

# **Energy Use in Homes**

**A series of reports on domestic energy use in  
England**

**Space and Water Heating Systems**



# Energy Use in Homes

## A series of reports on domestic energy use in England

**This is one of a series of three reports on the energy characteristics of the stock as observed by the 2003 English House Condition Survey.**

**The reports in this series are:**

- 1. Space and Water Heating**
- 2. Thermal Insulation**
- 3. Energy Efficiency**

*The English House Condition Survey is funded and provided courtesy of Communities and Local Government. More information about this survey can be found at [www.communities.gov.uk/ehcs](http://www.communities.gov.uk/ehcs)*

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## Space and Water Heating 2003

### Executive Summary

The predominant space heating system across the stock is the boiler driven radiator system, identified as the primary source for 83% of dwellings. Storage radiators are used in 7% of dwellings, with stock relying on fixed room heaters contributing 6%. The vast majority (83%) is fuelled by gas, with 9% of systems running on electricity and the remaining 8% using oil, solid fuel or communal heat pumps. 74% of dwellings also use a secondary source of space heating, with room heaters accounting for 97% of these. The remaining 3% is comprised of storage radiators and portable heaters.

A household's hot water is supplied by central heating in 83% of cases, with an electric immersion heater used by 12% of the stock. Around 2% use either a dedicated water heating boiler or instantaneous heating systems. Again gas is the predominant heating fuel for water, used in 80% of dwellings, indeed 76% of the total stock use gas central heating for both primary space and water heating. 12% of dwellings heat their water with electricity. Among heating systems with boilers, standard boilers predominate with 45% of the total stock using these, whilst 27% use a combination boiler and 12% a back boiler.

Central heating with radiators is a more prevalent heating system in houses than flats, and in detached houses in particular. Flats are more likely to have storage radiators (particularly purpose built flats), communal systems and room heaters to heat the dwelling.

The location of a dwelling is an important factor when looking at space and water heating. 95% of oil fuelled systems and 60% of solid fuel systems occur in rural stock. This trend may be due to the age of stock, type of dwelling and also limited availability of the gas network in rural areas. Electric room heaters and communal heating are found in a higher proportion of dwelling in urban areas, and may be linked to the high proportion of flats in urban areas.

Since 1996 the proportion of dwellings primarily using central heating has steadily risen, with the predominant system being a boiler driven radiator system. The proportion of dwellings with this system has increased from 75% in 1996 to 83% in 2003. Of the minority central heating systems, the proportion of communal heating schemes have risen due to its installation in a number of social sector flats, whilst warm air systems, mainly installed in the 1970's, have seen their frequency decrease.

All forms of non-central heating have decreased since 1996, particularly individual room heaters and portable electric heaters. These categories have seen numbers approximately halve since 1996.

Around 2.7 million more dwellings are using central heating to provide hot water in 2003 than in 1996, with the proportions of all other methods decreasing, and numbers of dedicated water boilers halving. The proportion of dwellings using a boiler for space heating has increased from 79% in 1996 to 85% in 2003.

## 2003 Space and Water Heating Update Report

### Summary

- Types of primary space and water heating vary according to factors such as dwelling type, tenure, region and dwelling age.
- Gas central heating is more frequently found in owner occupied stock than in other tenures, and in a higher proportion of houses than flats.
- More energy efficient heating systems and boiler types are found in dwellings with higher levels of thermal insulation.

### Introduction

This report studies the provision of primary space and water heating systems across the English housing stock. It uses analysis based on the combined 2002 – 2003 English House Condition Survey (EHCS), with a sample of approximately 16,500 dwellings.

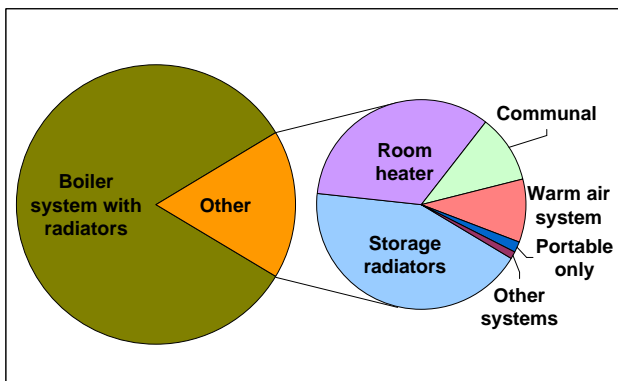


Figure 1: Proportions of primary space heating systems

The predominant space heating system across the stock is the boiler driven radiator system as shown in Figure 1. It is identified as the primary source for 83% of dwellings. This category covers all systems, regardless of the fuel used, in which heat is supplied by a central source and radiators are the heat emitters. Electric storage radiators are used in 7% of dwellings, with fixed gas, solid fuel or electric room heaters used as a primary source in 6%. The remaining 6% comprises all communal systems, underfloor or ceiling systems (grouped as 'other') and dwellings in which individual rooms are only heated by a portable unit.

The vast majority of systems (83%) are fuelled by gas, with 9% of systems running on electricity and the remaining 8% using oil, solid fuel or communal heating (Figure 2).

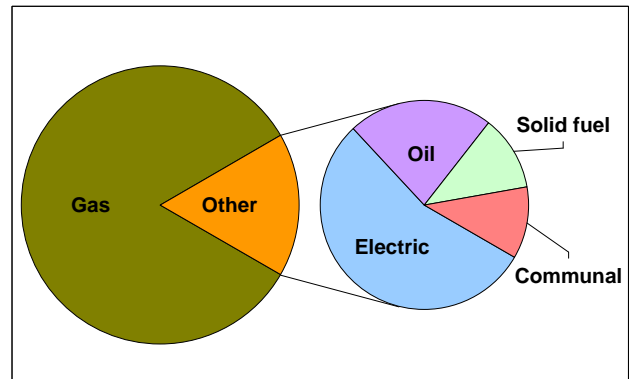


Figure 2: Proportion of space heating systems by fuel

74% of dwellings also use a secondary source of space heating, with room heaters accounting for 97% of these. The remaining 3% is comprised of storage radiators and portable heaters.

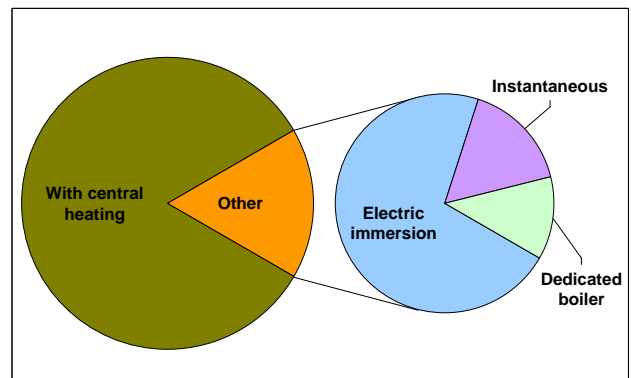


Figure 3: Proportions of water heating systems

A dwelling's hot water is primarily supplied by central heating in 83% of cases (Figure 3), with an electric immersion heater used by 12% of the stock as the main source of hot water. Immersion heaters are found in around 54% of the stock but this report will only deal with the primary source. Around 2% use either a dedicated water heating boiler or instantaneous heating systems.

Gas is the predominant fuel used for heating water, identified in 80% of dwellings. Indeed 76% of the total stock uses gas central heating for both primary space and water heating.

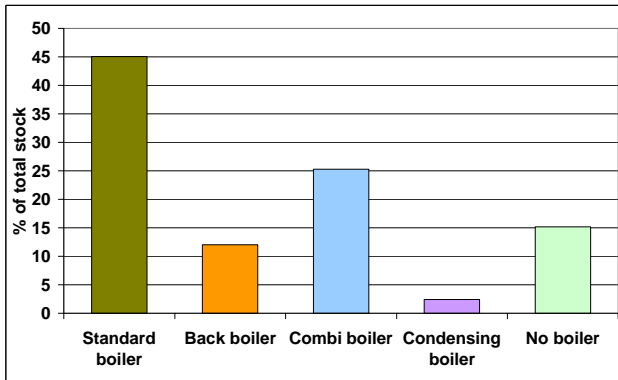


Figure 4: Proportions of boiler types

Among heating systems with boilers, standard boilers predominate (Figure 4). 45% of the total stock uses this boiler system, whilst 27% use a combination boiler and 12% a back boiler. Condensing boilers make up only 2.5% of the stock.

## Dwelling Analysis

### Dwelling Type

Central heating with radiators is a more predominant heating system in houses than flats and in detached houses in particular, with wet radiator boiler systems found in 94% of these dwellings (Figure 5).

Only 70% of converted flats have wet radiator systems and just 55% of purpose built flats, which are more reliant on programmable storage heaters, communal heating and portable heaters than any other dwelling category. Room heaters are particularly common in terraced houses, with 39% of all room heaters found in mid terraced dwellings, which make up only 21% of the total stock.

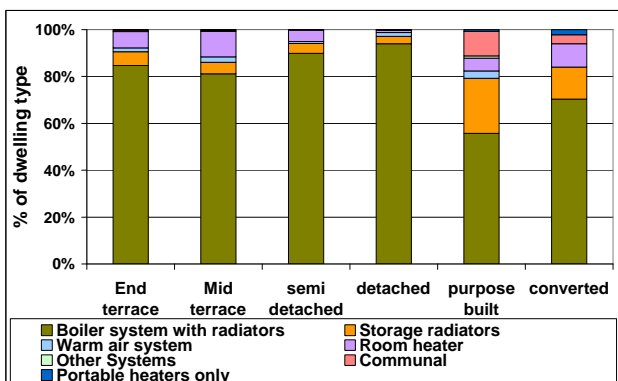


Figure 5: Comparison of space heating systems by dwelling type

Purpose built flats have the highest proportion of electrically heated systems, accounting for 44% of dwellings in this heating category despite making up only

14% of the overall stock. They also have the lowest percentage of gas fuelled systems. Detached houses have the largest proportion of oil powered systems, reflecting the higher than average likelihood of these houses being off the gas network.

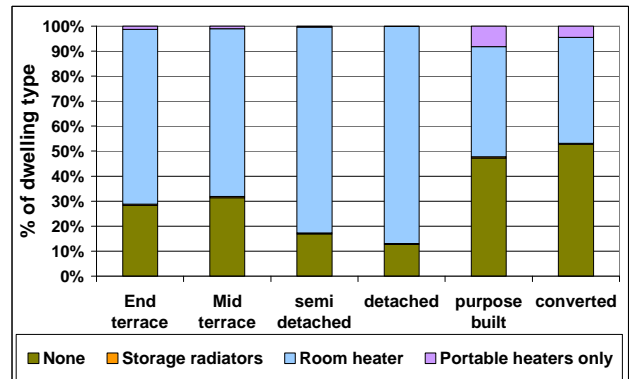


Figure 6: Comparison of secondary heating systems by dwelling type

Flats are significantly less likely to have a secondary source of space heating than houses (Figure 6). This is mainly due to their smaller size, with centrally and communally heated flats in particular using only one source of heating. The most likely to have an alternative source are detached and semi detached with 87% and 83% respectively using a secondary system against a stock average of 74%.

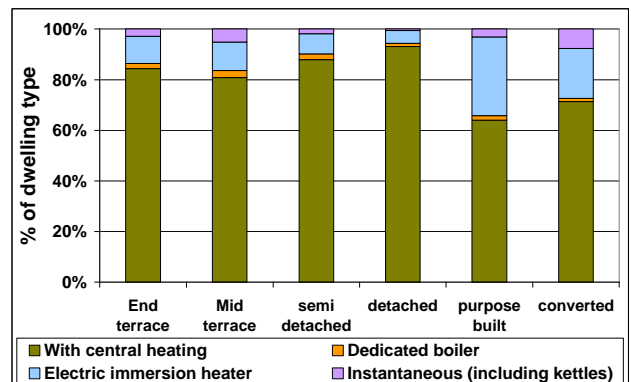


Figure 7: Comparison of water heating systems by dwelling type

We also see flats, particularly purpose built, heating their water through an electric immersion more frequently than houses (Figure 7), with centrally heated water more predominant in detached and semi detached houses.

### Dwelling Age

Wet radiator boiler systems are the most frequently used in dwellings of all ages, with inter-war stock being more reliant on these systems (89%) than other age bands (Figure 8).

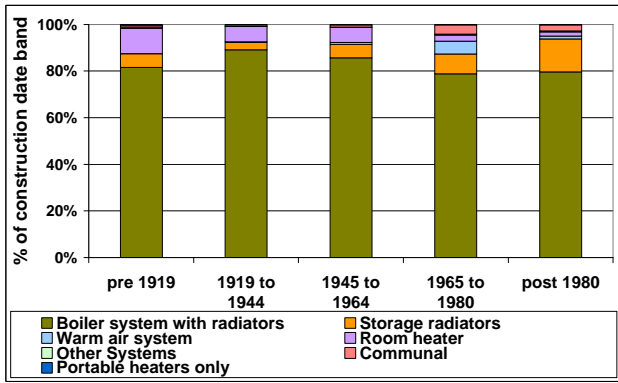


Figure 8: Comparison of space heating systems by construction date

Programmable storage radiators are more common in newer dwellings, with 34% of these systems found in post 1980 stock. The inverse is true for room heaters of which 40% are found in pre 1919 dwellings compared with only 6% in post 1980 stock. Both warm air and communal systems, although making up a relatively small percentage of the total stock, are found mainly in 1965 – 1980 dwellings. Solid fuel and oil systems are more likely to be found in older stock, and are much less common in recently constructed stock, in which electrical heating is more predominant than in other age categories (Figure 9). We find that 55% of electrical systems occur in dwellings built after 1965 whilst only 40% of all stock was built in this period.

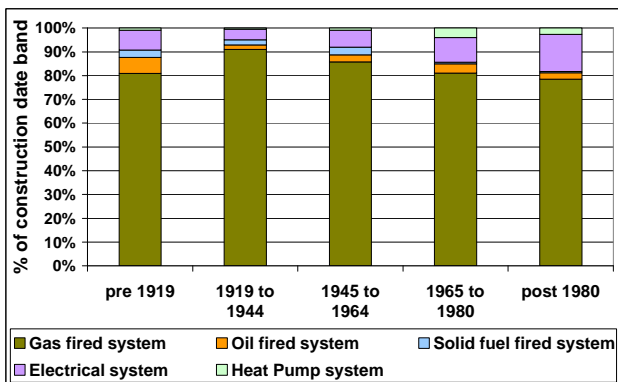


Figure 9: Comparison of space heating fuel by construction date

Newer dwellings are increasingly likely to use electricity to heat water, although pre-1919 stock also has a high proportion of immersion and instantaneous heaters with the proportion of dwellings using central heating or a dedicated boiler falling over time. The balance between standard and combination boilers changes with each construction date category (Figure 10). Pre-1919 dwellings use just over a third of each type, compared to 57% of post 1980 stock using standard boilers and 21% using combination boilers.

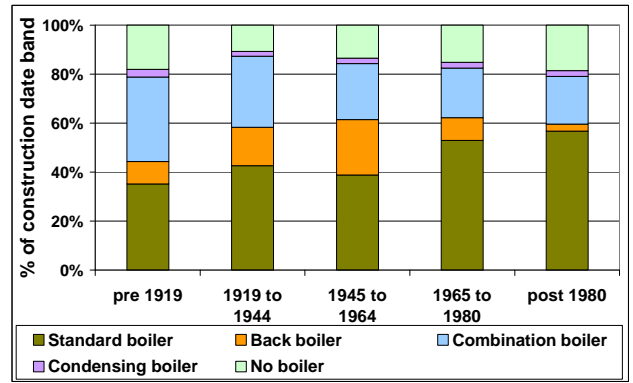


Figure 10: Comparison of boiler types by construction date

However, it would be wrong to conclude that combination boilers are being used less frequently. As will be shown later in this report, combination boilers are making up an increasing percentage of installations; the high frequencies seen in older properties come from old boilers that have been replaced, whilst the newer stock is still using the original standard boilers.

### Correlation with Thermal Performance of the Fabric

There are a number of areas that we can identify in which two or more energy efficiency measures occur together. One of these is found when comparing space heating systems and the extent of double glazing. We see that boiler systems are more predominant in fully double glazed dwellings than those with no double glazing, whilst storage and room heaters are more predominant in non-double glazed dwellings than overall stock proportions would suggest. A similar pattern emerges in which gas fired heating systems occur more frequently in dwellings with some double glazing than those without, and likewise double glazed stock is more likely to use central heating for hot water than single glazed dwellings.

A further correlation can be found between high levels of insulation and efficient heating systems, with the highest proportion of boiler systems with radiators found in dwellings with insulated cavity walls. However, the next highest incidence is found in uninsulated solid walled stock. This can be attributed to the fact that older stock is overwhelmingly more likely to be solid walled and also has a higher proportion of boiler systems with radiators – 85% of pre 1945 stock use this heating system, compared with 81% of dwellings built in 1945 or later. Housing with solid walls uses a higher proportion of room and portable heaters, whilst cavity walled dwellings use a larger amount of storage heaters. This reflects the more recent construction dates of this stock.

Inefficient space and water heating is found in higher proportions in dwellings with uninsulated loft spaces than those with insulation. We find that radiator systems occur

in 76% of uninsulated dwellings compared with 82% of insulated stock. Room heaters and portable heaters predominate in housing with no loft insulation, along with oil and solid fuel systems and non-centrally heated hot water systems. We also see that dwellings with thicker loft insulation more frequently use condensing boilers.

### Government Office Region (GOR)

The East Midlands and North Eastern GOR's are the most reliant on boiler systems, whilst the South West uses a higher proportion of storage heaters than other regions, due to a lower level of access to mains gas. The highest proportion of room heaters are found in Yorkshire and the North West. 39% of communal systems are found in London, which makes up 15% of the total stock. These systems are found mainly in the high proportion of purpose built flats in the London GOR.

The South and East of the country have a higher proportion of electrical space heating than other regions, whilst the South West has the least efficient water heating systems; the region is above the national average for use of dedicated boilers, electric immersions and instantaneous heaters.

### Floor Area

There is a strong correlation between the type of space heating and dwelling floor area, with all non boiler systems being more predominant in smaller dwellings than large ones (Figure 11).

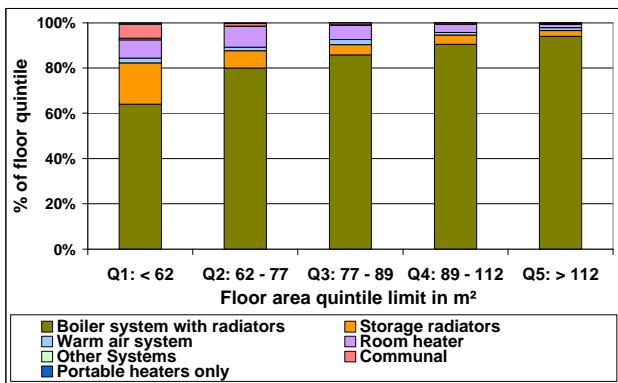


Figure 11: Comparison of space heating systems of floor area

Smaller stock is also the most likely to use electrical systems, with 48% of the smallest floor area quintile relying on this fuel. The largest fifth of all dwellings, of which 58% are detached houses, use 62% of oil fuelled systems. Larger homes are more likely to have a secondary method of space heating and also have a higher proportion of hot water produced by central heating than smaller stock.

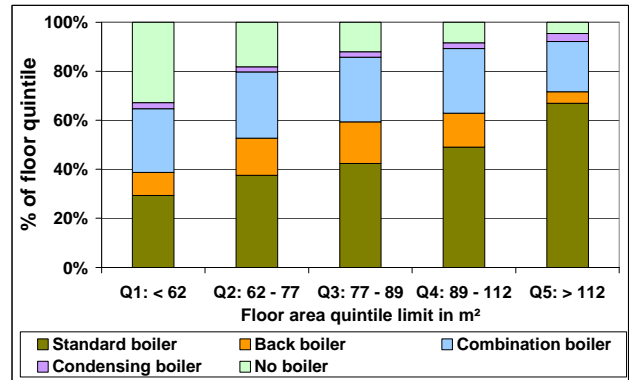


Figure 12: Comparison of boiler types by floor area

Standard and condensing boilers are found more frequently in larger dwellings (Figure 12), with dwellings in the smallest quintile seven times more likely to be without a boiler than those in the largest quintile.

## Household Analysis

### Tenure

Of the tenure categories private rented dwellings are the most reliant on non boiler driven systems, with around 16% of this stock using storage heaters and 12% of the stock using room heaters for space heating, (Figure 13). This is around twice the total stock proportion for each heating type.

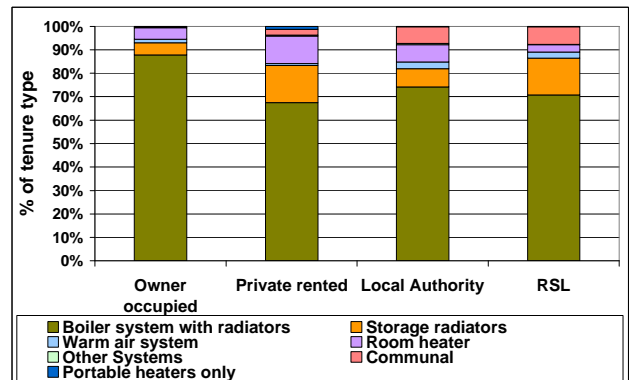


Figure 13: Comparison of space heating systems by tenure

Private rented stock consistently falls behind other tenures in terms of energy efficient space and water heating. It has the lowest proportion of gas systems for all heating, the highest proportion using electricity and the lowest percentage of hot water central heating systems. We find that some dwelling profiles which typically have inefficient space and water heating systems occur regularly in private rented stock. Whilst private rented stock makes up around 10% of the total number of dwellings, it contains 49% of all converted flats and 22% of the pre 1919 stock, both of which have high proportions of inefficient heating

systems. Southern and eastern regions predominate in this tenure and these also have proportionally high frequencies of electric systems and storage heaters.

RSL stock uses a similar proportion of storage heaters to private rented dwellings, but is more reliant on communal heating and less reliant on room heaters. The owner occupied sector has the highest levels of gas central heating systems and centrally heated hot water systems, as there is a greater prevalence of larger detached houses, of which 95% are owner occupied, compared with a total stock proportion of 71%.

## Vacancy

In a similar way to private rented stock, vacant dwellings have more of the minority heating systems and fuels than occupied stock, and are more likely to have electric immersion and instantaneous water heaters. This is partly explained by the fact that private rented dwellings make up over one third of all vacant stock, despite this tenure contributing only 10% to the total number of dwellings. Vacant dwellings are often older and more likely to be poorly insulated and have no double glazing; factors that correlate with inefficient heating systems (see above).

## Neighbourhood

The heating systems of dwellings in rural<sup>1</sup> locations differ from urban<sup>2</sup> stock, with 95% of oil fuelled systems and 60% of solid fuel systems occurring in rural stock, despite rural dwellings only comprising 21% of the total stock. This is due to the large number (45%) of older, detached dwellings in rural areas, many of which are off the gas network. Rural dwellings have a higher than average proportion of storage heaters, whilst electric room heaters, communal heating and combination boilers are found in a higher proportion of urban dwellings along with combination boilers, these are due to the high proportion of terraced housing and flats in urban areas.

Looking more closely at the surrounding area of a dwelling, we might expect to see a pattern of less efficient space and water heating occurring in poorer and more neglected neighbourhoods. The analysis shows that areas with these neighbourhoods include a higher than average proportion of room and portable heaters and more non-centrally heated hot water systems than on average. Housing in poor neighbourhoods use a high proportion of solid fuel and only 73% of these use boiler systems with radiators, compared with 84% of dwellings not situated in a poor neighbourhood.

## Household Type

Examining household composition, we see that single person households have the smallest percentage of boiler systems with radiators and the highest percentage of storage and room heaters (Figure 14). These categories are the most likely to live in flats which reflect the reliance on non-boiler heating systems. Couples with dependent children have the highest incidence of boiler driven systems; these families make up the largest percentage of the owner occupied sector which again reflects the typical heating systems of this tenure.

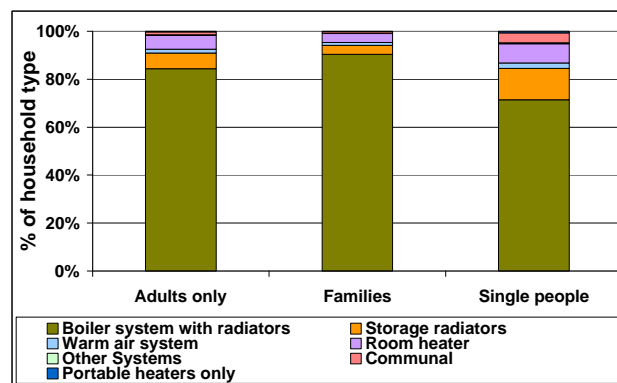


Figure 14: Comparison of heating systems by household type

Storage radiators and room heaters occur most frequently in both the youngest and oldest categories of Household Reference Person (HRP) and these categories are the least likely to use gas. Older categories are more likely to use a secondary source of space heating, usually room heaters.

## Income

A direct comparison can be made between poorer households and high use of minority heating systems, for example 20% of the lowest household income quintile use storage radiators or room heaters for primary space heating, compared with just 5% of the highest quintile (Figure 15).

<sup>1</sup> Isolated dwellings and small hamlets.

<sup>2</sup> Around core of towns, small cities, older urban areas incorporated in metropolises.



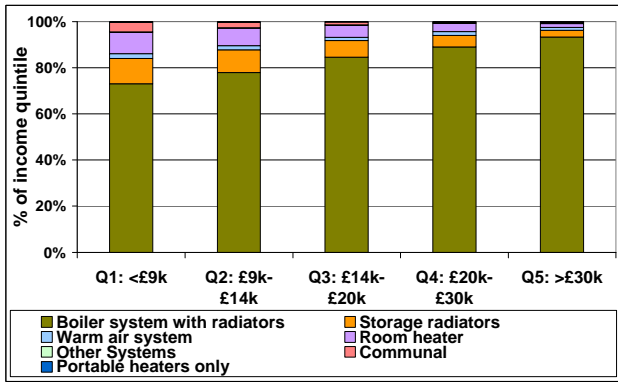


Figure 15: Comparison of space heating systems by household income

Low income households are more likely to be in terraces or flats, which also use a high proportion on non-central heating. Around 10% more of the highest income quintile uses gas for space and water heating than the lowest quintile.

### Comparison over time

Since 1991 the proportion of dwellings primarily using central heating has steadily risen, with the predominant system being a boiler driven radiator system (Figure 16). The proportion of dwellings with this system has increased from 71% in 1991 to 83% in 2003. Of the minority central heating systems, the proportion of communal heating schemes have risen due to its installation in a number of social sector flats, whilst warm air systems, mainly installed in the 1970's, have seen their frequency decrease.

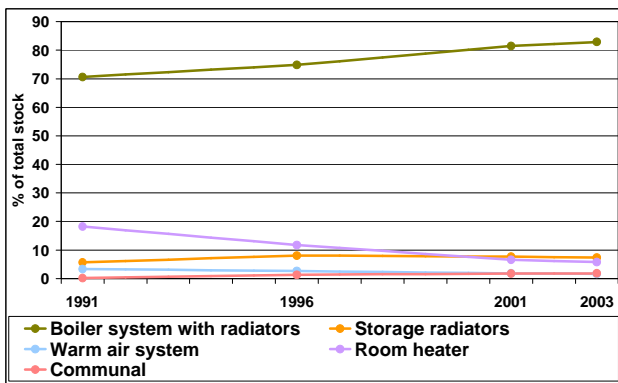


Figure 16: Change in the use of space heating systems over time

All forms of non-central heating have decreased since 1991, particularly individual room heaters and portable electric heaters. These categories have seen proportions drop by around two-thirds since 1991. These decreases mean that the use of electricity and solid fuel have fallen since 1991, whilst gas and oil fuelled systems are found more frequently (Figure 17).

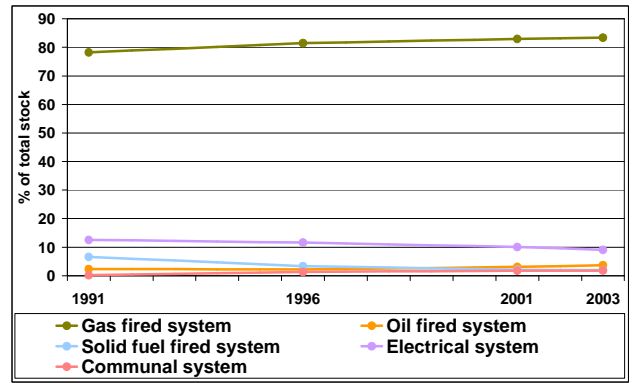


Figure 17: Change in the use of space heating fuel over time

Around 2.7 million more dwellings are using central heating to provide hot water in 2003 than in 1996, with the proportions of all other methods decreasing, and numbers of dedicated water boilers halving (Figure 18<sup>3</sup>).

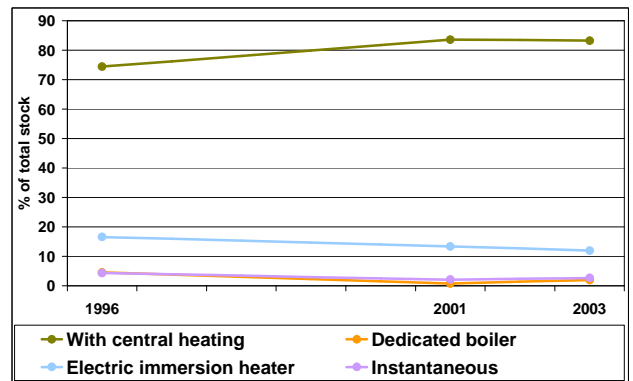


Figure 18: Change in the use of water heating systems over time

The proportion of dwellings using a boiler for space heating has increased from 74% in 1991 to 85% in 2003. The numbers of standard floor or wall boilers and back boilers have steadily decreased, being replaced with combination boilers and, more recently, condensing boilers (Figure 19). From a small number of combination boilers in 1991 there were 2.8 million in 1996 (14% of the total stock) and 5.4 million in 2003 (25% of the stock).

<sup>3</sup> Due to changes in the EHCS survey form, Figure 18 begins in 1996

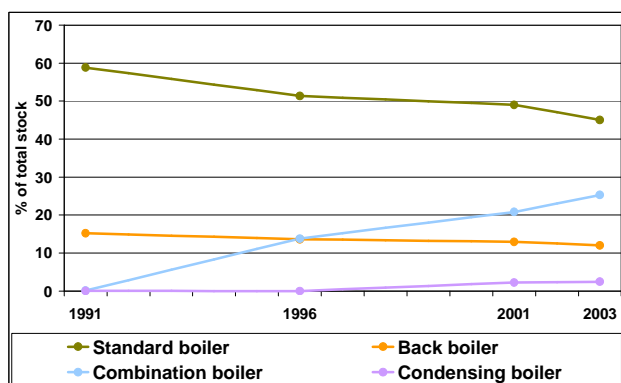


Figure 19: Change in the use of boilers over time

### Dwelling Type

The overall increase in boiler driven central heating since 1991 has been in all dwelling types to differing extents, although purpose built flats have only had a small change in the proportion using these systems. The decrease in room heaters used in purpose built flats is due to the take up of communal heating and storage heater systems. Terraced houses have seen the greatest increase in ownership of central heating systems; with 22% more mid terraces and 19% more end terraces using them. These increases are balanced by the removal of warm air systems and the reduced reliance on room heaters.

The increase in oil fuelled systems can be mainly attributed to semi-detached dwellings, predominantly in rural areas where homes are off the gas network. Terraces have seen the greatest increase in gas fuelled heating, balanced by the largest decrease in electrical systems. Terraced dwellings also show the largest changes in water heating systems since 1996, along with semi-detached houses. These categories have increased their use of centrally heated water by between 9% and 14%, with dedicated boilers, immersion and instantaneous heaters becoming rarer.

Between 1991 and 2003 the largest shift from standard boilers to combination boilers has been in flats, whilst terraced houses have had a large number of combination boilers installed where a non-boiler heating system was previously found. Semi-detached and detached dwellings have seen the largest decrease in back boilers, again replaced by combination and, more recently, condensing boilers.

### Dwelling Age

The increase in use of boiler systems with radiators since 1991 can be seen in each construction date category, but is most distinct in older stock, where central heating installations have replaced room heaters or portable electric heaters. Dwellings built between 1965 and 1980 have seen a large number of warm air heating systems

and storage radiators replaced with boiler driven central heating, whilst new build stock has increased the number of centrally heated homes in the post 1980 category by almost 1.8 million, out of a total increase of 2.2 million dwellings since 1991.

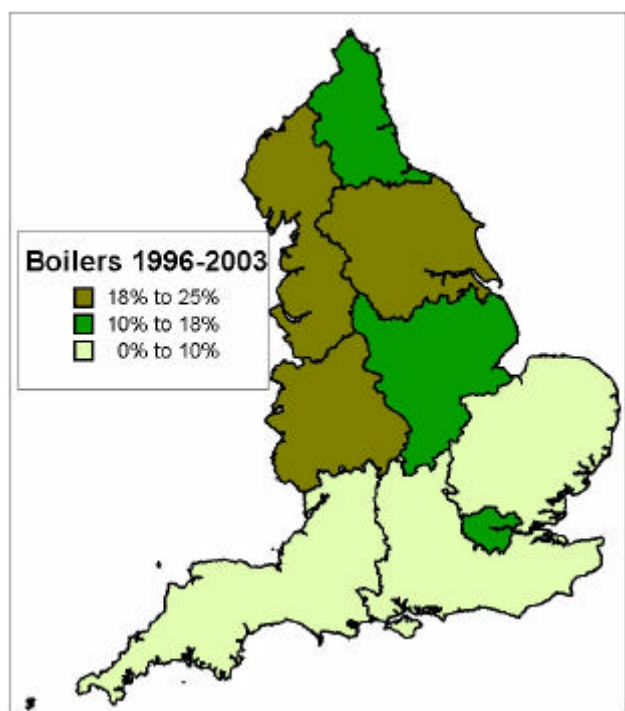
The swing from electric systems to gas fuelled systems is also more pronounced in older stock, as is the proportion of dwellings with centrally heated hot water systems. The frequency of solid fuel systems has been cut by around two-thirds since 1991, with the largest decreases in pre-1945 stock.

Combination boilers have increased in frequency in all age bands from almost zero in 1991, although older stock again shows the largest change. Over a third of pre-1919 dwellings have combination boilers in 2003, compared to one-fifth of post-1980 stock. In pre-1965 stock installation of combination and condensing boilers has replaced a significant amount of stock with non-boiler systems, whilst in post-1964 dwellings it is existing standard boilers that have been upgraded.

### Government Office Region

The highest increases of central heating use since 1996 are in the North and Midlands, whilst the use of storage heaters has increased slightly in the Eastern and South East GOR's, resulting in a small shift from gas fuelled systems to electrical systems. In London the frequency of room heaters as the primary space heating source has decreased by two thirds, and has been replaced with central and communal heating.

The Midlands has seen the largest increase in the proportion of dwellings using centrally heated water, with the majority of conversions coming from stock that previously used an electric immersion heater.



**Figure 20: Percentage increase in the use of combination or condensing boilers by region**

Figure 20 shows the increase in the use of combination and condensing boilers for each region between 1996 and 2003, banding the % change into 0 – 10%, 10% to 18% and more than 18%. The southern regions have seen the smallest increases, with the exception of London in which the use of these boilers has risen by 14%. The North West, Yorkshire and the West Midlands show the largest increases of between 18% and 25%.

The regions with the largest proportion of dwellings without boilers, along with the South West, have shown the largest increases in these energy efficient boilers. However, where the North West area has significantly improved, the South West remains the region with the lowest proportion of dwellings with any type of boiler driven systems.

### Tenure

The dominant owner occupied sector has seen a rise in boiler systems with radiators of around 3.1 million, an increase of 8.5% within this sector. The numbers of all other systems, with the exception of communal heating, have fallen. Social housing has seen an increase in the proportion of central heating installations since 1991 of

13%, although the transition of a large amount of local authority stock to RSL ownership, often of a poor quality, means that the RSL sector has seen a large increase in the number of dwellings using storage heaters.

Private rented stock has also seen increases in the use of central heating and storage heaters and a sharp decrease in dwellings relying on room heaters although it still has a proportionally higher amount of this heating category than other tenures.

The RSL sector has had the largest increase in the proportion of dwellings with gas fuelled systems and centrally heated hot water systems. This is mainly due to new build RSL stock installing these systems as standard. The transit of local authority stock has significantly reduced the proportions of electrical space heating systems and immersion water heating systems in this sector.

For the same reason the frequency, rather than the proportion, of RSL stock without a boiler has increased, whilst the frequency of back boilers has decreased in line with other tenures. The use of combination boilers has increased dramatically in RSL stock and has also doubled in the owner occupied and private rented sectors, whilst standard boilers are gradually being replaced in all tenures.

### Household Type

The largest increase in the proportion of boiler driven central heating systems since 1991 has been among one parent families, corresponding to the largest percentage decrease in room heater use. The highest use of storage heaters and communal systems are still found in single person households, although these have also seen a rise of around 10% in boiler driven central heating systems.

Young households containing either one person or a couple have seen the highest increases in gas fuelled systems since 1991, whilst couples with dependent children are using twice as many oil fuelled systems in 2003, contributing most significantly to the rise in the use of this minority fuel.

## Space and Water Heating Update Update Tables 2003

These tables give detailed breakdowns of the four main heating groups (primary space heating type, space heating fuel, water heating type and boiler type) against key variables, as an appendix to the Space and Water Heating Update Report

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**Table 1.1 Primary space heating system - Proportion of space heating type**

	count(000s), (column%)
<b>Primary space heating system</b>	<b>Dwellings</b>
Boiler system with radiators	17,806 ( 82.9)
Storage radiators	1,587 ( 7.4)
Warm air system	360 ( 1.7)
Room heater	1,241 ( 5.8)
Other Systems	45 ( 0.2)
Communal	393 ( 1.8)
Portable heaters only	53 ( 0.2)
<b>Total</b>	<b>21,484</b> <b>( 100.0)</b>















**Table 2.1 Primary space heating fuel - Proportion of space heating fuel**

count(000s), (column%)	
<b>Primary space heating fuel</b>	<b>Dwellings</b>
Gas fired system	17,915 ( 83.4 )
Oil fired system	800 ( 3.7 )
Solid fuel fired system	422 ( 2.0 )
Electrical system	1,954 ( 9.1 )
Communal system	393 ( 1.8 )
Total	21,484 ( 100.0 )





Table 2.4 Primary space heating fuel - Proportion of space heating fuel by dwelling tenure

	count(000s), (row%), (column%)					
	Gas fired system	Oil fired system	Solid fuel fired system	Electrical system	Communal system	Total
Owner occupied	13,222 ( 87.0)	708 ( 4.7)	239 ( 1.6)	993 ( 6.5)	40 ( 0.3)	15,201 ( 100.0)
Private rented	1,558 ( 70.6)	76 ( 3.4)	71 ( 3.2)	445 ( 20.2)	56 ( 2.5)	2,205 ( 100.0)
Local Authority	1,953 ( 8.7)	11 ( 0.5)	81 ( 3.3)	236 ( 9.6)	175 ( 7.1)	2,457 ( 100.0)
RSL	1,182 ( 72.9)	6 ( 0.3)	31 ( 1.9)	280 ( 17.3)	122 ( 7.5)	1,621 ( 100.0)
	17,915 ( 83.4)	800 ( 3.7)	422 ( 2.0)	1,954 ( 9.1)	393 ( 1.8)	21,484 ( 100.0)
Total	17,915 ( 100.0)	800 ( 100.0)	422 ( 100.0)	1,954 ( 100.0)	393 ( 100.0)	21,484 ( 100.0)









**Table 3.1 Water heating system - Proportion of water heating system**

	count(000s), (column%)
<b>Water heating system</b>	<b>Dwellings</b>
With central heating	17,885 ( 83.2)
Dedicated boiler	435 ( 2.0)
Electric immersion heater	2,579 ( 12.0)
Instantaneous (including kettles)	584 ( 2.7)
Total	21,484 ( 100.0)

Table 3.2 Water heating system - Proportion of water heating system by dwelling age

	count(000s), (row%), (column%)				
	With central heating	Dedicated boiler	Electric immersion heater	Instantaneous	Total
End terrace	1,745 ( 84.4)	41 ( 2.0)	222 ( 10.7)	59 ( 2.9)	2,067 (100.0)
Mid terrace	3,595 ( 80.9)	124 ( 2.8)	499 ( 11.2)	228 ( 5.1)	4,445 (100.0)
semi detached	5,792 ( 87.9)	152 ( 2.3)	520 ( 7.9)	122 ( 1.9)	6,586 (100.0)
detached	4,260 ( 93.1)	52 ( 1.1)	238 ( 5.2)	23 ( 0.5)	4,573 (100.0)
purpose built	1,977 ( 64.0)	57 ( 1.8)	959 ( 31.0)	97 ( 3.1)	3,089 (100.0)
converted	516 ( 71.4)	9 ( 1.3)	142 ( 19.6)	56 ( 7.7)	723 (100.0)
Total	17,885 ( 83.2)	435 ( 2.0)	2,579 ( 12.0)	584 ( 2.7)	21,484 (100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Table 3.3 Water heating system - Proportion of water heating system by dwelling type

	count(000s), (row%), (column%)				
	With central heating	Dedicated boiler	Electric immersion heater	Instantaneous	Total
Pre 1919	3,591 ( 79.0)	150 ( 3.3)	511 ( 11.2)	292 ( 6.4)	4,544 (100.0)
1919 - 1944	( 20.1)	( 34.4)	( 19.8)	( 49.9)	( 21.1)
	3,474 ( 87.3)	93 ( 2.3)	300 ( 7.5)	114 ( 2.9)	3,981 (100.0)
1945 - 1964	( 19.4)	( 21.3)	( 11.6)	( 19.5)	( 18.5)
	3,764 ( 84.8)	106 ( 2.4)	477 ( 10.7)	92 ( 2.1)	4,439 (100.0)
1965 - 1980	( 21.0)	( 24.5)	( 18.5)	( 15.7)	( 20.7)
	3,986 ( 83.9)	54 ( 1.1)	656 ( 13.8)	56 ( 1.2)	4,752 (100.0)
1981 - 1990	( 22.3)	( 12.5)	( 25.4)	( 9.5)	( 22.1)
	1,529 ( 78.8)	26 ( 1.3)	363 ( 18.7)	22 ( 1.2)	1,940 (100.0)
Post 1990	( 8.5)	( 5.9)	( 14.1)	( 3.9)	( 9.0)
	1,541 ( 84.3)	6 ( 0.3)	273 ( 14.9)	9 ( 0.5)	1,829 (100.0)
Total	( 8.6)	( 1.4)	( 10.6)	( 1.5)	( 8.5)
	17,885 ( 83.2)	435 ( 2.0)	2,579 ( 12.0)	584 ( 2.7)	21,484 (100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Table 3.4 Water heating system - Proportion of water heating system by dwelling tenure

	count(000s), (row%), (column%)				
	With central heating	Dedicated boiler	Electric immersion heater	Instantaneous	Total
Owner occupied	13,152 ( 86.5)	300 ( 2.0)	1,354 ( 8.9)	395 ( 2.6)	15,201 (100.0)
Private rented	( 73.5)	( 69.0)	( 52.5)	( 67.6)	( 70.8)
	1,518 ( 68.8)	69 ( 3.1)	506 ( 23.0)	111 ( 5.1)	2,205 (100.0)
Local Authority	( 8.5)	( 15.9)	( 19.6)	( 19.1)	( 10.3)
	1,964 ( 79.9)	53 ( 2.2)	387 ( 15.8)	52 ( 2.1)	2,457 (100.0)
RSL	( 11.0)	( 12.2)	( 15.0)	( 8.9)	( 11.4)
	1,251 ( 77.2)	13 ( 0.8)	332 ( 20.5)	26 ( 1.6)	1,621 (100.0)
Total	( 7.0)	( 2.9)	( 12.9)	( 4.4)	( 7.5)
	17,885 ( 83.2)	435 ( 2.0)	2,579 ( 12.0)	584 ( 2.7)	21,484 (100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

**Table 3.5 Water heating system - Proportion of water heating system by household composition**

	count(000s), (row%), (column%)				
	<b>With central heating</b>	<b>Dedicated boiler</b>	<b>Electric immersion heater</b>	<b>Instantaneous</b>	<b>Total</b>
couple under 60	3,453 ( 86.1)	84 ( 2.1)	380 ( 9.5)	95 ( 2.4)	4,012 (100.0)
couple 60 or over	2,700 ( 85.0)	69 ( 2.2)	348 (10.9)	61 ( 1.9)	3,178 (100.0)
couple with children	4,520 ( 91.2)	75 ( 1.5)	269 ( 5.4)	94 ( 1.9)	4,959 (100.0)
lone parent with children	1,269 ( 84.4)	20 ( 1.3)	173 (11.5)	41 ( 2.7)	1,503 (100.0)
large adult household	1,245 ( 86.0)	30 ( 2.1)	132 ( 9.1)	41 ( 2.8)	1,447 (100.0)
one person under 60	1,981 ( 75.2)	50 ( 1.9)	519 (19.7)	86 ( 3.2)	2,636 (100.0)
one person 60 or over	2,133 ( 73.2)	91 ( 3.1)	590 (20.2)	100 ( 3.4)	2,914 (100.0)
<b>Total</b>	<b>17,301 ( 83.8) (100.0)</b>	<b>419 ( 2.0) (100.0)</b>	<b>2,410 (11.7) (100.0)</b>	<b>518 ( 2.5) (100.0)</b>	<b>20,648 (100.0) (100.0)</b>

Table 3.6 Water heating system - Proportion of water heating system by quintiles of floor area

	count(000s), (row%), (column%)				
	With central heating	Dedicated boiler	Electric immersion heater	Instantaneous	Total
1st quintile	2,955 ( 68.8) ( 16.5)	72 ( 1.7) ( 16.6)	1,090 ( 25.4) ( 42.3)	175 ( 4.1) ( 30.0)	4,293 ( 100.0) ( 20.0)
2nd quintile	3,424 ( 79.8) ( 19.1)	131 ( 3.0) ( 30.1)	600 ( 14.0) ( 23.3)	137 ( 3.2) ( 23.5)	4,292 ( 100.0) ( 20.0)
3rd quintile	3,695 ( 85.8) ( 20.7)	82 ( 1.9) ( 18.9)	408 ( 9.5) ( 15.8)	120 ( 2.8) ( 20.6)	4,306 ( 100.0) ( 20.0)
4th quintile	3,828 ( 89.1) ( 21.4)	82 ( 1.9) ( 18.8)	299 ( 7.0) ( 11.6)	88 ( 2.0) ( 15.0)	4,296 ( 100.0) ( 20.0)
5th quintile	3,984 ( 92.7) ( 22.3)	68 ( 1.6) ( 15.7)	182 ( 4.2) ( 7.1)	64 ( 1.5) ( 10.9)	4,298 ( 100.0) ( 20.0)
Total	17,885 ( 83.2) ( 100.0)	435 ( 2.0) ( 100.0)	2,579 ( 12.0) ( 100.0)	584 ( 2.7) ( 100.0)	21,484 ( 100.0) ( 100.0)



Table 3.7 Water heating system - Proportion of water heating system by quintiles of income

	count(000s), (row%), (column%)				
	With central heating	Dedicated boiler	Electric immersion heater	Instantaneous	Total
1st quintile	3,097 ( 75.7)	109 ( 2.7)	741 ( 18.1)	145 ( 3.6)	4,093 (100.0)
2nd quintile	( 17.9)	( 26.1)	( 30.8)	( 28.1)	( 19.8)
	3,262 ( 79.2)	88 ( 2.1)	636 ( 15.4)	133 ( 3.2)	4,119 (100.0)
3rd quintile	( 18.9)	( 21.0)	( 26.4)	( 25.7)	( 19.9)
	3,459 ( 83.8)	94 ( 2.3)	468 ( 11.3)	105 ( 2.6)	4,126 (100.0)
4th quintile	( 20.0)	( 22.4)	( 19.4)	( 20.4)	( 20.0)
	3,671 ( 88.3)	72 ( 1.7)	335 ( 8.1)	77 ( 1.9)	4,155 (100.0)
5th quintile	( 21.2)	( 17.1)	( 13.9)	( 14.9)	( 20.1)
	3,812 ( 91.7)	56 ( 1.3)	230 ( 5.5)	57 ( 1.4)	4,155 (100.0)
Total	( 22.0)	( 13.4)	( 9.5)	( 11.0)	( 20.1)
	17,301 ( 83.8)	419 ( 2.0)	2,410 ( 11.7)	518 ( 2.5)	20,648 (100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

**Table 4.1 Type of boiler - Proportion of boiler type**

count(000s), (column%)	
<b>Type of boiler</b>	<b>Dwellings</b>
Standard boiler	9,677 ( 45.0)
Back boiler	2,586 ( 12.0)
Combination boiler	5,432 ( 25.3)
Condensing boiler	527 ( 2.5)
No boiler	3,262 ( 15.2)
Total	21,484 ( 100.0)





Table 4.4 Type of boiler - Proportion of boiler type by dwelling tenure

	count(000s), (row%), (column%)					
	Standard boiler	Back boiler	Combination boiler	Condensing boiler	No boiler	Total
Owner occupied	7,691 ( 50.6) ( 79.5)	1,576 ( 10.4) ( 60.9)	3,924 ( 25.8) ( 72.2)	386 ( 2.5) ( 73.3)	1,625 ( 10.7) ( 49.8)	15,201 ( 100.0) ( 70.8)
Private rented	651 ( 29.5) ( 6.7)	177 ( 8.0) ( 6.9)	648 ( 29.4) ( 11.9)	48 ( 2.2) ( 9.1)	681 ( 30.9) ( 20.9)	2,205 ( 100.0) ( 10.3)
Local Authority	792 ( 32.2) ( 8.2)	590 ( 24.0) ( 22.8)	480 ( 19.5) ( 8.8)	44 ( 1.8) ( 8.3)	551 ( 22.4) ( 16.9)	2,457 ( 100.0) ( 11.4)
RSL	544 ( 33.5) ( 5.6)	243 ( 15.0) ( 9.4)	379 ( 23.4) ( 7.0)	49 ( 3.0) ( 9.4)	405 ( 25.0) ( 12.4)	1,621 ( 100.0) ( 7.5)
Total	9,677 ( 45.0) ( 100.0)	2,586 ( 12.0) ( 100.0)	5,432 ( 25.3) ( 100.0)	527 ( 2.5) ( 100.0)	3,262 ( 15.2) ( 100.0)	21,484 ( 100.0) ( 100.0)





