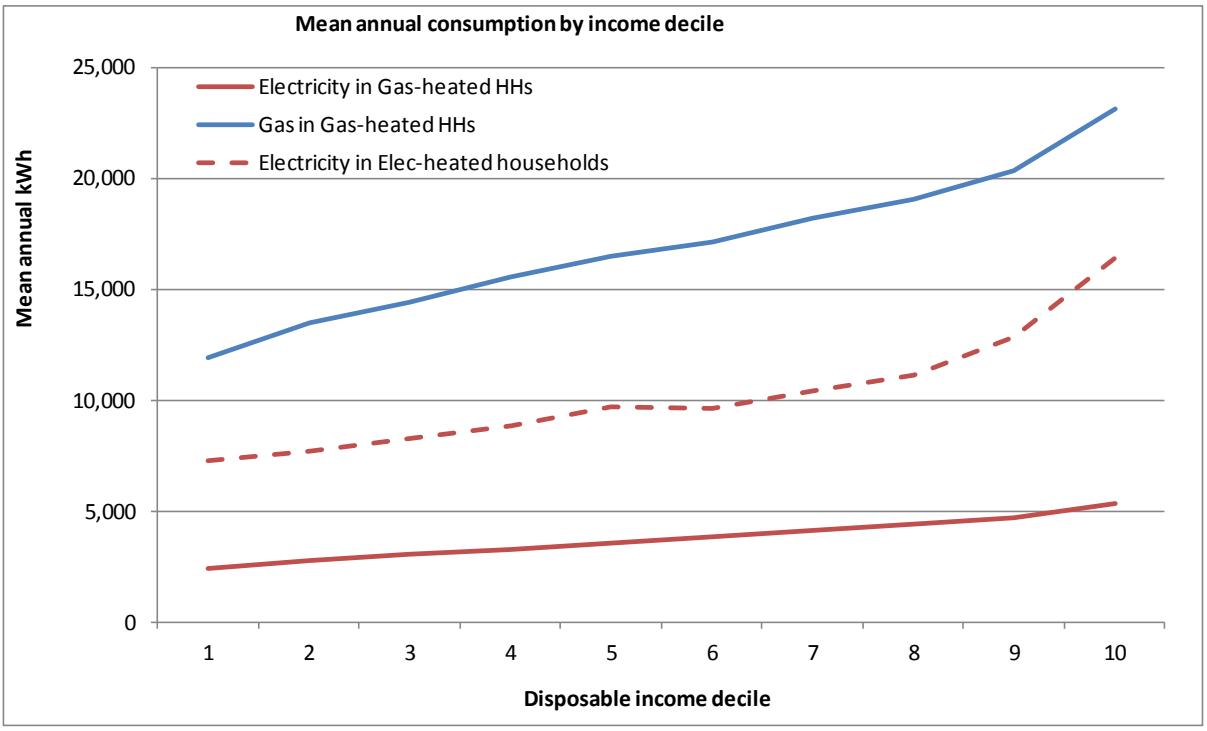
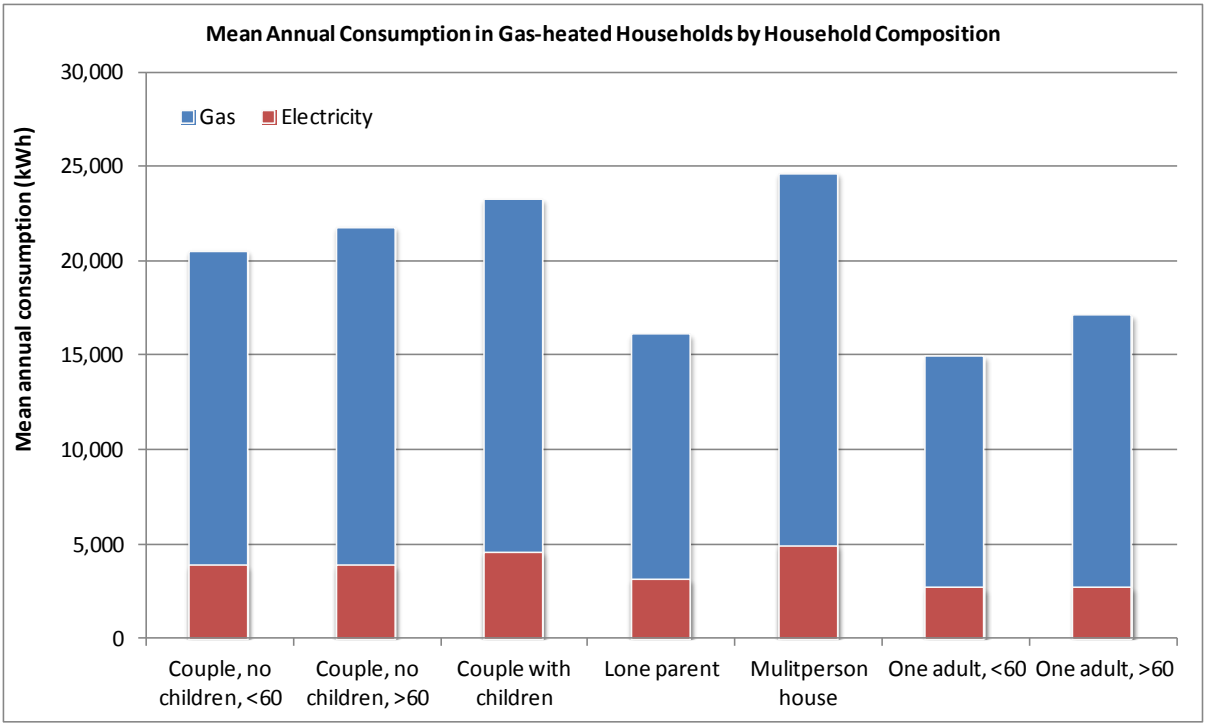


Figure 3.3. Average annual electricity and gas consumption by household composition (households with mains gas central heating only)



3.3 Characterising consumer groups: CHAID analysis (iteration 1)

The results and analysis of energy consumption by different socio-demographic variables (as presented in brief in section 0 and in detail in the spreadsheet that accompanies this report), provide some indication of the distribution of energy consumption by different household characteristics. As set out in section 2 of this report, the process of Chi-squared Automatic Interaction Detector (CHAID) can be used to further explore and identify key characteristics associated with different energy consumption levels.

CHAID analysis has the advantage that it enables more detailed scrutiny of energy consumption by different household socio-demographics, whilst maintaining a sufficient number of cases (set at 200 cases in the unweighted dataset) to give reliable estimates of scalar values of interest- in this case household electricity and gas consumption.

To help further understanding of which variables are most closely associated with (or predictive of) household energy consumption levels, two different CHAID models were run, on two different subsets of the population: (1) electricity consumption in non-gas heated households; and (2) gas consumption in gas-heated households. The models and resulting nodes (clusters of households) are described in some detail below. Full descriptions of the key nodes of interest are included in the annex of this report and all data is provided in the accompanying spreadsheet.

3.3.1 Electricity consumption in non-gas heated households

This CHAID model was run on the subset of the dataset containing all non-gas heated properties (i.e. electrically heated and non-metered fuels (including oil, coal, LPG and biomass; ~4.2m households). Predictor variables used in the model (i.e. variables which the model identified as having a statistically significant difference with respect to the dependent variable – in this case annual electricity consumption) are shown below.

Box 1. Variables selected as predictors in the CHAID model of electricity consumption in non-gas heated households

- Household composition
- Tenure
- Age of HRP[4]
- Heating fuel
- Category of Dwelling

Within the parameters of the model criteria (e.g. adhering to the minimum group size rule), the CHAID model resulted in 14 distinct groups, with between around 200,000 and 450,000 households in each, as shown below. Cross-tabulating the nodes created in the CHAID analysis with socio-demographic variables in the LCF survey dataset helps to identify the key defining characteristics of each group. Full details of the nodes are shown in the accompanying spreadsheet provided to Ofgem (tab: '*Elec CHAID'*), which includes a count of households in each node, the estimated annual electricity consumption of the node, and counts and percentages of households in each node by different socio-demographic variables (income, tenure etc). For reference, and to facilitate identification of the key defining characteristics (i.e. how does each node differ from the population as a whole) the same information is shown for: all non-gas heated households; all electricity-only

[4] HRP stands for Household Reference Person and is defined as the householder with the highest income (or the oldest of two or more householders with the same income).

households; all non-metered fuel households only; and all GB households. Written descriptions of the groups are shown in the tables in Annex I of this report.

Table 3.6. Nodes resulting from the CHAID model of electricity consumption in non-gas heated households

Node ID	Predicted value (Mean annual elec. kWh)	Count	Table N %
6	3,097	372,300	9%
13	7,081	298,730	7%
14	5,766	333,929	8%
15	11,277	229,666	5%
16	9,292	394,921	9%
17	4,896	213,212	5%
18	3,999	266,811	6%
19	7,124	320,288	8%
20	5,418	457,465	11%
21	5,882	286,074	7%
22	7,727	202,081	5%
24	5,572	288,040	7%
25	3,837	239,300	6%
26	4,704	284,651	7%

3.3.2 Gas consumption in gas-heated heated households

CHAID was run on the subset of the LCF survey dataset containing all mains gas heated properties (~20.3m households). The dependent variable in the model was annual gas consumption, such that the resulting nodes (or groups of households) would be defined according to the relationship between socio-demographic descriptors and annual household gas consumption. An estimate of annual electricity consumption is then assigned to each group using the dataset (DIMPSA) values.

Predictor variables used in the model (i.e. variables which the model identified as having a statistically significant difference with respect to the dependent variable – in this case annual gas consumption) are shown below.

Box 2. Variables selected as predictors in the CHAID model of gas consumption in mains gas heated households

- Tenure
- Category of dwelling
- Income quintiles
- Economic position of HRP
- Household composition
- Government Office Region
- Age of HRP

This resulted in 35 distinct groups, with between around 400,000 and 1.1m households in each, as shown in Table 3.7 below. As with the CHAID on non-mains gas heated households, the nodes created for mains gas heated properties have been cross-tabulated with socio-demographic variables and the resulting tables included in the accompanying spreadsheet (tab: '*Gas CHAID*') to provide full details of the characteristics of each group. The spreadsheet includes a count of households in each group, the estimated annual gas consumption (assigned by CHAID) and electricity consumption (derived from the underlying DIMPSA data), and counts and percentages of

households in each node by different socio-demographic variables (income, tenure etc). For reference, and to facilitate identification of key defining characteristics (how each node differs from the model population as a whole) the same information is shown for all GB gas-heated households.

Written descriptions of the nodes at either end of the consumption distribution (i.e. those identified as the highest and lowest gas consumers by CHAID) are described in Annex II of this report. This includes 19 nodes in total, representing just over half of all gas heated households. This approach was taken on the understanding that those in the middle consumption bracket could appropriately be considered 'average' consumers in the context of analysing policy impacts on bills.

Table 3.7. Nodes resulting from the CHAID model of gas consumption in mains gas heated households

Node ID	Predicted value (Mean annual gas. kWh)	Count	Table N %	Estimated elec. kWh
22	7,708	508,741	3%	1,884
21	8,598	508,635	3%	2,026
15	9,925	548,729	3%	2,276
19	10,330	413,437	2%	2,753
37	12,473	666,328	3%	2,714
31	12,741	603,113	3%	3,041
16	12,813	672,184	3%	2,635
20	12,973	569,867	3%	2,805
39	13,500	527,898	3%	2,722
45	13,950	656,776	3%	3,053
38	14,115	526,603	3%	2,910
53	14,349	499,907	2%	2,866
33	14,672	742,453	4%	3,356
46	15,003	455,019	2%	3,573
54	15,668	474,093	2%	2,758
59	15,763	545,177	3%	3,403
18	15,815	814,113	4%	4,004
66	16,511	535,675	3%	3,841
58	16,989	772,362	4%	3,633
41	17,204	405,404	2%	3,461
62	17,333	810,617	4%	4,059
65	17,525	565,421	3%	3,795
68	17,695	417,657	2%	4,550
63	18,619	427,049	2%	3,892
67	19,633	544,649	3%	4,526
56	20,025	463,404	2%	4,092
42	20,050	451,595	2%	3,619
50	20,229	600,505	3%	4,773
64	20,380	475,989	2%	4,079
51	20,518	749,248	4%	5,291
55	20,863	445,544	2%	4,710
43	22,888	728,194	4%	4,672
52	23,218	688,931	3%	5,401
29	24,236	1,111,457	5%	5,562
30	27,770	417,018	2%	5,728

3.4 Distinct consumer groups of concern

Detailed descriptions of all the groups of electricity and gas consumers identified in the CHAID analysis (iteration 1) are presented in Annex I and II of this report respectively. This section provides some further discussion of the key characteristics of these small, socio-demographically discreet groups of households (as opposed to the broader 'archetypes' described in the next section) in the context of Ofgem's remit with respect to protecting the interests of existing and future consumers, with particular regard to the interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.

The following groups identified in the detailed CHAID analysis may therefore be of particular interest to Ofgem, as they may represent more vulnerable households:

Non- gas heated households:

- *Node 22 Low-income but asset-rich single elderly in electrically-heated houses in less urban areas*
  This description bears resemblance to the 'Classic Fuel Poor'[5] - typically fuel poor older people; a status that may be acerbated and difficult to alleviate due to under-occupying and high electricity consumption.

- *Node 13 Less-urban, small, purpose-built electrically-heated flats occupied by older couples, or young families*
  'The Ineligible Fuel Poor' – though not notably low income, and therefore not qualifying for support, this group is particularly vulnerable to policy costs passed through on to electricity, and, being in less-urban areas and with children, tick key boxes within Ofgem's remit. Note that this group is less likely to be classed as fuel poor under the new proposed definition, due to small property size.

- *Node 24 Low income single adults in electrically-heated terraced houses in less urban areas*
  This group may or may not be classed as fuel poor (under the new definition, though it depends on the median threshold[6]) but again, being in more rural areas, and dependent on electricity for heating are vulnerable to policy costs passed on to electricity consumers.

Gas heated households:

- *Node 64 Older couples nearing or already retired, without children, in owner-occupied semi-detached houses.*
- *Node 42 Lower income but asset-rich elderly in detached houses in less urban areas*
  These groups are likely to be a mix of fuel poor and non-fuel poor households, on both the old and new definition. It is likely that these households will meet the new proposed fuel poverty median fuel costs thresholds if the homes are solid walled.

[5] Based on the original definition of fuel poor.

[6] The proposed Hills Review definition of fuel poverty uses a combination of median fuel costs and income poverty (i.e. income less than 60% of the median after housing costs income). The use of the fuel cost threshold makes it difficult to assess the susceptibility of the archetypes described in this study to fuel poverty, as their required fuel expenditure is unknown. However, low income households living in smaller properties may fall below the median fuel cost threshold, despite the use of more expensive fuels (e.g. electricity).

The descriptions above draw on just a few of the groups described in detail in the annex of this report and in the accompanying spreadsheet provided to Ofgem. All 14 of the groups resulting from the CHAID analysis of electricity consumption in non-gas heated households have been described, whilst descriptions of the gas-heated nodes have been limited to those at either end of the consumption distribution. Each of the groups described could be used in Ofgem's analysis of policy impacts on different consumer groups, though they do represent quite small and discreet subsets of the population.

4 The Archetypes

4.1 Introduction

Having run the CHAID analysis described in the previous section, CSE met with Ofgem to discuss the results. In particular, consideration was given to the utility of the outputs in facilitating Ofgem's analysis of policy impacts on domestic consumers. It was agreed that whilst useful in spreadsheet format for Ofgem's own detailed analysis, the level of detail and disaggregation resulting from the CHAID models was not fit-for-purpose as a communication tool and for defining 'archetypes'.

The parameters of the (iteration 1) CHAID models were therefore refined in light of this discussion, to limit the number of resulting nodes and restrict input predictor variables to the key ones of interest to Ofgem.

For the electricity consumption model (run on the non-mains gas heated subset of households as described previously), predictor variables were limited to income (disposable household income) and heating fuel. The model parameters were set to give a maximum of four final nodes (Figure 4.1).

For the gas consumption CHAID model (run on the mains gas heated subset of households) predictor variables were limited to tenure, dwelling type and income[7]. Model parameters were set to give a maximum of eight final nodes (Figure 4.2).

A total of 12 different energy consumer archetypes have therefore been identified, which encompass all households in Great Britain. Four of these represent households without mains gas heating. One of the mains gas-heated nodes represents a significant proportion of the population and therefore may be considered the 'average' gas consumer (and therefore Ofgem may not wish to use this as an 'archetype' as such).

The archetypes are summarised in the table below and described in more detail in section 4.2 (electricity consumer archetypes) and 4.3 (gas consumer archetypes) respectively.

[7] Variables identified in the previous analysis as the strongest predictors of household gas consumption.

Table 4.1. Summary of the Energy Consumer Archetypes

	Archetype	Count of HHs	N %	Mean annual electricity kWh	Mean annual gas kWh
Non-mains gas HHs	Archetype 1: Low-income electrically-heated	881,000	4%	5,130	-
	Archetype 2: All other electrically-heated	1,694,000	7%	7,674	-
	Archetype 3: Low-income non-metered fuel-heated	548,000	2%	3,634	-
	Archetype 4: All other non-metered fuel-heated	1,065,000	4%	5,562	-
Mains gas heated households	Archetype 5 : Low-income, out-of-work single adults in small 1-bed social rented flats (London)	948,000	4%	2,018	8,553
	Archetype 6: Young working adults in rented flats (London)	1,053,000	4%	2,672	11,256
	Archetype 7: Low-income single adults (lone parents or elderly) in social rented houses	1,221,000	5%	2,474	11,515
	Archetype 8: Younger working families in medium-sized rented houses	2,529,000	10%	3,450	14,452
	Archetype 9: "Average" mains gas-heated households	8,231,000	34%	3,588	16,386
	Archetype 10: Wealthy working families in 3-4 bed semi's owned with mortgage	2,339,000	10%	4,767	20,202
	Archetype 11: Asset-rich, "empty-nesters" in detached houses in less urban areas	2,494,000	10%	4,184	20,557
	Archetype 12: Wealthy working families in larger detached houses in less urban areas	1,528,000	6%	5,608	25,200
		24,531,000	*100%*	*4,378*	*17,100*

Figure 4.1. Tree diagram of the CHAID model used in creating electricity consumption Archetypes

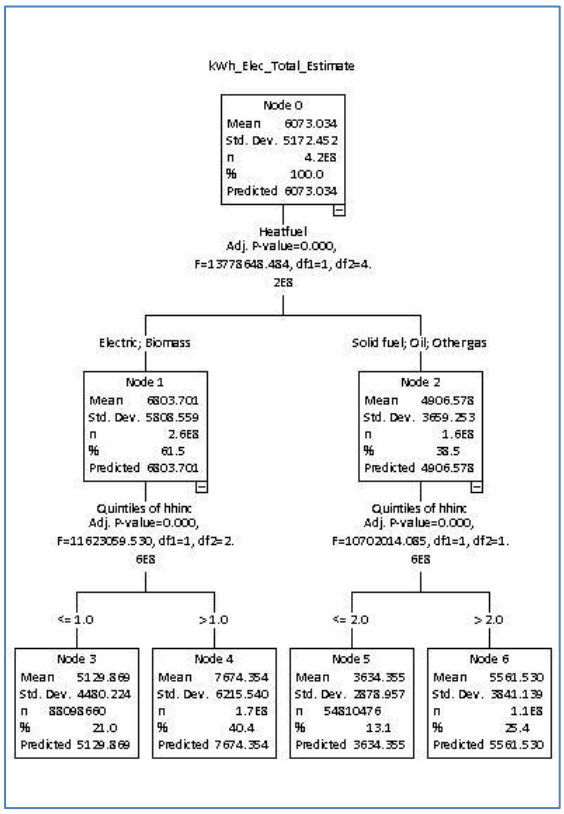
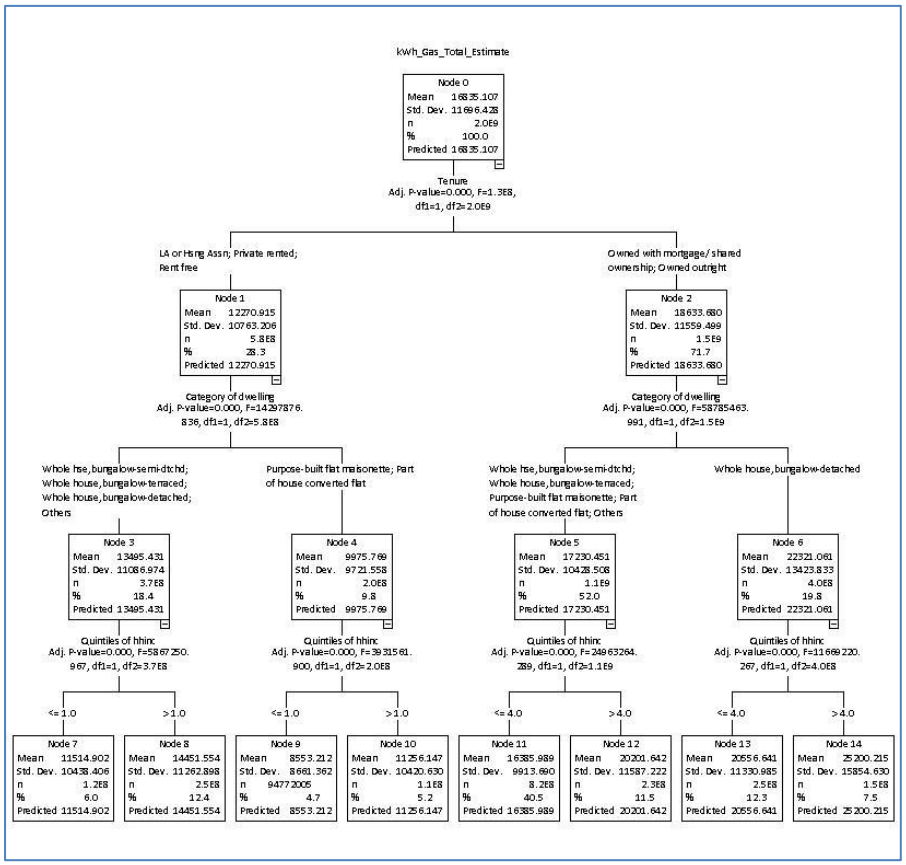


Figure 4.2. Tree diagram of the CHAID model used in creating gas consumption Archetypes



4.2 Non-mains gas heated household archetypes

Compared to the population as a whole, non-mains gas heated households fall into two distinct groups according to their heating fuel being either: Electric or Non-metered fuels (including oil, solid fuel, and other gas[8]).

The socio-demographics of these two groups are very different. Electrically-heated households tend to be: lower income, single adults in small, rented flats; whilst non-metered fuel-heated households tend to be higher income and asset-rich couples in larger, detached houses, owned outright.

To facilitate Ofgem's own analysis, these two groups have been further disaggregated into lower income and 'all other' households, to give four distinct Archetypes of non-mains gas heated households. These are described below[9].

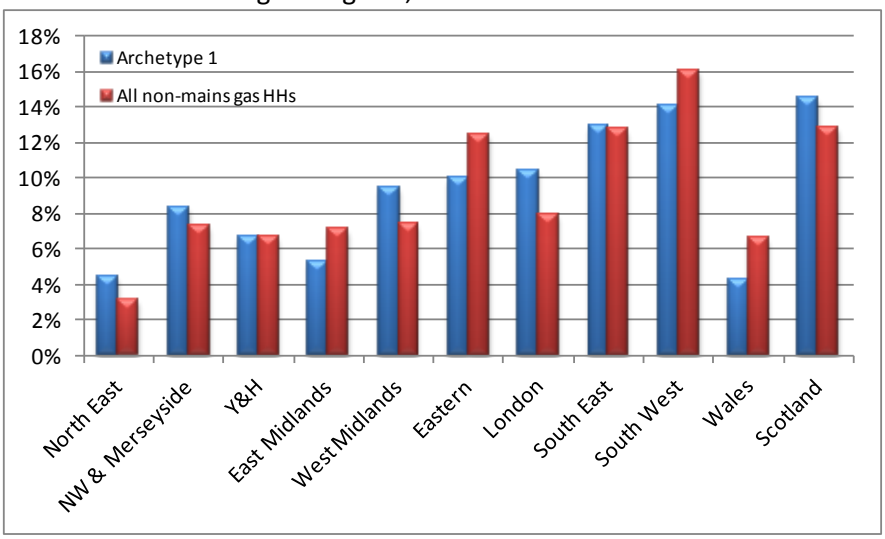
Archetype 1: Low-income Electrically-heated
Single adults without children, retired or not working, in small social rented flats.

Count of HHs: 881,000

Mean annual electricity consumption: 5,130 kWh

Mean annual household disposable income: £6,900

Key characteristics:
Disposable income quintile 1 (annual household income <£11,000)
Mainly single adult households, half of whom are over the age of 60 and one third 75 or over.
A high proportion of social housing (46%) and flats (50%)
Small (81% 2 or fewer bedrooms)
Higher than average use of prepayment meter (31%)
'Sticky' customers
75% in Urban areas
Distribution across English regions, Scotland and Wales:



[8] Biomass is also included, but analysis of the data suggests households heated mainly by biomass actually have more in common – in terms of annual electricity consumption and socio-demographic characteristics – with higher income electrically-heated households. This may be because households using biomass as the main heating fuel may rely quite heavily on supplementary electric heating sources. It is also likely that biomass-heated households are larger dwellings which would have a higher electricity (for power) demand.
[9] The percentage value shown in brackets in the descriptions refers to the proportion of the group falling into that category.

Archetype 2: All other Electrically-heated Households

Couples or younger single adults, in small, owner-occupied or private rented houses or flats, in full-time employment

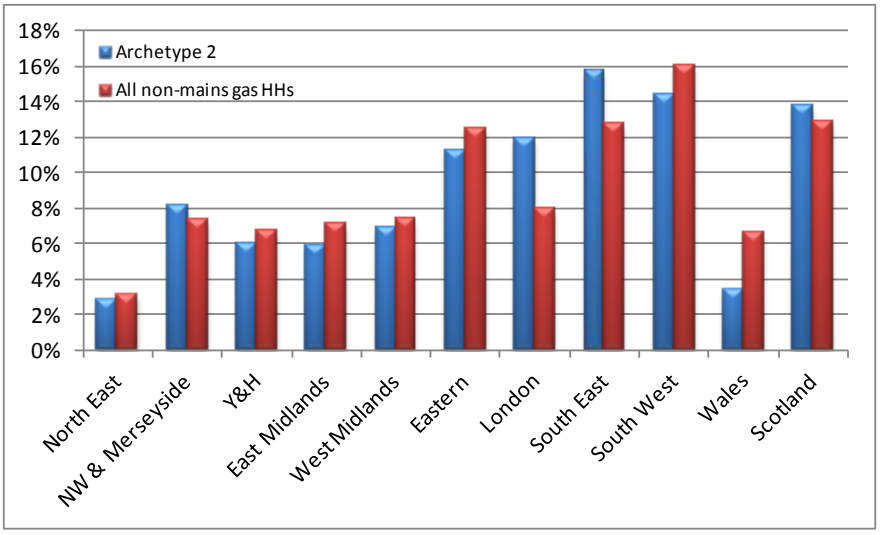
Count of HHs: 1,694,000

Mean annual electricity consumption: 7,700 kWh

Mean annual household disposable income: £25,800

Key characteristics:

Disposable income quintile 2 and above (mainly middle-income, quintile 2 and 3, annual disposable household income >£11,000)
Mainly couples, one fifth of whom have children at home.
Mixed age range, but over one quarter under 35 (27%).
Over half (51%) are in full-time employment and one quarter (27%) retired.
Mixed tenure but a high proportion owner occupied (55%) and one quarter private rented
Small (64% 2 or fewer bedrooms), purpose-built flats (38%) or terraced houses (23%)
Pay mainly by direct debit or standard credit (41% representation for each)
Some propensity for switch (13%)
70% in Urban areas
Distribution across English regions, Scotland and Wales:



Archetype 3: Low-income Non-metered Fuel-heated households

Older people in detached houses in rural areas who own their home outright (low income but asset-rich)

Count of HHs: 548,000

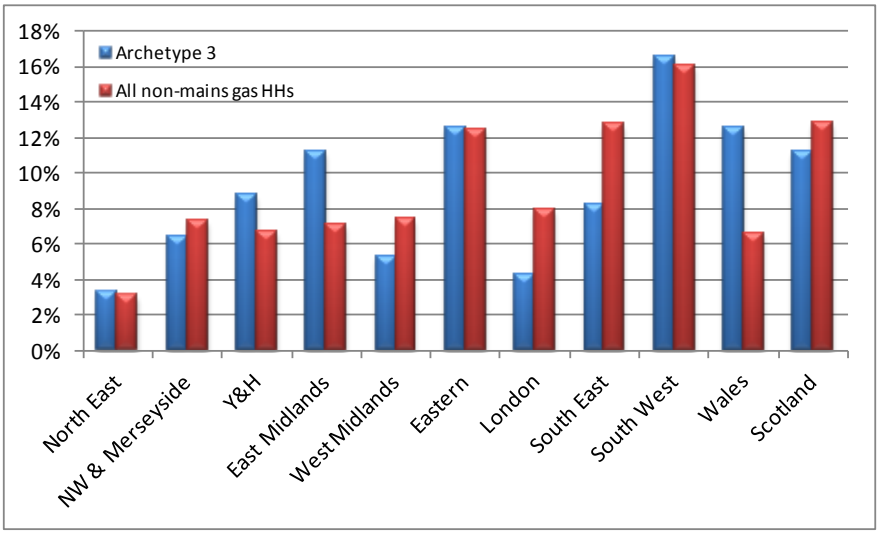
Mean annual electricity consumption: 3,600 kWh

Mean annual household disposable income: £11,000

Key characteristics:

Disposable income quintiles 1 & 2 (annual disposable household income <£18,100)
Mix of single adults and couples, but mainly over 60 (65%) and retired.
Medium-size (2-3 bed), detached (40%) and semi-detached (25%) houses
Over half own outright (54%)
'Sticky' customers paying by standard credit (51%)
Rural (65% in villages and hamlets)

Distribution across English regions, Scotland and Wales:



Archetype 4: All other non-metered fuel-heated households

Wealthy, market-savvy families in rural detached properties

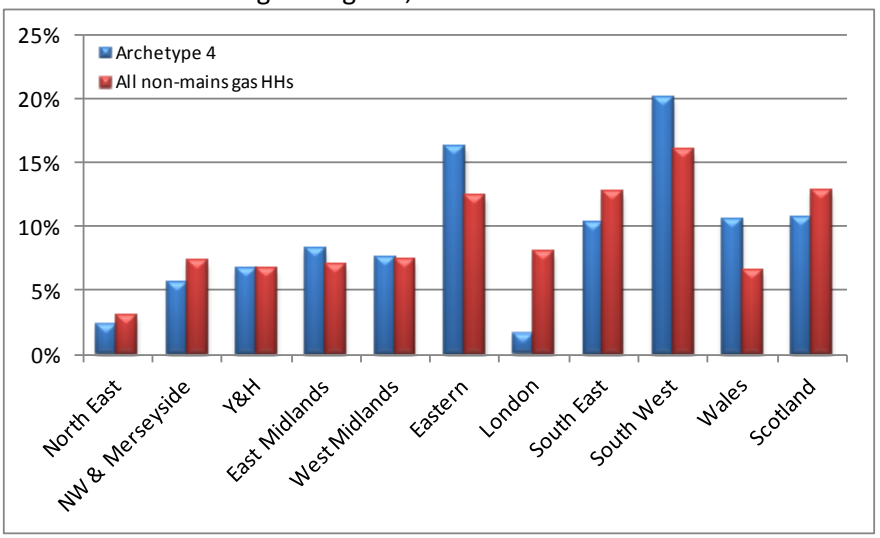
Count of HHs: 1,100,000

Mean annual electricity consumption: 5,600 kWh

Mean annual household disposable income: £43,000

Key characteristics:

High income (income quintiles 3 & above, annual disposable household income >£18,100)
Oil central heating (74%)
Couples, mainly working age, full-time or self-employed (16%).
With dependent or adult off-spring still living at home (31% with dependent children and 18% multi-person households)
Larger (42% 4 or more bedrooms), detached (57%) houses
Owner-occupiers, 40% own outright
Higher propensity to switch (19%) and pay by direct debit (49%)
Rural (80% in villages and hamlets)
Distribution across English regions, Scotland and Wales:



4.3 Mains gas-heated household archetypes

Based on the Living Costs and Food survey dataset used for this analysis, 83% of households (some 20.3m) in Great Britain have mains gas central heating. Given this encompasses the majority of the population, the characteristics of subset of mains gas-heated households very much mirror the profile of the "average" household in Great Britain. However, there is much variation across the mains gas heated population in terms of gas consumption levels and socio-demographic characteristics. Some of the key groups that stand out are captured in the archetypes described in detail in the boxes that follow. Some key points to note and of interest about these archetypes are discussed first below.

Generally average household gas consumption shows a strong correlation with income: more affluent households having higher consumption levels. However, two archetypes appear to represent slight exceptions to this rule:

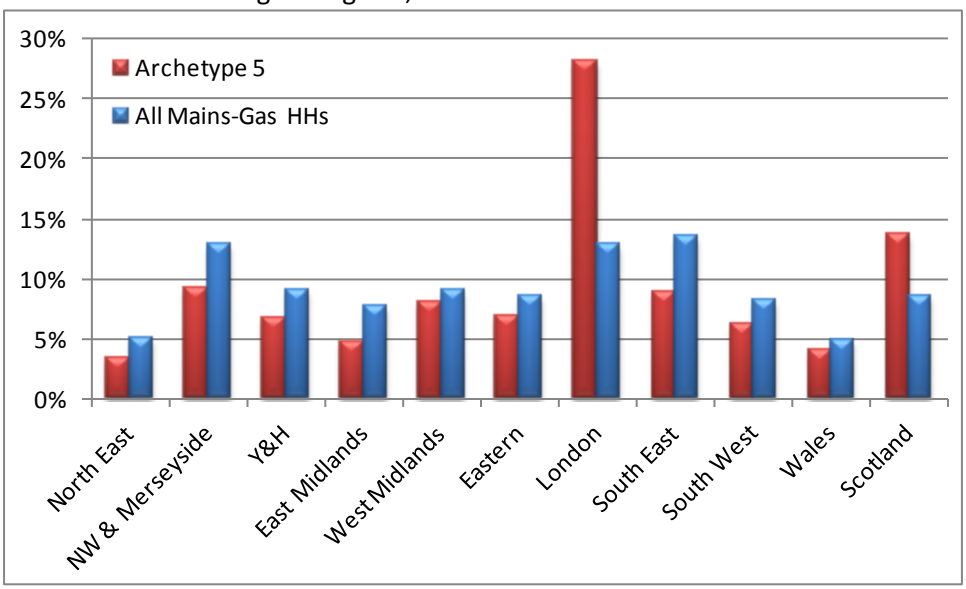
- Archetype 6 has notably low consumption but is not notably low income. This represents a group of "young professionals" – being in full-time employment these households are not poor; their low gas consumption is therefore more likely a reflection of dwelling type (small flats) and lifestyle (working longer hours, socialising etc).
- Archetype 11 on the other hand has high gas consumption but is not notably high income. This represents a group that could be described as "empty-nesters" – that is, couples living in larger "family" homes, but no longer with children at home. Being near or over the age of retirement they are lower income but may be considered asset-rich, as a high proportion own their home outright. This group is likely to be classed as fuel poor according to both the old and new proposed definition.

Archetypes 5 and 7 are low energy consumers (and therefore less exposed to policies impacting on energy bills) but represent potential groups of concern, being low-income single adults, either elderly and retired or younger and out of work (some with children, hence lone parents). Whilst representing potentially vulnerable households, under the new, proposed 'Hills Definition' of fuel poverty, these households may not be classed as 'fuel poor'. The new definition applies a threshold based on *total (equivalised) energy cost* not costs relative to floor area (per meter square). Small properties, albeit inefficient & occupied by low income householders, will therefore not necessarily meet this proposed threshold.

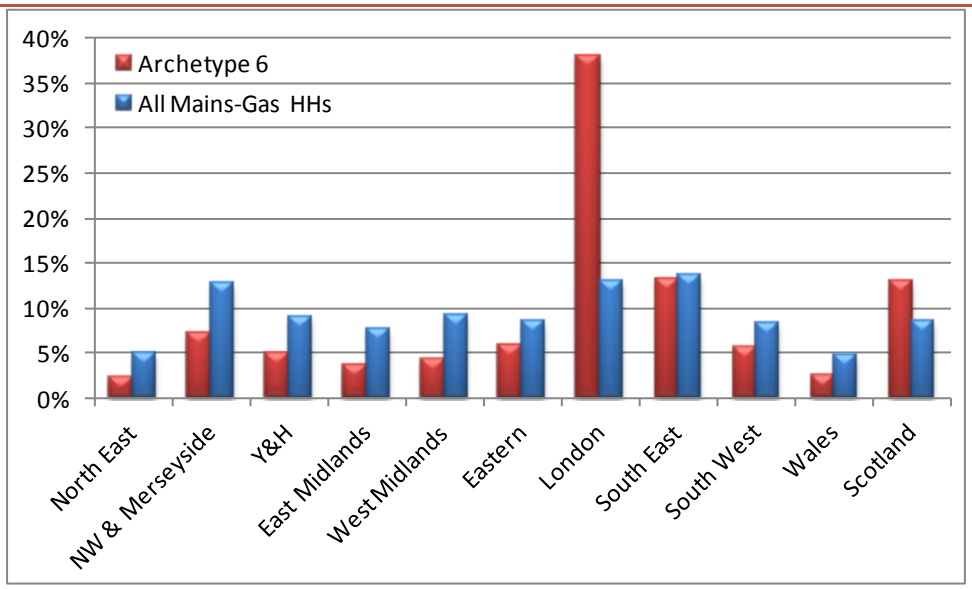
Archetype 9 encompasses 40% of the mains gas-heated population and therefore very much resembles the 'average' gas consumer, in terms of consumption levels and socio-demographic characteristics.

Archetype 5 : Low-income, out-of-work single adults in small 1-bed social rented flats (London)
Count of HHs: 950,000
Mean annual gas consumption: 8,550 kWh
Mean annual electricity consumption: 2,000 kWh
Mean annual household disposable income: £6,500
Key characteristics: Disposable income quintile 1 (annual household income <£11,000) Mainly single, young adults (11% < 25) without children (though 13% lone parents), not working

(42%) though one third (34%) is retired being over 65.
Small (55% 1 bed) flats (100%)
Mainly social rented (82%) and high proportion are in London (28%)
Higher proportion have prepayment meters (45% for electricity and 39% for gas)
'Sticky' customers
Likely to be 'Priority Group' due to low income/benefits status
Distribution across English regions, Scotland and Wales:



Archetype 6: Young working adults in rented flats (London)
Count of HHs: 1,100,000
Mean annual gas consumption: 11,300 kWh
Mean annual electricity consumption: 2,700 kWh
Mean annual household disposable income: £24,300
Key characteristics: Middle income (62% quintiles 2 and 3) Mainly young (41% under 35) couples (28%) or single adults without children, working fulltime (54%) In rented (55% social, 43% private) flats (23% converted houses, 77% purpose-built) A high proportion is in London (38%) 'Sticky' customers Higher proportion have prepayment meters (31% for electricity and 24% for gas) Distribution across English regions, Scotland and Wales:



Archetype 7: Low-income single adults (lone parents or elderly) in social rented houses
Count of HHs: 1,220,00
Mean annual gas consumption: 11,500 kWh
Mean annual electricity consumption: 2,500 kWh
Mean annual household disposable income: £7,200

Key characteristics:

Disposable income quintile 1 (annual household income <£11,000)

Mainly single adults (77%; 65% are women), some with children (hence 25% lone parents) but one third over 60

Either not working (42%) or retired (36%)

Small-medium sized (82% 2-3 bed) terraced houses (57%)

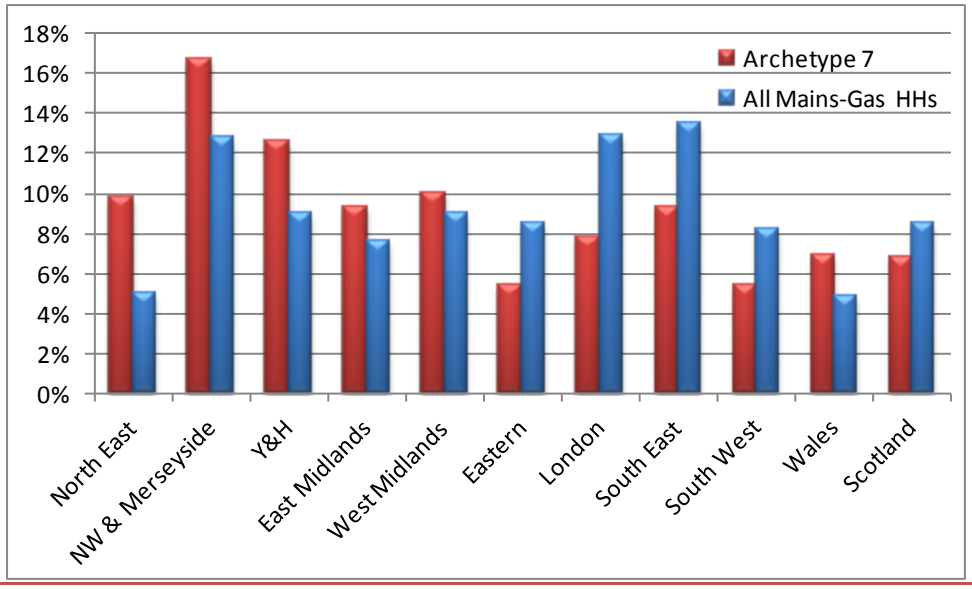
All renting, mainly social rented (73%)

Higher proportion have prepayment meters (45% for electricity and 43% for gas)

'Sticky' customers

Likely to be 'Priority Group' due to low income/benefits status

Distribution across English regions, Scotland and Wales:



Archetype 8: Younger working families in medium-sized rented houses
Count of HHs: 2,530,000
Mean annual gas consumption: 14,500 kWh
Mean annual electricity consumption: 3,500 kWh
Mean annual household disposable income: £27,000

Key characteristics:

Middle-income (68% income quintiles 2 and 3)

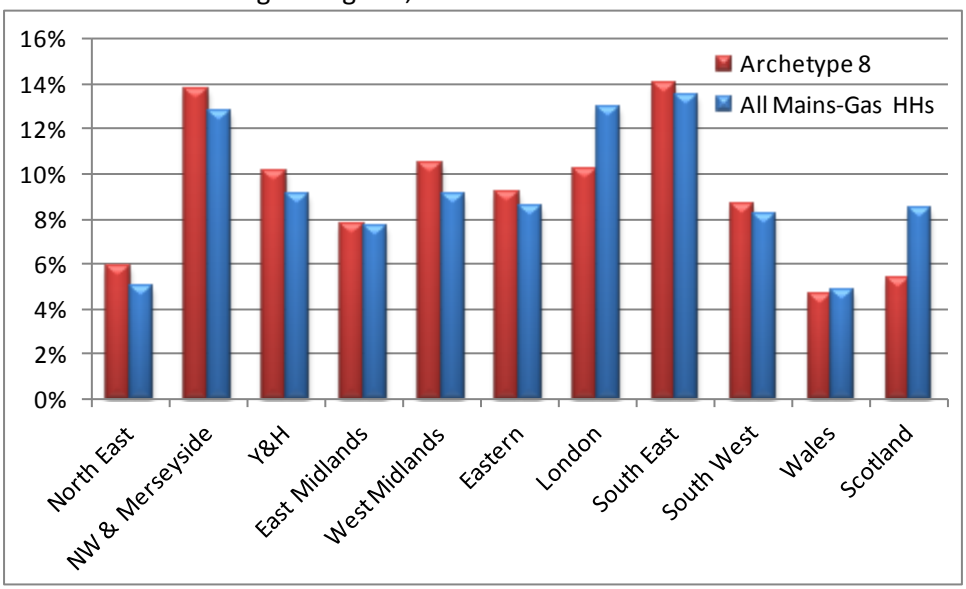
Younger couples (32% under 35) with children (some lone parents) working full (45%) or part-time (15%)

In 3-bed (53%), rented (54% social, 42% private), terraced houses (54%)

Higher than average use of prepayment meters (34% for electricity and 29% for gas)

'Sticky' customers

Distribution across English regions, Scotland and Wales:



Archetype 9: "Average mains gas-heated households"
Count of HHs: 8,230,000
Mean annual gas consumption: 16,400 kWh
Mean annual electricity consumption: 3,600 kWh
Mean annual household disposable income: £21,500

Key characteristics:

Mix of incomes though none in the top quintile (annual disposable household income <£40,000)

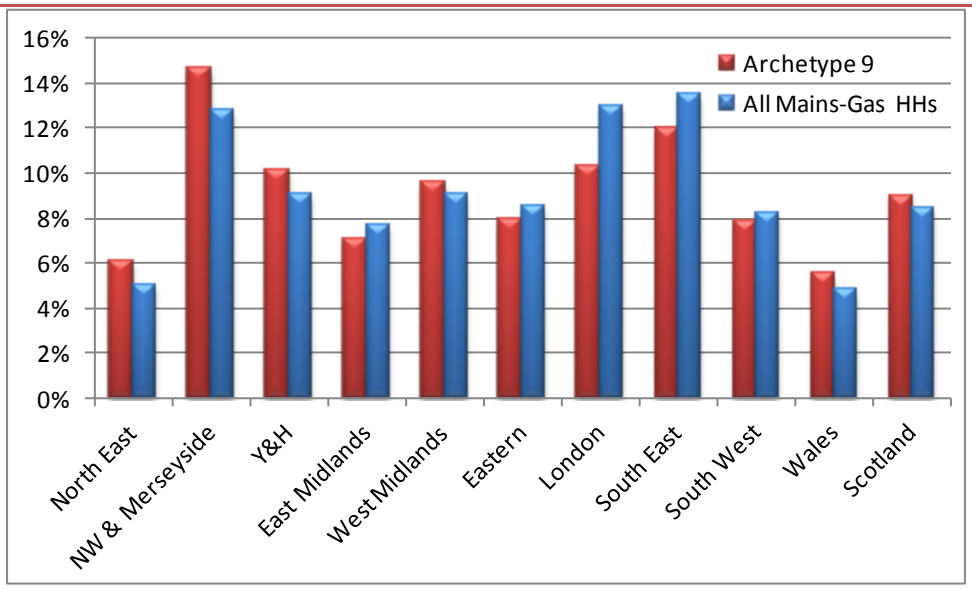
Mix of household types (couples and single adults, mainly without children), either working age and in fulltime employment (47%) or retired (29%)

Owner-occupiers (55% with mortgage, 45% owned outright)

In 3-bed (59%) semi-detached (50%) houses

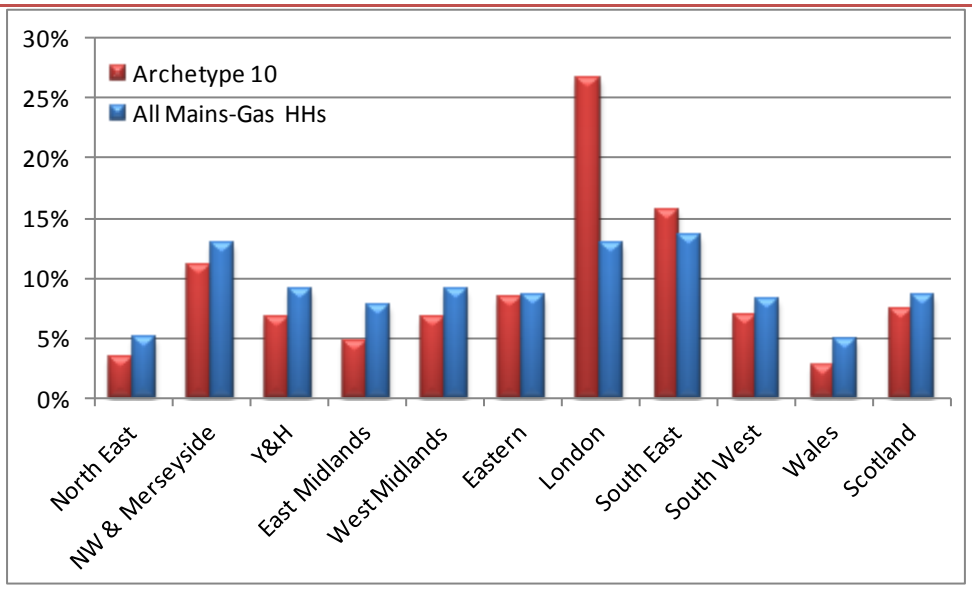
Pay by direct debit (55%) or standard credit (36%); some propensity to switch

Distribution across English regions, Scotland and Wales:



Archetype 10: Wealthy working families in 3-4 bed semi's owned with mortgage
Count of HHs: 2,340,000
Mean annual gas consumption: 20,200 kWh
Mean annual electricity consumption: 4,800 kWh
Mean annual household disposable income: £59,000
Key characteristics: High income (100% income quintile 10, annual disposable income >£40,000) Couples, some with dependent children (40%) or adult offspring (hence 32% multi-adult[10] households) Working age (60% 35-55) and working fulltime (78%) In 3-4 bed (75%) semi-detached (54%) and terraced houses Owned with mortgage (81%) High proportion in London (27%) Pay by direct debit and market savvy Distribution across English regions, Scotland and Wales:

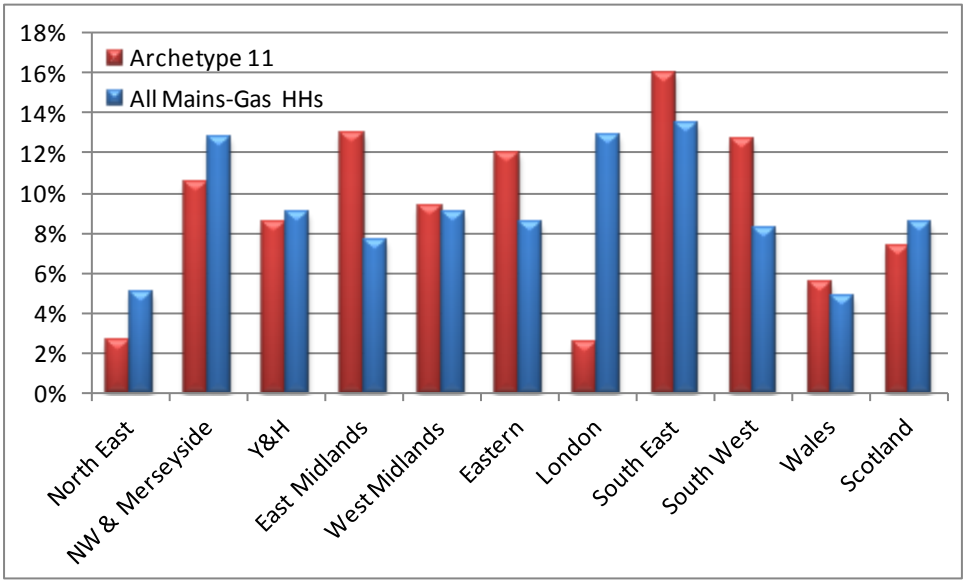
[10] Multi-adult households have 3 or more adults.



Archetype 11: Asset-rich, "empty-nesters" in detached houses in less urban areas
Count of HHs: 2,500,000
Mean annual gas consumption: 20,600 kWh
Mean annual electricity consumption: 4,200 kWh
Mean annual household disposable income: £23,000

Key characteristics:

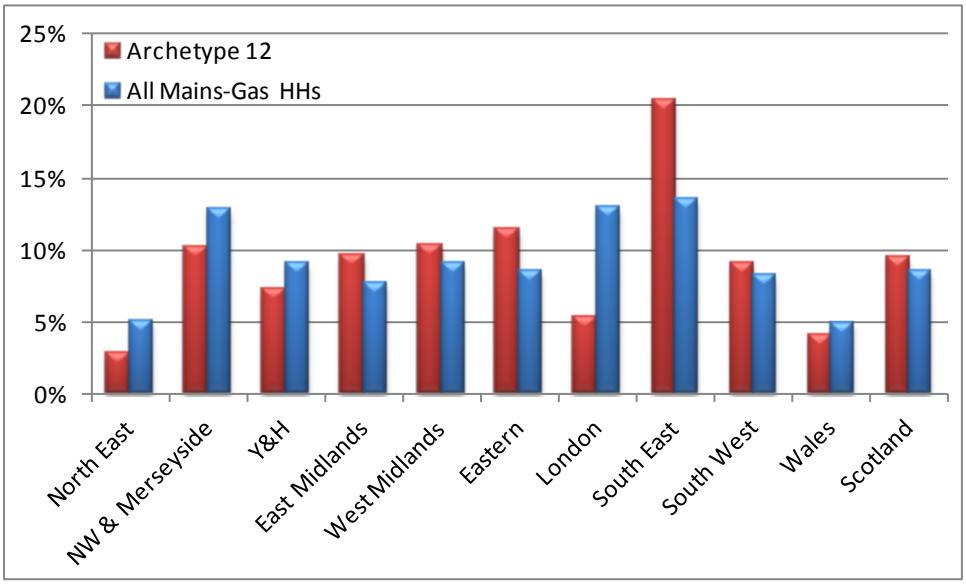
Average income (66% income quintiles 3 and 4)
Mainly retired (43%) and couples (64%) without children at home
In 3-4 bed (76%) detached (100%) houses
All are owner occupiers and the majority own outright (64%)
Pay by direct debit (64%) but less likely to switch
More town and fringe areas (18%)
Distribution across English regions, Scotland and Wales:



Archetype 12: Wealthy working families in larger detached houses in less urban areas
Count of HHs: 1,500,000
Mean annual gas consumption: 25,200 kWh
Mean annual electricity consumption: 5,600 kWh
Mean annual household disposable income: £65,600

Key characteristics:

High income (100% income quintile 10, annual disposable income >£40,000)
Couples with dependent children (45%) or adult offspring (hence 28% multi-adult[11] households)
Working age (63% aged 35-55) and working fulltime (71%) or self-employed (14%)
In larger (70% 4 or more bedrooms), detached (100%) houses
Owned with mortgage (73%) or outright (27%)
High proportion in the south east (20%) and less urban areas (25% town & fringe or villages)
Pay by direct debit (68%) and market savvy (56% likely to have switched more than once)
Distribution across English regions, Scotland and Wales:



[11] Multi-adult households have 3 or more adults.

Annex I: Summary of key consumer groups of non-mains gas heated households

(CHAID Iteration 1 Results)

All Non-Mains Gas Heated Households		Count	Mean Elec. kWh	Mean income	Mean equiv. income
All	Compared to the population as a whole, non-mains gas heated households fall into two distinct groups according to their heating fuel, being either electric, or non-metered. The socio-demographics of these two groups are very different:	4,187,466	7,278	£24,242	£16,130
	• Electrically-heated tend to be: *"lower income, single adults in small, rented flats"* Over half of electrically-heated households are single adults, a high proportion elderly (22% 75+) and without children, in small (33% 1-bed, 38% 2-bed), rented flats, lower income (60% quintiles 1-2), retired or not working. Nearly a quarter on PPM and around half PG.	2,554,154	9,149	£19,175	£13,885
	• Non-metered fuel households on the other hand tend to be: *"higher income and asset-rich couples in large, detached houses, owned outright"* Over half of the non-metered fuel households are couples (62%) and higher income (26% quintile 5), living in large (24% 4-bed), detached (51%) houses in rural areas, a high proportion of which are owned outright (45%).	1,633,311	4,351	£32,165	£19,642
Node	**Group Description *[NM = Non-metered fuel; Elec = Electric heating]***	**Count**	**Mean Elec. kWh**	**Mean income**	**Mean equiv. income**
6	*[NM] Low income, asset-rich single adults in smaller rural houses with solid-fuel heating* The group with the lowest estimated annual electricity consumption consists of rural, solid fuel-heated (59% oil), small-medium (36% 2-bed, 35% 3-bed) detached and semi-detached properties. Occupants are all single adults without children and low income (47% unequivalised disposable income quintile) but some asset rich - half (53%) own their home outright. Mix of ages but over half retired (and 34% over 75), the rest mainly working fulltime. 58% likely to be Priority Group.	372,300	3,097	£15,697	£15,697
25	*[Elec] Low income young single adults out of work in small, urban, electrically heated, rented flats with PPM* A notably low income group (63% quintile 1) of young (12% under 25, 31% 25-35) single adults without children, who are unemployed or not working, renting (55% social) small (74% 1-bed), electrically-heated flats (mainly purpose-built - 73%) in urban areas. Half use PPM (49%) and are Priority Group (51%).	239,300	3,837	£10,415	£10,415
18	*[NM] Couples in 3-bed semi's in rural areas with solid fuel heating* Rural (42% villages, 20% hamlets), 3-bed semi-detached houses with solid fuel heating (53% oil). Occupied by couples without children, but mixed in tenure, incomes and employment status. 42% Priority Group.	266,811	3,999	£25,374	£16,896

26	*[Elec] Low income single, elderly in small social rented purpose-built electrically-heated flats* Notably low income (66% quintile 1), retired and elderly (47% over 75), single adults (55% women) in small (78% 1 bed), rented (76% social), purpose-built flats, in urban areas with electric heating. 84% likely to be Priority Group.	284,651	4,704	£11,291	£11,291
17	*[NM] Families in rural, solid-fuel heated semi-detached houses* Mid-higher income (35% quintile 4 unequivalised), larger families (either with dependent or grown-up children, hence 36% are multi-person households; 18% of households have 5 or more people), in rural, solid-fuel (57% oil) heated, 3-4 bed, semi-detached houses owned with mortgage. HRP mainly 35-55 (67%) and working fulltime or self-employed (14%).	213,212	4,896	£35,912	£16,729
20	*[NM] Higher income and asset-rich empty-nesters in large, rural, oil heated detached houses* Higher income and asset-rich (67% own outright) couples in rural, (54% villages, 30% hamlets), large (46% 4 or more bedrooms), detached houses with oil central heating (77%). One fifth in the South West. No dependent children at home and HRP around retirement age (36% 55-65, 41% over 65) so either retired (38%) or still in fulltime employment (32%).	457,465	5,418	£35,665	£23,777
24	*[Elec] Lower income single older adults in small electrically-heated owner-occupied purpose-built flats* Lower income (though not so on equivalised scale), single adults (57% female), mainly retired (46%) in small (54% 1-bed, 44% 2-bed), electrically-heated, purpose-built flats which over half own outright. High proportion in SE urban areas and half likely to be Priority Group.	288,040	5,572	£16,539	£16,539
14	*[Elec] Young couples in small, rented, purpose-built electrically-heated urban flats* Young (25% under 25), combination of couples without children and lone parents (32%), private renting (61%, social renting 35%) small (1-2 bed) purpose-built, electric heated flats. Mix of incomes though tending towards lower quintiles (around 30% quintile 1 on non- and equivalised scale). HRP working fulltime (49%) or not working (24%). One fifth (19%) in London. High proportion of PPM (38%). Just over one third (36%) likely to be Priority Group.	333,929	5,766	£21,586	£14,423
21	*[Elec] Low income single adults in electrically-heated terraced houses in less urban areas.* Low income (49% quintile 1 unequivalised), all single adults, but mix of ages, employment (though 35% retired) and tenure, in 2-bed (45%) electrically-heated terraced houses in less urban areas (17% fringe, 20% villages).	286,074	5,882	£12,940	£12,940
13	*[Elec] Less-urban, small, purpose-built electrically-heated flats occupied by older couples, or young families, with PPM* Low-mid income (33% quintile 2 unequivalised), couples, either older (36%) or young with children (42%),	298,730	7,081	£21,255	£11,237

	renting (mainly social, 57%), small (45% 2-bed), purpose-built electrically-heated flats (41%), in less urban areas (11% fringe, 15% villages). Mix of ages and employment status, but generally higher occupancy households - 47% with children and 18% with 3 adults. High proportion of PPM (35%).				
19	*[NM] Wealthy families in large detached oil-heated rural houses* Similar to node 17 above: Larger families (18% with 5 or more people in the household; 69% dependent children; 32% 3-adults, suggesting grown-up children at home), higher income (52% quintile 5) in rural (56% village, 30% hamlet), large (21% 5+ bedrooms), detached (90%), oil-heated (81%) houses, owned with a mortgage. HRP working fulltime or self-employed (24%). High proportion in the SW (23%).	320,288	7,124	£49,711	£22,661
22	*[Elec] Low-income but asset-rich single elderly in electrically-heated houses in less urban areas* Very low income (64% quintile 1) but to some extent asset-rich (63% own outright), single elderly (all over 75), in electrically-heated, 2-3 bed semi-detached or terraced houses. High proportion in less urban areas (48% non-urban), and south west (24%). Pay by standard credit (59%). 100% Priority Group.	202,081	7,727	£10,109	£10,109
16	*[Elec] Middle-income working or retired couples in electrically-heated less urban properties* Middle-income (29% quintile 3 unequivalised), couples without children, in mix of property types, though less-urban (17% villages) and all properties are electrically heated and medium-sized (40% each 2 and 3 bed). They own outright (55%) or with mortgage (45%). HRP either in fulltime employment (38%) or retired (38%). Around 40% Priority Group.	394,921	9,292	£27,276	£18,184
15	*[Elec] Well-off, working families in electrically-heated semi-detached houses in less urban areas.* The group with the highest average electricity consumption typically has electric heating and is higher income and larger dwellings (particularly for electrically-heated properties): Higher income (33% quintile 5, though notably less so on equivalised scale), larger families (55% couples with children, 45% multi-person households; 13% five or more people in the house), in electrically-heated, 3-4 bed, semi-detached houses in less urban areas (20% village, 11% hamlets), own with mortgage, HRP aged 35-55 and working fulltime or self-employed.	229,666	11,277	£36,836	£17,077

Annex II: Summary of key consumer groups of mains gas-heated households

(CHAID Iteration 1 Results)

Node	Description: Gas heated houses – lowest consumers	Count	Gas kWh	Elec kWh	Mean income	Mean equiv. income
22 & 21	"*Low income single adults without children in social-rented flats with PPM*" These two nodes of the lowest gas consuming households are very similar in make-up being low income (~68% quintile 1 unequivalised), single adults, without children, in small (66% 1-bed), rented (mainly social ~ 78%), flats (mainly purpose-built). A high proportion use prepayment meters for both gas and electricity (~30%) and are in London (25%). The key difference between the two nodes is the age of occupants: one is notably older (43% over 75) and retired; the other younger (55% 25-45) and not working. Likely to be Priority Group (~70%).	1,017,376	8,153	1,955	£9,608	£9,615
15	*"Low income, lone parents in social-rented terraced houses with PPM"* Very low income (100% quintile 1 unequivalised, 90% quintile 1 equivalised), all single adults, over half of whom have children (i.e. 56% lone parents), in social rented, 2-3 bed terraced houses. Occupants are all working age, notably younger (40% under 35) but not in work. Very high proportion of prepayment meters for electricity and gas (63% & 58%). Very likely to be Priority Group.	548,729	9,925	2,276	£10,250	£10,250
19	*"Small, rented, purpose-built flats with PPM"* All are in small (60% 2-bed) rented flats, mainly purpose-built (77%) and social rented (58%). Mixed household composition, though notably younger (21% HRP under 25) - couples under 60 without children dominate (42%) - reflected in mixed employment status - 23% not working but 43% in FT employment. As such, not notably low income - 26% in quintile 1 (rising to 33% on equivalised income scale). A high proportion are in the South East (26%) and use prepayment meters (41% for electricity, 35% for gas). Around half likely to be Priority Group.	413,437	10,330	2,753	£6,686	£5,269
37	*"Working single adults in terraced houses owned with a mortgage"* Middle - higher income (particularly on equivalised scale) single adults, mainly aged 25-55, working full time, in 2-bed terraced houses owned with a mortgage. High proportion in London and the SE (47% in total). More likely to switch and non-Priority Group. [NB. Node 38 near identical, with the exception of the regional spread]	666,328	12,473	2,714	£19,442	£12,113
31	*"Lower-income families and lone parents in rented terraced houses, with PPM"* Mainly lower-middle income (55% quintile 1, 45% quintile 3 unequivalised) families (mix of couples with children 27% and lone parents 16%) in rented (58% social, 37% private) 2-3 bed terraced houses. HRP mainly in younger age bracket (46% 25-44), mix of employment status, though higher than average working PT (17%) or not working (20%). Regional spread: SE 35%, SW 23%, Eastern 23% and NE 20%. High proportion of prepayment meters (36% electric, 31% gas). Around half likely to be Priority Group	603,113	12,741	3,041	£22,903	£22,903
16	*"Low income single elderly in small social-rented terraced houses with PPM"* Very low income (100% quintile 1 unequivalised) single retired, elderly (34% over 75) adults in small (1-2 bed) social rented (76%), terraced houses (55%). Higher proportion on PPM (~30% for electricity and gas) and 92%	672,184	12,813	2,635	£17,753	£10,973

	Priority Group.					
20	*"Small rented purpose-built flats in London (occupied mainly by younger, lower income couples or lone parents)"* A London-dominant node (72%) of small (1-2 bed), social rented (58%, remainder private-rented) purpose-built (80%) flats. Mixed occupancy - couples without children (29%) and lone parents (22%). HRP mainly younger (47% under 35) and in FT employment (39%) or not working (28%); lower equivalised income (39% quintile 1) but less so on unequivalised (26% quintile 1). High proportion on PPM (42% for electricity) and around half likely to be Priority Group.	569,867	12,973	2,805	£7,689	£6,331
39	*"Single, elderly women, lower income but asset-rich in semi-detached houses owned outright"* Retired, elderly (44% over 75) single female (72%) adults. Relatively low income (52% quintile 1 unequivalised) but own their houses (mainly 3-bed semi-detached) outright, therefore asset-rich. All in NW (38%), East and SW. Pay by DD in the main, and around three quarters likely to be Priority Group.	527,898	13,500	2,722	£23,988	£13,842

Node	Description: Gas heated houses – highest consumers (sorted by highest first)	Count	Gas kWh	Elec kWh	Mean income	Mean equiv. income
30	*"Wealthy, asset-rich couples and grown up families, around retirement age in large detached houses in less urban areas"* High income (100% quintile 1), mainly couples over 60 and HMO's - latter likely to be grown up families (i.e. parents with adult off-spring still living at home), in large (16% with 5 or more bedrooms) detached houses (100%) which they own outright (100%), in less urban areas (19% town and fringe. HRP is mainly either still working fulltime (46%) or self employed (15%), or retired, being aged between 45-60. Pay by DD, but not notably switchers.	417,018	27,770	5,728	£68,041	£18,165
29	*"Wealthy working age families in large detached houses in less urban areas"* High income (100% quintile 5) couples, aged 35-55, working fulltime or self-employed, with dependent or grown-up children at home (26% multi-adult households), in large (55% 4-bed, 16% 5 or more), detached (100%) houses which they own with a mortgage, in less urban areas (15% fringe, 10% villages). Pay by DD and more likely to switch.	1,111,457	24,236	5,562	£64,736	£9,381
52	*"Wealthy families in semi-detached houses in urban areas"* As node 29 above only slightly smaller, semi-detached houses, 20% owned outright and over half in London (hence highly urban). Notably high proportion of multi-person households (52% with 3 or more adults) suggesting adult off-spring living at home.	688,931	23,218	5,401	£62,309	£12,760

43	*"Asset-rich retirement-age couples in detached houses in less urban areas"* Mid-higher income (41% quintile 3, 59% quintile 4 unequivalised), but asset-rich mainly couples over 60, either retired or still working fulltime, in fairly large (4-bed) detached houses, over half owned outright. Notably high proportions in SE and NW, less urban areas (14% fringe). Pay by DD, slightly higher propensity to switch.	728,194	22,888	4,672	£28,806	£19,253
55	*"Well-off working families in large detached houses in less-urban areas"* Relatively wealthy (70% quintile 4 unequivalised, but notably lower on equivalised scale) couples with children, in larger (4-5 bed) detached houses (100%) which they own with a mortgage (100%), in less urban areas (21% fringe, 10% villages). HRP aged 35-55 and working fulltime (76%). Pay by DD and much more likely to switch.	445,544	20,863	4,710	£30,659	£24,875
51	"Wealthy working families in 3-bed semis in urban areas) As per node 52 and 29, only smaller houses (3-bed) and different regional spread (more urban), but occupants and income status (100% quintile 5 on unequivalised scale) very similar.	749,248	20,518	5,291	£54,915	£17,744
64	"*Older couples nearing or already retired, without children, in owner-occupied semi-detached houses"* Mixed income (spread across quintiles) older couples (59% over 60) without children, either working age and in fulltime employment (38%) or retired (37%). All semi-detached, mainly 3-bed houses, owned outright (58%, therefore considered asset-rich) or with mortgage. Mixed regional spread in Y&H, London and Scotland. Pay by DD but no high propensity to switch. 40% Priority Group.	475,989	20,380	4,079	£28,895	£18,169
50	*"Middle-income working families in 3-bed semis, where HRP aged 45-54"* Middle income (though 60% in quintile 4 unequivalised, they are notably lower on the equivalised income scale), working families, in 3-bed semi-detached (55%) houses which they own with a mortgage (73%). Either with dependent (64%) or likely adult children in the home (indicated by the 54% of multi-person households). HRP aged 45-54 (94%) and working fulltime (62%) or self-employed. Pay by DD and higher propensity to switch.	600,505	20,229	4,773	£28,059	£28,031
42	*"Lower income but asset-rich elderly in detached houses in less urban areas"* Lower income (61% quintile 2 unequivalised), elderly (37% over 75) and mainly single adults (52% one adult households) in detached (100%) houses, mixed size - 31% 2-bed, 21% 4-bed, which they own outright (86%), in less urban areas (17% fringe). 65% Priority Group	451,595	20,050	3,619	£11,598	£33,593
56	*"Middle income and asset-rich empty-nesters"* Mid-higher income (58% quintile 3, 42% quintile 4 unequivalised), older (74% HRP over 60), couples (59%), in larger (34% 4-bed) detached (100%) houses which they own outright (100%), in less urban areas (20% fringe).	463,404	20,025	4,092	£26,660	£39,084