Annex F: Summary of Katalysis Regression

Contents

1. Introduction

This report is a summary of the regression analysis carried out by Katalysis Limited on behalf of DECC. The work was carried out using data in the National Energy Efficiency Data-Framework (NEED). This work should be considered alongside other models such as the local area gas model[1] developed by DECC and the econometric modelling undertaken by NERA (see Annex E).

The original report from Katalysis also included an in-depth assessment of the dataset as well as a comparison of gas consumption before and after installation of various energy efficiency measures. These outputs laid the foundation for some of the analysis included in DECC's 2011 NEED report[2] and are therefore not repeated in this summary. More information about NEED is available in Annex A .

This summary is being published to aid users in understanding the various modelling approaches that have been carried out using the NEED data and to encourage any further feedback from users on ideas for developing the analysis further.

1.1. Aims and objectives

The objective was to develop a regression model relating domestic gas consumption with various factors available from NEED such as property characteristics, household socio-economic factors and energy efficiency measures.

The aim of the model was to improve the understanding of how energy is consumed in households. Ultimately the knowledge derived from the model could be used to develop policies to minimise energy use in general and also to target energy efficiency policies more effectively.

1.2. Scope and limitations

The analysis presented in this annex covers domestic gas consumption in England. It was carried out using 2008 consumption data, which was the latest data available at the time the analysis was undertaken. NEED has since been updated with more recent gas consumption data and now includes data up to 2010.

There is no price data available within NEED, so any effect of changing price on consumption is not captured in the model.

[1] See the special feature 'Identifying local areas with higher than expected domestic gas use' in Energy Trends, March 2012 available at: http://www.decc.gov.uk/assets/decc/11/stats/publications/energy-trends/4779-energy-trends-mar12.pdf.

[2] Available at http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/en_effic_stats/need/need.aspx.

2. Model Building

The analysis used was an iterative cross-sectional multiple regression analysis. Unlike the panel regression work in annex E that was carried out by NERA, this approach does not exploit the panel nature of NEED. However, it is useful to see how model outputs compare across a variety of approaches and in particular to understand how a model a from simpler method such as the one in this analysis compares with more complicated models using econometric techniques.

Gas consumption in 2008, the most recent year for which data was available at the time, was used as the dependent variable. Only households with gas consumption of between 2,500 and 73,200 kWh were included in the regression analysis. The lower bound represents the minimum gas use for heating while the upper bound represents the industry standard cut off for domestic consumption. The model fit was quite sensitive to the cut off used. For example, when the upper limit was increased the R-squared value fell sharply.

The following variables were considered for inclusion in the gas consumption model:

1. Property size (measured by area, number of rooms or number of bedrooms);
2. Electricity consumption;
3. Dwelling type;
4. Dwelling age;
5. Household income;
6. Output Area Classification; and
7. Presence of energy efficiency measures.

A number of regression runs were carried out with various combinations of the above variables. In addition, some of the variables were constrained to assess whether the model fit would improve. For example, when floor area was constrained to between 2 and 500 square metres[3] (on advice from the Valuation Office Agency (VOA)) and to the extreme when properties with floor area of up to 750 square metres were also tested; the fits were found to reduce slightly. Also the models that included all of the dwelling types (see categories in Section 2.3) performed better than those that included houses only.

The variables included in the final model are described below.

2.1 Dwelling size

It is expected that the size of a property should have some relation to the amount of gas consumed. In general, gas use in homes is primarily for heating, and the bigger the home, the larger is the amount of gas that would be required to heat the available space.

Floor area, number of rooms and number of bedrooms are all variables available in NEED which can describe a property size. These variables are highly correlated with one another, as shown in

[3] Note that this is a wide range and includes most records.

Table 2.1, and therefore only one of them (in this case floor area) has been included in the final model.

Table 2.1: Descriptive statistics and correlations between the size-related property attributes[1]

	Number	Mean	Standard deviation
Rooms	113,420	4.3	1.2
Bedrooms	113,420	2.8	0.8
Floor area	113,260	97.8	35.3

		Rooms	Bedrooms	Floor area
Rooms	Pearson correlation		0.872**	0.793**
	Number		113,410	113,150
Bedrooms	Pearson correlation			0.725**
	Number			113,140
Floor area	Pearson correlation			
	Number			

** Correlation is significant at the 0.01 level (2-tailed).

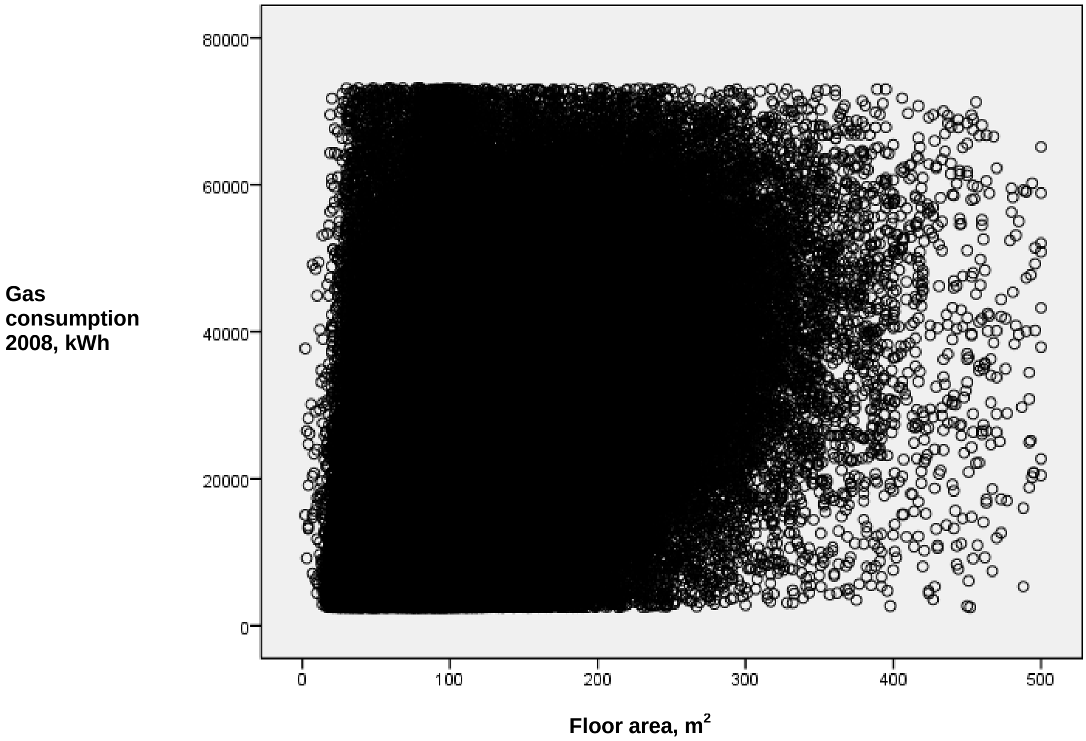
1. This table gives the correlations for a random sample of houses (drawn from the NEED sample) which had valid gas consumption between 2004 and 2008.

When number of rooms and number of bedrooms were used in the regression model, they were found to underperform floor area. Therefore, floor area was chosen to represent dwelling size.

However, floor area has some characteristics that could be problematic when it is used for modelling. It is worth exploring this variable in more detail as its contribution in the model is much higher than that of the other variables in the model.

Figure 2.1 shows the relationship between gas consumption in 2008 and floor area. Summary statistics for these variables are also included.

Figure 2.1: Relationship between gas consumption in 2008 and floor area[1]



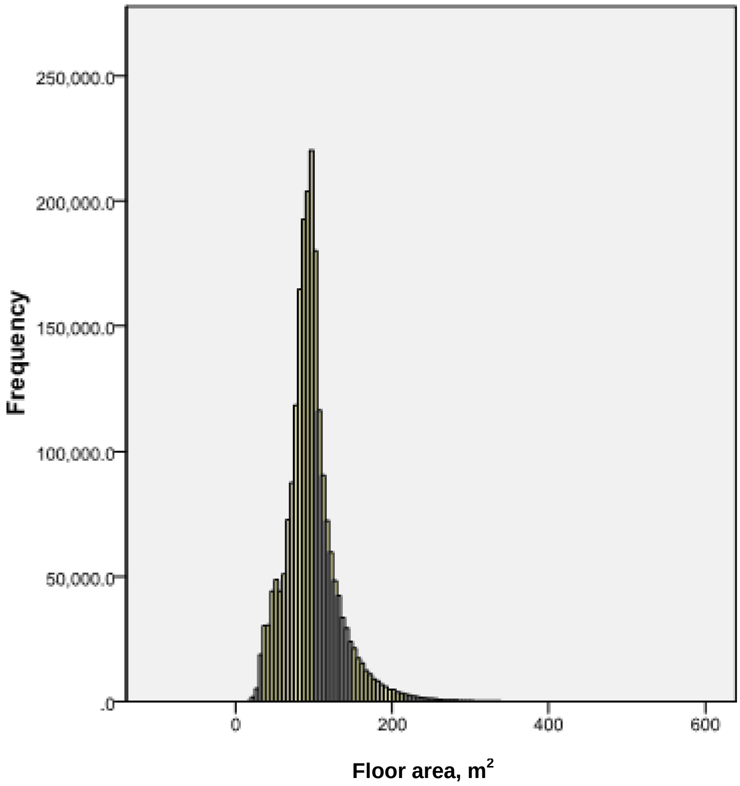
Summary statistics

	Number	Minimum	Maximum	Mean	Standard deviation
Gas consumption	2,223,700	2,500	73,200	17,818	9,124
Floor area	2,211,100	0	2,500	98	36

1. The chart and summary statistics are based on valid gas consumption of between 2,500 and 73,200 kWh. For floor area, the chart is restricted to properties with floor area up to 500 square meters while the summary statistics are presented for all values of floor area.

The expected increase in gas consumption with floor area is somewhat masked in the chart by the large number of properties with below average floor area and above average consumption. This observation is confirmed in Figure 2.2 which shows that the distribution of floor area is positively skewed with a long tail on the right. This indicates that the majority of properties have floor area that is below the mean and that there are a relatively small proportion of properties with large floor area which are causing the mean to be higher.

Figure 2.2: Frequency distribution for floor area of dwelling (between 2 and 500 m^2)



The relationship between gas consumption and floor area is probably due to the definition of floor area. It is defined differently by the VOA for houses (Reduced Covered Area) and flats (Effective Floor Area). In the dataset, floor area for houses is measured externally and is effectively the building's footprint. For flats, it is the internal floor area excluding some internal spaces such as bathrooms/showers and WCs which are not excluded for houses. The range for houses is not large and therefore it may not be capturing all the variation in area required. Due to occurrences of anomalous values in the dataset, and following advice from the VOA, the floor area in houses was constrained to a maximum of 500 square metres .

2.2 Electricity consumption

Electricity consumption in 2008 was also included as a possible surrogate for household size or affluence. Its inclusion resulted in improved regression results.

2.3 Dwelling type

NEED classifies dwellings into 33 types. They were re-grouped into 7 categories for the model:

1. Bungalows
2. Converted flats
3. Purpose built flats
4. Detached houses

5. End of terrace houses
6. Semi detached houses
7. Mid terrace houses

The reference group chosen was mid terrace houses.

2.4 Dwelling age

The dwelling age bands in NEED were regrouped in order to help identify properties built within certain periods relating to the amount of insulation and boiler efficiency common during those periods.

Building regulations introduced certain energy efficiency measures at key dates during the time frame being considered. In particular, un-insulated cavity wall construction in 1945, lofts and cavities were suitably insulated from 1990 onwards and boilers rated at a minimum of Band B under the Seasonal Efficiency of Domestic Boilers in the UK (SEDBUK) scheme from 2006.

This information was considered in reclassifying the age bands used in NEED and resulted in six groups to better reflect building standards and regulations in housing stock. The age bands used were:

1. Pre 1929
2. 1930 – 1964
3. 1965 – 1982
4. 1983 – 1992
5. 1993 – 1999
6. 2000 – 2010

The oldest properties were used as the reference group in the model.

2.5 Household income

The Experian household income data comprised of 10 income bands which were reclassified into the following four groups:

1. Up to £14,999
2. Between £15,000 and £29,999
3. Between £30,000 and £49,999
4. £50,000 and over

The lowest income group was used as the reference group.

Note that the household income variable should be treated with caution, particularly in relation to the lower income households. In addition, in terms of coverage, it is only available for about three quarters of the NEED sample.[4]

2.6 Output Area Classification

The seven Output Area Classification super groups were used:

1. Blue collar communities
2. City living
3. Countryside
4. Prospering suburbs
5. Constrained by circumstances
6. Typical traits
7. Multicultural

'Blue collar communities' were used as the baseline in the model.

2.7 Energy efficiency measures[5]

The presence of the following energy efficiency measures was considered:

1. Cavity wall insulation
2. Heating measure
3. Loft insulation
4. Draught proofing
5. Replacement double glazing

[4] Because of these limitations, ONS Output Area Classifications (see section 2.6) were investigated as a possible alternative, but is was found to perform poorly on its own.
[5] An initial regression using the NEED sample without considering energy efficiency measures was carried out since about half of the sample does not have a HEED record. This was then followed by a regression using the sub-sample of NEED with energy efficiency measures as recorded in HEED.

3. Results

3.1 Summary of results

All of the variables considered were included in the final regression model. The regression results, are shown in Table 3.1. Further details of the regression results, including the stepwise regression summary and the ANOVA table can be found in the appendix .

Table 3.1: Results of Regression Analysis for Gas Consumption, 2008

	Un-standardized coefficients		Standardised estimates
	Estimate	Standard error	
Constant	3263.320	25.831	
Floor area, m^2	110.216	0.191	0.425
Electricity consumption 2008, kWh	0.555	0.002	0.170
Dwelling type[1]			
Bungalows	4321.650	20.309	0.149
Converted flats	3721.272	44.510	0.049
Purpose built flats	1958.782	23.384	0.059
Detached houses	3775.333	21.113	0.149
End of terrace	1623.485	18.783	0.054
Semi-detached	2243.392	14.922	0.116
Dwelling age[2]			
1930 -1964	-669.493	14.223	-0.360
1965 - 1982	-2400.029	15.650	-0.113
1983 - 1992	-3990.112	21.431	-0.120
1993 - 1999	-4745.885	26.999	-0.150
2000 - 2010	-4048.983	152.800	-0.014
Household income[3]			
£15,000 - £29,999	197.311	12.840	0.010
£30,000 - £49,999	788.787	13.807	0.038
£50,000 or more	1715.495	17.651	0.064
Output Area Classification[4]			
City living	1534.266	29.814	0.032
Countryside	270.374	24.182	0.007
Prospering suburbs	1147.951	16.712	0.056
Constrained by circs	87.222	19.414	0.003
Typical traits	569.033	15.696	0.026
Multicultural	2180.100	19.466	0.076
Heating measures present	-1373.096	16.441	-0.045
Loft insulation present	-214.936	20.869	-0.006
Draught proofing present	660.926	44.571	0.008
Glazing replacement present	-509.464	13.241	-0.021
Cavity wall insulation present	-1207.278	15.428	-0.045
R-squared	36.6 %		

1. Relative to mid terraces
2. Relative to properties built prior to 1930
3. Relative to households in the lowest income group, or those with income less than £15,000
4. Relative to blue collar communities

3.2 Interpretation of results

Note that in this model the constant term represents the mean consumption when all the variables are zero. However, it suggests that there is a minimum core gas consumption that all households have irrespective of their sizes.

In the discussion below, each factor should be interpreted as its impact on average gas consumption when all other factors remain the same.

Floor area

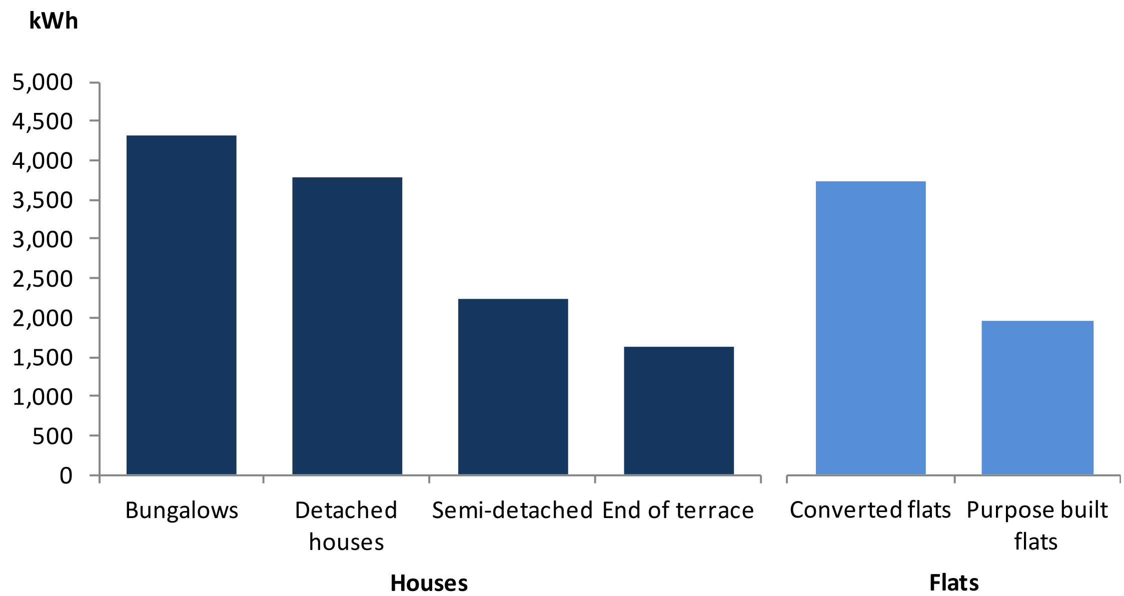
When all other factors remain the same, the mean gas consumption increases by about 110 kWh for every square meter (approximately 10.8 square feet) increase in floor area.

Floor area was found to have the largest contribution to the model, accounting for the majority of the variation in gas consumption. This is consistent with the results from the NERA work (see Annex E). This result is expected, since the majority of gas is used for heating and the amount required to heat a home would be highly dependent on the size of the property, as measured by floor area.

Dwelling type

At first glance, the relationship between dwelling type and gas consumption appears slightly unusual with mid terraced houses (the reference dwelling type) apparently consuming the least amount of gas even when compared to flats. However, if for the reasons outlined in Section 2.1, houses and flats are considered separately, the relationship become more plausible as demonstrated in Figure 3.1 below.

Figure 3.1: Effect of dwelling type on gas consumption in 2008 (relative to mid terraced houses)



Households living in bungalows consume about 4,300 kWh more gas on average than similar households living in mid terraced houses. They use only about 500 kWh more than those living in detached houses.

Households in detached houses use about 1,500 kWh more gas than those in semi detached houses. Households occupying end terraces use slightly less gas (600 kWh) than those in semi detached houses but 1,600 kWh more than those in mid terraces. As expected, converted flats consume more than purpose built flats (around 1,800 kWh more). These results are consistent with the findings set out in Section 4 of the NEED report.

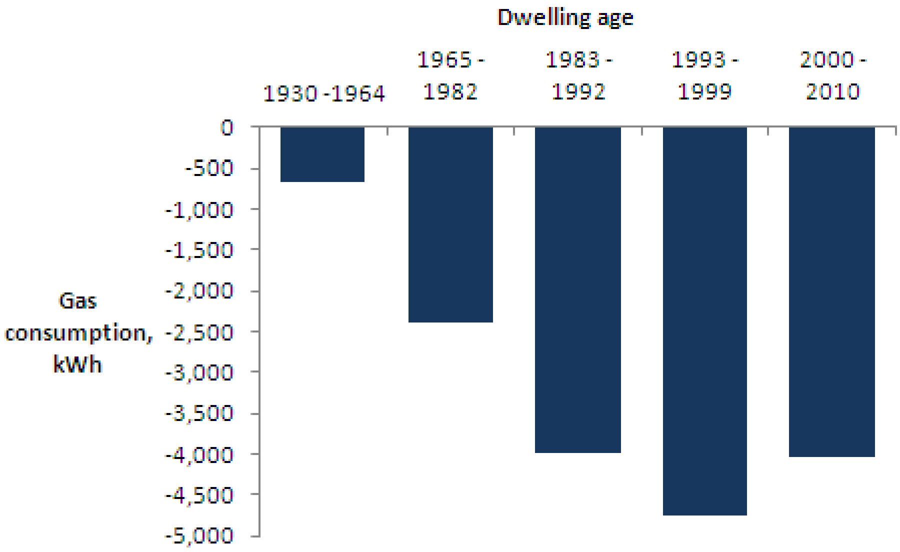
Even after considering houses and flats separately, the pattern in consumption for some house types does not follow that of average consumption figures presented in Section 3 of the main report. The model suggests that mean gas consumption for bungalows is higher than that for detached houses which in turn consume more than semi detached houses. This pattern is also seen in the NERA model presented in Annex E.

The pattern observed in the model may be explained by the fact that properties with large external surface area to volume ratios consume more gas. Note that a detached house would have a larger volume than a bungalow of the same floor area so would likely have a smaller or comparable ratio.

Dwelling age

A summary of the results for dwelling age is shown in Figure 3.2.

Figure 3.2: Effect of dwelling age on gas consumption in 2008 (relative to those built pre-1930`



If all other things are unchanged, the oldest properties (those built prior to 1930) consume more gas than any of the other dwelling age groups considered. Building regulations have meant that the thermal performance of new build properties has been increasing since the 1980s (see Annex G for details).

Properties built during 1930 and 1964 used slightly less gas than those built earlier (700 kWh less on average), however consumption generally reduces rapidly thereafter. Properties built between 1983 and 1999 used on average between 4,000 to 4,700 kWh less gas than the oldest properties.

However, note that the estimate for the newest properties built since 2000 does not follow this pattern and is much more variable than the other estimates. Their consumption did not appear lower than those built between 1993 and 1999 and was quite similar to those properties built between 1983 and 1992. This may be due to the relatively small number of new properties in the sample, which is a characteristic of the housing stock in England, or because of the impact of some new builds which have a low consumption before they are occupied for a full year.

Household income

Gas consumption in households in the highest income band (£50,000 or more) was on average 1,700 kWh more than those in the lowest income groups[6] (less than £15,000). However, the effect of income on gas consumption was not really apparent in households with incomes of between £15,000 and £29,999 and was only slightly noticeable in households earning £30,000 to £49,999 (both compared to the lowest income groups).

Output Area Classification

The type of community that a household belongs to has some impact on the amount of gas consumed. For example, multicultural communities, city living and prospering suburbs use on average between 1,100 and 2,200 kWh more gas than blue collar communities. On the other hand, households that are constrained by their circumstances have similar gas consumption to blue collar communities.

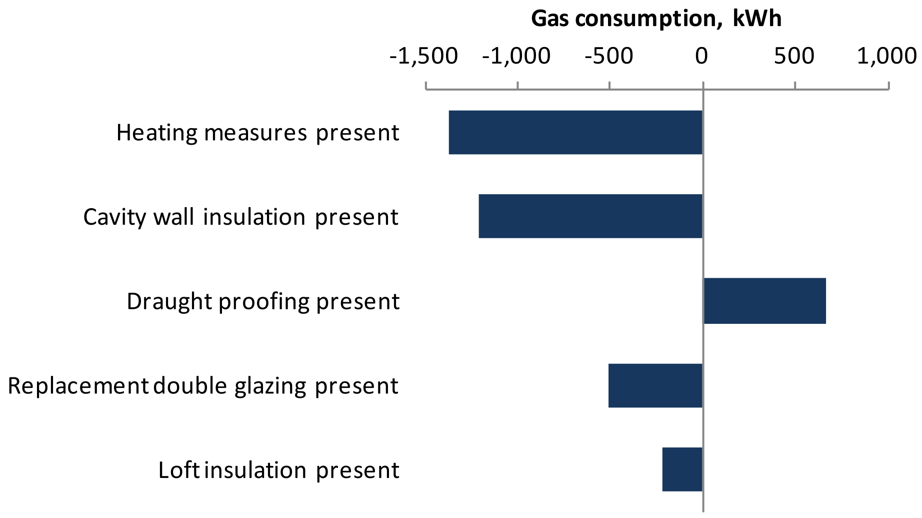
Presence of energy efficiency measures

Of all the energy efficiency measures included in the model, the presence of heating measures resulted in the largest reduction in gas consumption. In comparison, the presence of cavity wall insulation resulted in a slightly lower reduction while replacement glazing and loft insulation reduced consumption by much lower amounts. Note that all heating measures were considered and not just condensing boilers as in DECC's analysis in Section 4 of the main NEED report.

The results of the energy efficiency measures are shown in the Figure 3.3 below.

[6] Note that the household income variable is thought to have some limitations in terms of coverage, particularly in relation to the lower income households. Also, the original 10 bands were re-grouped into four bands in the model. Output Area Classifications were explored as an alternative to income, but they performed poorly.

Figure 3.3: Effect of energy efficiency measures on 2008 gas consumption



Households that have installed heating measures (these are mainly new condensing gas boilers) used about 1,400 kWh less gas than those that had not. Households that had cavity wall insulation used slightly more gas than those with heating measures and about 1,200 kWh less than those without cavity wall insulation. Homes with glazing measures used about 500 kWh less gas while those with loft insulation used around 200 kWh less. However, draught proofed homes used close to 700 kWh more gas than those where this measure was absent. It is not clear why this measure caused an increase in gas consumption.

Note that these results do not include properties that were built with these measures installed or those where the measures were installed by the householders themselves (DIY installations) as this information is not available in HEED.

It should also be noted that these results are the difference between average gas consumption for homes with and without the energy efficiency measure. They should not be interpreted as the estimated savings; which are given in Section 4 of the main report.

3.3 Model accuracy

The coefficients for all the terms in the model are statistically significant at the 0.001 level. However, one factor, darea, representing floor area, had a much larger influence than the others as indicated by its standardised coefficient estimates value of 0.425.

The R-squared value implies that the model explains only about 37 per cent of the variation in gas consumption. There is therefore still substantial (two thirds) unexplained variation in consumption. Much of this further variation will be a result of factors the model did not capture, such as socio-demographics, household occupancy or individuals' behaviour.

A number of regression runs were carried out in order to try and improve the model fit, including using logarithm and exponential transformations of gas consumption and floor area. However, these did not improve the predictive performance of the model.

4. Summary and conclusions

The multiple regression approach set out in this annex provides similar results, in terms of model adequacy, to other models such as the local area gas model[7] developed by DECC and more complex methods such as econometric techniques used by NERA (see Annex E for more details).

The regression work to date has demonstrated that there is real value in analysing energy consumption data in this way. However, the modelling of energy consumption remains a very complex problem, with R-squared values of greater than about 30 to 40 per cent seemingly impossible to obtain with the data available. This suggests that there may be a significant proportion of variability which relates to other behaviours which we do not have the data to represent or model at a property level. More insights into this may be available from ongoing work in DECC's Customer Insight team. Alongside this, potential developments to the model using the data currently available include:

- Checking correlations in more detail - For example, there may be some benefit in looking at scatter plots and correlations for more of the data currently available. This would better inform potential candidates to include in a model and where interaction terms or transformations should be considered.

- Including interactions or higher order terms - For example, a two way interaction would be relevant if it was likely that the relationship between gas consumption and one of the variables in the model depended on the value of another variable in the model. One possible interaction to explore could be floor area and dwelling type, as the relationship between gas consumed and floor area depends on the dwelling type (irrespective of whether a property is a house or flat).

- Energy consumption cut off - Katalysis found that the model fit was quite sensitive to the gas cut off used. It would be sensible to see if the model improves when the cut off for valid gas is reduced from 73,200 kWh to 50,000 kWh, in line with the cut off used for DECC's most recent analysis. This could also be extended to electricity by using the cut off of 25,000 kWh for valid consumption.

- Identifying homes built with measures - Create a proxy variable to indicate whether a property was likely to have been built with cavity wall and/or loft insulation based on the implementation of building regulations. For example, assuming that all recently built properties had these measures installed when built.

[7] See the special feature 'Identifying local areas with higher than expected domestic gas use' in Energy Trends, March 2012 available at: http://www.decc.gov.uk/assets/decc/11/stats/publications/energy-trends/4779-energy-trends-mar12.pdf.

Appendix: Detailed Regression Results

Model Summary[h]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.531[a]	.282	.282	7672.048	.282	858361.036	1	2181439	.000	
2	.562[b]	.316	.316	7491.456	.033	106441.945	1	2181438	.000	
3	.576[c]	.332	.332	7404.778	.016	8562.558	6	2181432	.000	
4	.592[d]	.351	.351	7297.303	.019	12946.937	5	2181427	.000	
5	.596[e]	.355	.355	7274.355	.004	4595.931	3	2181424	.000	
6	.601[f]	.361	.361	7240.462	.006	3412.801	6	2181418	.000	
7	.605[g]	.366	.366	7212.931	.005	3337.855	5	2181413	.000	1.986

a. Predictors: (Constant), darea

b. Predictors: (Constant), darea, Econs2008

c. Predictors: (Constant), darea, Econs2008, dtype3dum5, dtype3dum1, dtype3dum2, dtype3dum6, dtype3dum3, dtype3dum4

d. Predictors: (Constant), darea, Econs2008, dtype3dum5, dtype3dum1, dtype3dum2, dtype3dum6, dtype3dum3, dtype3dum4, agecde3DUM6, agecde3DUM5, agecde3DUM3, agecde3DUM4, agecde3DUM2

e. Predictors: (Constant), darea, Econs2008, dtype3dum5, dtype3dum1, dtype3dum2, dtype3dum6, dtype3dum3, dtype3dum4, agecde3DUM6, agecde3DUM5, agecde3DUM3, agecde3DUM4, agecde3DUM2, HhldInc2DUM3, HhldInc2DUM2, HhldInc2DUM4

f. Predictors: (Constant), darea, Econs2008, dtype3dum5, dtype3dum1, dtype3dum2, dtype3dum6, dtype3dum3, dtype3dum4, agecde3DUM6, agecde3DUM5, agecde3DUM3, agecde3DUM4, agecde3DUM2, HhldInc2DUM3, HhldInc2DUM2, HhldInc2DUM4, OAC2DUM3, OAC2DUM6, OAC2DUM2, OAC2DUM5, OAC2DUM7, OAC2DUM4

g. Predictors: (Constant), darea, Econs2008, dtype3dum5, dtype3dum1, dtype3dum2, dtype3dum6, dtype3dum3, dtype3dum4, agecde3DUM6, agecde3DUM5, agecde3DUM3, agecde3DUM4, agecde3DUM2, HhldInc2DUM3, HhldInc2DUM2, HhldInc2DUM4, OAC2DUM3, OAC2DUM6, OAC2DUM2, OAC2DUM5, OAC2DUM7, OAC2DUM4, HtgMDUM, DraughtMDUM, GlazReplDUM, CavityWIDUM, LoftMDUM

h. Dependent Variable: Gcons2008

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
7	Regression	6.543E13	27	2.423E12	46580.798	.000
	Residual	1.135E14	2181413	5.203E7		
	Total	1.789E14	2181440			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
7	(Constant)	3263.320	25.831		126.331	.000
	darea	110.216	.191	.425	575.904	.000
	Econs2008	.555	.002	.170	295.578	.000
	dtype3dum1	4321.650	20.309	.149	212.796	.000
	dtype3dum2	3721.272	44.510	.049	83.605	.000
	dtype3dum3	1958.782	23.384	.059	83.767	.000
	dtype3dum4	3775.533	21.113	.149	178.825	.000
	dtype3dum5	1623.485	18.783	.054	86.436	.000
	dtype3dum6	2243.392	14.922	.116	150.344	.000
	agecde3DUM2	-669.493	14.223	-.036	-47.072	.000
	agecde3DUM3	-2400.029	15.650	-.113	-153.358	.000
	agecde3DUM4	-3990.112	21.431	-.120	-186.186	.000
	agecde3DUM5	-4745.885	26.999	-.105	-175.781	.000
	agecde3DUM6	-4048.983	152.800	-.014	-26.499	.000
	HhldInc2DUM2	197.311	12.840	.010	15.367	.000
	HhldInc2DUM3	788.873	13.807	.038	57.134	.000
	HhldInc2DUM4	1715.495	17.651	.064	97.187	.000
	OAC2DUM2	1534.266	29.814	.032	51.462	.000
	OAC2DUM3	270.374	24.182	.007	11.181	.000
	OAC2DUM4	1147.951	16.712	.056	68.692	.000
	OAC2DUM5	87.222	19.414	.003	4.493	.000
	OAC2DUM6	569.033	15.696	.026	36.253	.000
	OAC2DUM7	2180.100	19.466	.076	111.994	.000
	HtgMDUM	-1373.096	16.441	-.045	-83.516	.000
	LoftMDUM	-214.936	20.869	-.006	-10.299	.000
	DraughtMDUM	660.926	44.571	.008	14.829	.000
	GlazReplDUM	-509.464	13.241	-.021	-38.477	.000
	CavityWIDUM	-1207.278	15.428	-.045	-78.252	.000

Dwelling type

Bungalows	• 1	(dtype3dum1)
Converted flats	• 2	(dtype3dum2)
Purpose-built flats	• 3	(dtype3dum3)
Detached houses	• 4	(dtype3dum4)
End-of-terrace houses	• 5	(dtype3dum5)
Semi-detached houses	• 6	(dtype3dum6)
Mid-terrace houses	• 7	

Age bands

Pre-1900 – 1929	• 1	
1930-1964	• 2	(agecde3DUM2)
1965-1982	• 3	(agecde3DUM3)
1983-1992	• 4	(agecde3DUM4)
1993-1999	• 5	(agecde3DUM5)
2000-2010	• 6	(agecde3DUM6)

Income bands

<£10,000- £14,999	• 1	
£15,000-£29,999	• 2	(HhldInc2DUM2)
£30,000-£49,999	• 3	(HhldInc2DUM3)
£50,000-£75,000+	• 4	(HhldInc2DUM4)

OAC

Blue collar communities	• 1	
City living	• 2	(OAC2DUM2)
Countryside	• 3	(OAC2DUM3)
Prospering suburbs	• 4	(OAC2DUM4)
Constrained by circs	• 5	(OAC2DUM5)
Typical traits	• 6	(OAC2DUM6)
Multicultural	• 7	(OAC2DUM7)