Energy Use in Homes 2005

A series of reports on domestic energy use in England

Space and Water Heating

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This is one of a series of three reports on the energy characteristics of the stock as observed by the 2005 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

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Energy Use in Homes 2005: Space and Water Heating

Executive Summary

The predominant space heating system across the stock is the boiler driven radiator system, identified as the primary source for 85% of dwellings, representing an increase of 0.7% (310,000 households) from 2004 and 14% since 1991. The increase in space systems has coincided with a reduction in fixed room heaters. This category has declined in numbers from 18.2% in 1991 to 4.4% in 2005. Combined, portable heaters, warm air systems and communal heating schemes made up 3.3% of the total space heating systems in 2005.

The vast majority of the stock (84%) is fuelled by gas, up by 265,000 dwellings since 2004. The proportions of dwellings using systems running on electricity, solid fuel or communal heating have all fallen slightly. The number of systems fuelled by oil has remained the same since 2004.

The proportion of homes with an additional system has gradually increased over time, due to the installation of central heating in dwellings with existing room heaters, which have then been retained. In 1991 13.1 million homes (67%) had an additional system, in 2005 this value had risen to 74%.

Among dwellings containing heating systems with boilers, 28.7% use a combination boiler in 2005, up from 25.7% in 2004, representing an increase in 300,000 dwellings. In 1991 only 1.2% of heating systems were combination boilers. Since 2004, the number of condensing boilers has increased by 100,000 and the number of condensing-combination boilers has increased by 300,000. Standard boilers still predominate with 43.3% whilst there have been decreases in the use of back boilers and non-boiler driven systems.

As a consequence of both the increase in boiler ownership and installation of combi boilers in particular there has been a quarter of a million rise in the number of dwellings using central heating for their hot water since 2004, with other water heating systems decreasing as the primary source. Immersion heaters are still found in just over half the stock, but are predominantly used as a secondary rather than primary source of hot water.

Central heating with radiators is a more prevalent heating system in houses than flats, and detached and semi-detached houses in particular have seen large increases, due to the large new build proportions in these categories. Flats are more likely to use storage radiators (particularly purpose built flats), communal systems and room heaters for their primary space heating.

The use of gas fuelled systems is up by 6% in the last 15 years, whilst oil systems have nearly doubled and solid fuel use has fallen by around three quarters. Electricity fuelled systems have seen a gradual decline.

2005 Space and Water Heating Update Report

Summary

1. The number and proportion of dwellings using a boiler driven central heating system has increased since 2004, as has mains gas use and centrally heated water.

2. The private rented sector typically has the least efficient heating systems, with flats and older city-based dwellings following similar patterns, whilst owner occupiers dominate the use of central heating from gas and oil.

3. The proportion of condensing boilers has begun a noticeable climb, due to recent changes in Building Regulations. Standard and back boilers or non-central heating systems are being replaced.

Introduction

4. This update report will provide details of space and water heating systems as measured by the 2005 English House Condition Survey (EHCS). The report is split into sections analysing the incidence of different domestic heating aspects against more general dwelling and household characteristics. Each section will also examine the way in which these proportions have changed over time.

5. Since 2002 the EHCS has been in a continuous format, providing annual data which is then analysed in two-year datasets. This report will present temporal analysis based on the continuous survey and will also look at data from previous surveys conducted in 1991, 1996 and 2001[1].

Primary Heating Systems

6. The first section examines the primary system of space heating within a dwelling (both the heating element and the system of distribution). By far the most predominant of these categories is what can be thought of as the conventional central heating system, in which water is heated by a boiler and distributed by radiators to one or more rooms.

7. Figure 1 shows that in 1991, 71% of the English housing stock (13.9 million) used such conventional central heating systems. In 2005 this figure rose to 85% of the English housing stock (18.5 million), representing a 0.3 million increase in central heating systems since 2004.

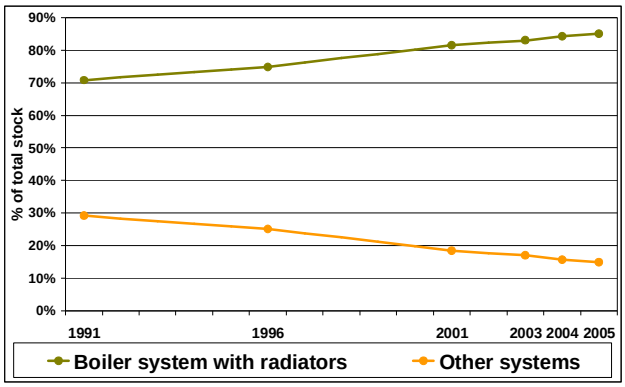

Figure 1: Timeline of boiler systems against other systems

8. Alternative categories of central heating identified in EHCS data are warm air heating and communal heating. The former were typically installed in the 1960's and 1970's and many now require a major upgrade or, more usually, a replacement. This had lead from an incidence in 1991 of around 0.65 million to less than half as many in 2005; with the total proportion now only 1.5%, although the decline has steadied in recent years. Communal systems distribute space and water heating to more than one building or dwelling from a central source. In the past these systems have made up a consistently small proportion of the stock. Since 2001 the numbers of communal systems have declined by around 50,000. In 2005 they represent 1.5% of the total primary heating systems. The numbers of other central heating systems still in existence, most commonly ceiling or under floor systems, have declined from 1% in 1991 to a handful in 2005. Figure 2 shows how the proportions of these non-boiler systems has changed over time.

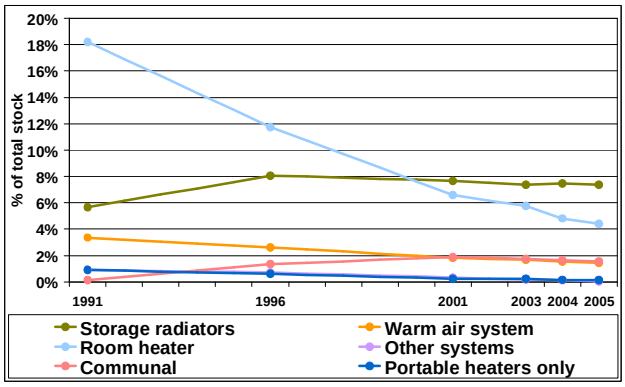

Figure 2: Timeline of minor primary heating systems

[1] The way in which EHCS data collection has evolved means that timeline analysis cannot always begin in 1991.

9. Where no central heating is present, electric storage heaters are the most predominant alternative system. These use off-peak electricity to store heat which can then be gradually released during the day. After a rise from 1991, the number of dwellings using these has remained at around 1.6 million since 1996, although the total proportion has slowly fallen to 7% of all dwellings as the number of English households have increased over time. The remaining housing stock relies on either fixed or portable room heaters. The use of fixed heaters, which can include mains gas fires, electric panel heaters and solid fuel open fires, has declined from 3.5 million dwellings in 1991 (18%) to just below 1 million in 2005 (4%), with a drop of 100,000 in the last year. Portable heaters as the primary source are now only found in a handful of dwellings, from a proportion of 1% in 1991. A clearer overall picture of heating systems in 2005 is shown in Figure 3.

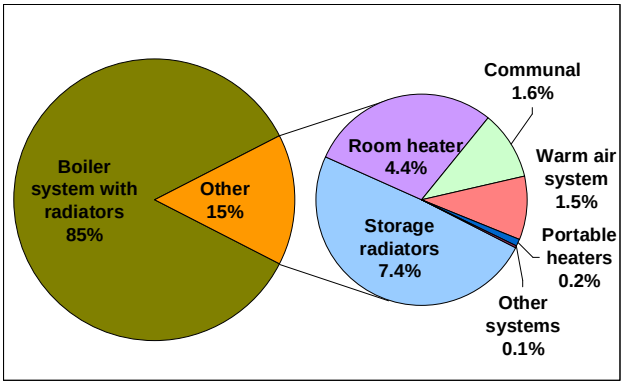

Figure 3: Proportions of primary space heating systems

Dwelling Type

10. Broadly speaking, houses are more likely to have central heating installed, with flats more likely to use storage or room heaters. Radiator distributed central heating is more predominant in semi-detached and detached houses, with only 4% of detached homes using an alternative system, as shown in Figure 4. In high-rise[2] and low-rise purpose built flats there are respective proportions of 40% and 61% of dwellings using radiator distributed central heating, and 28% and 24% using storage heaters (compared with a total stock proportion of 7%). However, 86% of all communal heating systems are found in purpose built flats.

[2] More than 5 storeys in the building.

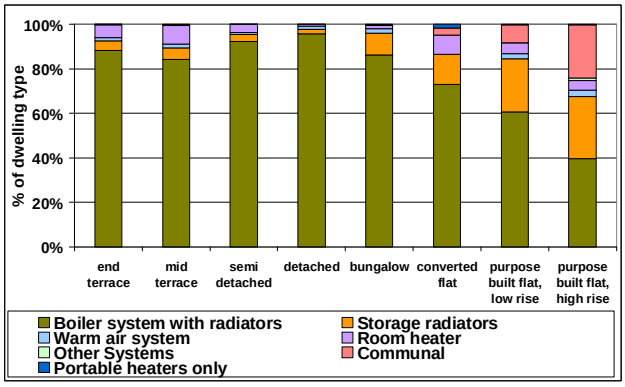

Figure 4: Comparison of space heating systems by dwelling type

11. A higher proportion of storage heaters are found in post-1980 dwellings than in those of an earlier construction (Figure 5). This can be attributed to a larger number of flats built post-1980. The highest proportion of central heating systems exists in the inter-war housing stock: 92% of households built within this time period have central heating systems installed. Older homes predominate in their use of room heaters: 9% of pre-1919 dwellings compared with less than 1% of post-1990. As might be expected, 71% of warm air systems are found in dwellings built between 1965 and 1980, as are 52% of communal systems.

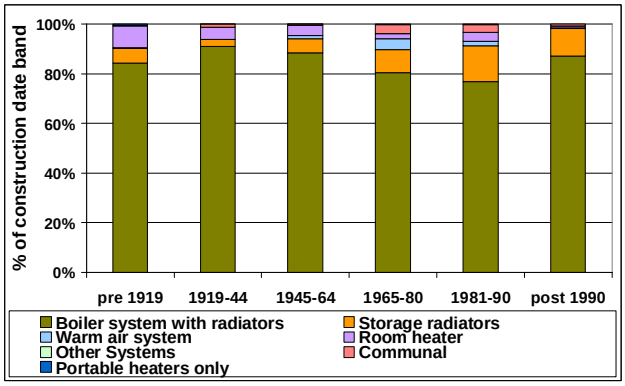

Figure 5: Comparison of space heating systems by dwelling construction date

12. As shown in Figure 6 strong correlations can be seen between dwelling size (in m², split into 20% floor area bands) and the predominance of different heating systems. Thirty percent more of the largest floor area quintile, most likely to comprise of detached houses, have central heating systems with radiators installed than the smallest floor area quintile. Similarly, the smallest quintile, most likely to comprise of flats and terraced housing, has 52% of all storage heaters and 31% of all room heaters installed as their primary systems, compared with only 6% of each in the largest quintile. These patterns have not changed greatly over time, although the conversion from room

or portable heaters to storage heaters has been most marked in the smallest quintile.

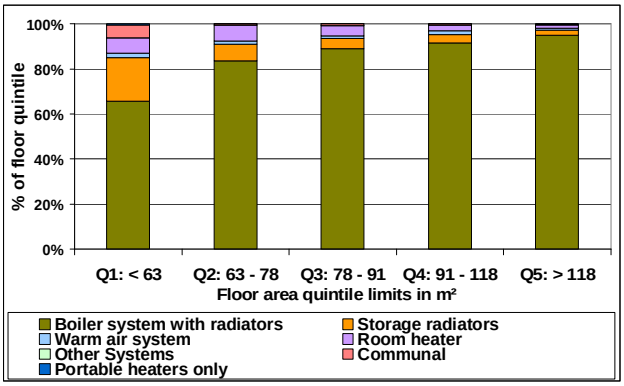

Figure 6: Comparison of space heating systems by floor area quintiles

Dwelling Location

13. The South West has the lowest incidence of central heating amongst the government office regions, with 80% of dwellings using boiler and radiator systems compared with 89% in the East Midlands, shown in Table 1. The South West also has the highest proportion of storage heaters (13%). In the northern regions the quantity of stock using predominantly room heaters outweighs the use of storage heaters whilst the inverse is true in all other areas of the country. Despite the South East and London making up only 31% of all housing stock, 45% of communal systems are found in these regions. This large proportion can be attributed to the number of flats in the south eastern regions: 51% of all flats in England are found there.

Region	% Boiler system with radiators	% Storage radiators	% Room heater
East Midlands	88.9	5.8	3.1
North East	87.9	5.0	2.9
South East	86.3	7.5	3.1
Yorks & Humber	85.0	4.5	8.2
East England	85.0	9.1	2.6
London	84.9	6.8	3.5
North West	84.8	5.6	6.5
West Midlands	83.1	8.0	5.3
South West	80.5	13.3	4.0
Total	85.0	7.4	4.4

Table 1: Comparison of the key space heating systems by region

14. Taking a more general look at a dwellings' surrounding neighbourhood, city centre and urban homes[3] are characterised by high proportions of storage or room heater and communal system use, with only 79% of these 5 million dwellings having conventional central heating provision, as indicated in Figure 7. Again, the predominance of flats in these neighbourhoods is indicative of this pattern, with typical dwelling age also a factor: 45% of pre-1919 homes are found in urban areas, compared with only 23% of the total stock. Newer suburban[4] locations have the highest incidence of central heating with 87%, whilst rural[5] areas have slightly above average proportions of central and storage heating with 86% and 9% respectively. This in part reflects recently constructed housing estates around villages, used by people working in nearby cities.

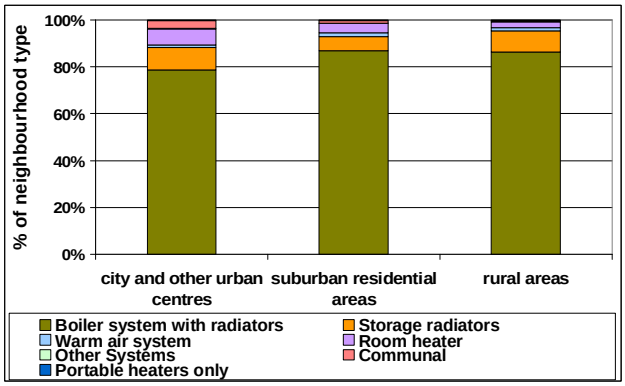

Figure 7: Comparison of space heating systems by neighbourhood category

Tenure

15. Approximately 4% of the housing stock comprise of vacant dwellings, a figure that is relatively unchanged since 1991. These dwellings have significantly different heating systems to the occupied stock. In 2005 vacant dwellings' primary heating systems comprise of 71% boiler driven central heating, 11% for each of storage radiators and room heaters and 6% communal heating (Figure 8). This compares with respective proportions of 86%, 7%, 4% and 1% for occupied homes. These differences come as no surprise since one of the key reasons for a dwelling to remain vacant is poor overall condition, including a lack of adequate heating provision.

[3] The core or area around the core of large towns and cities.
[4] The outer area of towns or cities, often large planned housing estates.
[5] Traditional villages and their immediate suburban surroundings or isolated dwellings.

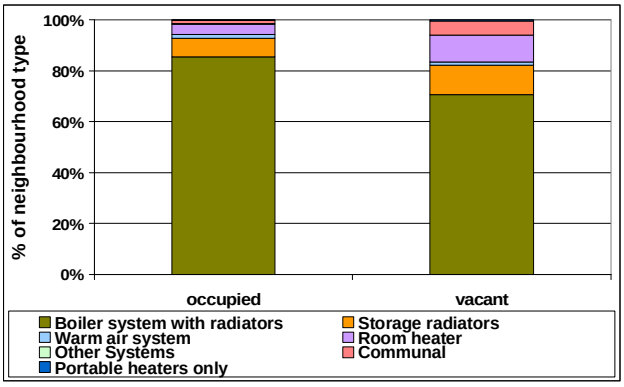

Figure 8: Comparison of space heating systems by dwelling vacancy status

16. It is understandable that a high proportion of the vacant stock is found in the private rented sector (although this tenure makes up 11% of all dwellings, 31% of vacant stock is found here). Thus having the highest proportion of vacant dwellings, the private rented housing stock has the highest proportion of room heaters (13%) and the lowest proportion of central heating (74%) amongst the tenure, shown in Figure 9. The rest of the private sector, the owner occupiers, has a far higher incidence of central heating systems at 89%, with below average proportions of all other systems.

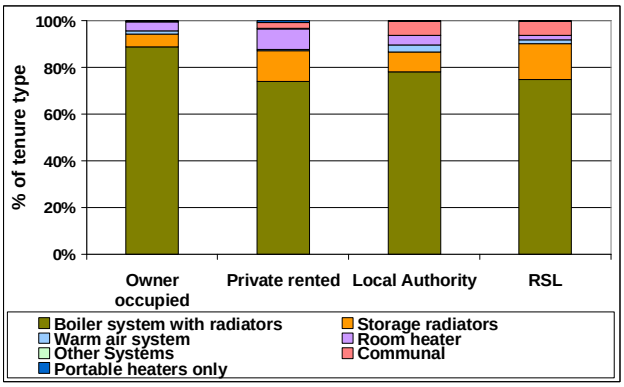

Figure 9: Comparison of space heating systems by tenure

17. Social stock in the Local Authority and Registered Social Landlord (RSL) tenures have a similar reliance on non central heating systems as private rented homes, but this reliance tends to involve a greater predominance of storage radiators rather than fixed room or portable heaters. Over 70% of communal heating systems are found in the social sector, compared with 18% of all stock. This is largely due to the prevalence of flats found in these tenures.

Household Type

18. An association exists between the use of non central heating systems and single person households, demonstrated in Figure 10, in which this groups' high residence of flats is a strong correlating factor. Single person households make up 26% of all households, but use 50% of storage heater systems as their primary heating source. It has also been found that 48% of communal systems exist in dwellings where the household comprises of one person aged 60 or over. The household type using the highest proportion of conventional central heating systems are couples with dependent children, who are most likely to live in detached and semi-detached houses. The use of central heating systems in detached houses was indicated in paragraph 10.

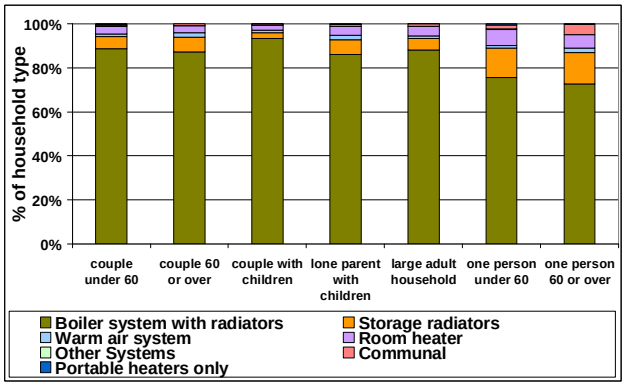

Figure 10: Comparison of space heating systems by household group

19. Heating systems in the housing stock also differ when looking at the age of the household reference person (HRP)[6], with an older or younger HRP indicative of a greater use of storage radiators and communal systems (Figure 11). In particular, young households (those where the HRP is younger than 30), are the least likely to live in detached or semi-detached houses or bungalows and the most likely to live in both converted and purpose built flats. They are also the most likely to live in the oldest stock (31% in pre-1919 homes compared with 21% of all HRP's) and in these dwellings we find the majority (84%) of converted flats, which use double the total proportion of storage and room heaters. Households with an HRP aged 65 or above are also likely to live in purpose built flats, and correspondingly have high storage heater use, but are also the predominant householders in bungalows which show a higher than average storage heater use.

[6] The HRP is the person in whose name the dwelling is owned or rented. Where there are joint householders the person with the highest income and then highest age is the HRP.

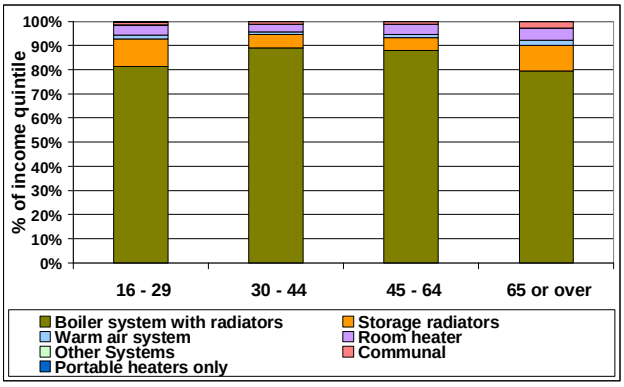

Figure 11: Comparison of space heating systems by age of household reference person

20. Comparing a households' net income with the primary heating system provides a clear pattern, with central heating being found more regularly used by higher income households, whilst the inverse is true for all other categories of heating systems. Examining the highest and lowest income quintiles in 2005 (Figure 12) we see that 94% of the highest income group use central heating with radiators compared to 75% of the lowest income group, whilst the respective proportions for storage or room heaters are 4% and 19%. Again associations with higher earning groups living in detached and semi-detached houses, and low earners living in flats and terraces can be made.

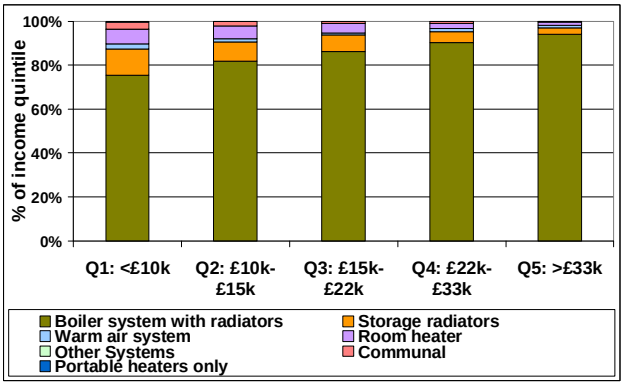

Figure 12: Comparison of space heating systems by household income

21. Using data from the EHCS interview survey, the least cost effective heating categories can be compared to a householders perception of their heating systems, as in Figure 13. We find that, against a figure of 6% claiming that their boiler driven central heating is either "not very" or "not at all" effective, those using storage heaters give these responses in 25% of cases, whilst the figure is 27% for room heaters and 42% where only portable heaters are used.

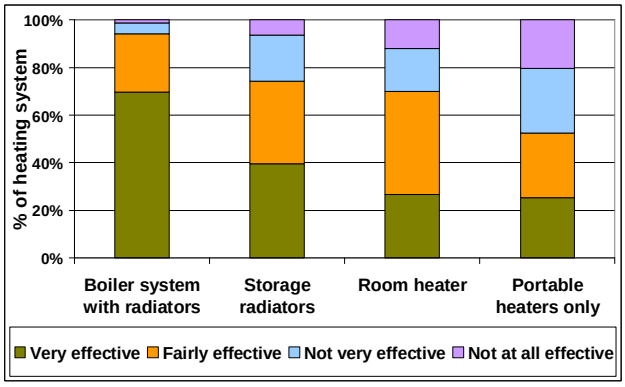

Figure 13: Comparison of space heating systems by household satisfaction rating for heating

Space Heating Fuels

22. This section examines the fuels used to power the primary space heating systems. In general, fuels are grouped into gas, electric, oil and solid fuel, with communal systems forming a separate category, discussed in the previous section. Gas, as with boiler driven central heating, is the predominant fuel by some distance, with 84% of dwellings using it. Indeed some 17.3 million dwellings, 79% of the stock, use conventional mains gas central heating. Along with mains gas, liquid petroleum gas (LPG) and bottled propane gas are used but account for less than 1% of the gas category. Besides its predominance in conventional central heating, gas is used in the majority of warm air systems and for around two-thirds of fixed room heaters. The use of all types of gas has slowly increased from 15.3 million in 1991 (78%), through 17.5 million in 2001 (83%), with a rise of 0.25 million since 2004, as shown in Figure 14.

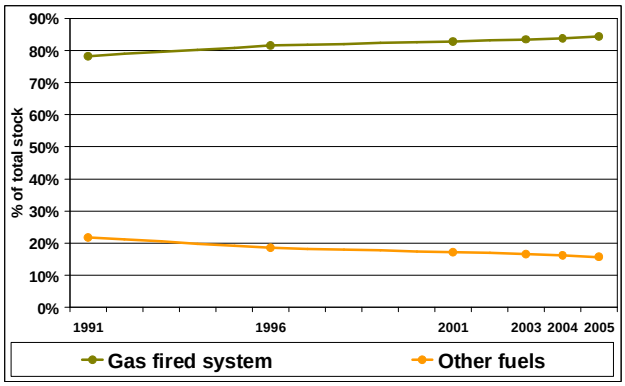

Figure 14: Timeline of gas fuelled systems against those using all other fuels

23. Electricity accounts for around half the remaining heating systems, with 9% of the total dwellings. The majority of these heating systems are storage heaters, using off-peak electricity at night and sometimes a top-up period in the afternoon. The

number of systems using electricity has decreased from 13% (2.5 million) in 1991 to 9% as indicated below, in Figure 15. Around 21% of fixed room heaters and almost all portable heaters used as a primary source of heating are electric, along with a small number of warm air systems and a handful of newer electrically heated boilers.

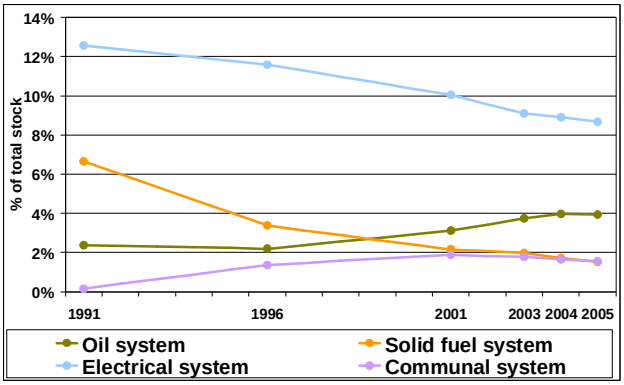

Figure 15: Timeline of systems using fuels other than gas

24. Besides the 1.5% of communal systems there are 4% of dwellings (0.9 million) using heating oil to power their central heating, increasing from 2% in 1991. There are a further 0.3 million homes (1.5%) using solid fuels including coal, wood, anthracite and manufactured smokeless fuels, this has fallen from 1.3 million in 1991 (7%) and 0.7 million in 1996 (3.5%). The majority of anthracite and smokeless fuel is used for central heating, predominantly from back boilers, whilst coal and wood are more often used for fixed room heaters. A comparison of the fuel use in 2005 is shown in Figure 16.

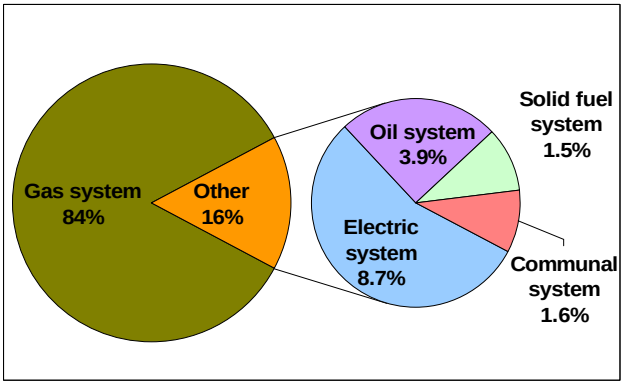

Figure 16: : Proportions of fuels used for space heating

Dwelling Type

25. Around 9 out of 10 terraced or semi-detached houses use gas for space heating, with between 4% and 6% using electricity. The remaining types of dwelling have a lower reliance on gas for a variety of reasons. Detached houses (85% gas) and bungalows (79% gas) often have to make greater use of oil, due to their rural locations not offering a connection to mains gas, as shown in Figure 17. With rural areas containing 20% of the total stock, 40% of detached houses and 38% of bungalows are located in these areas. Converted flats (75% gas) use more electrical systems, particularly room heaters and purpose built flats (63 % gas) rely heavily on electric storage heaters and contain the majority of communal systems (see paragraph 10).

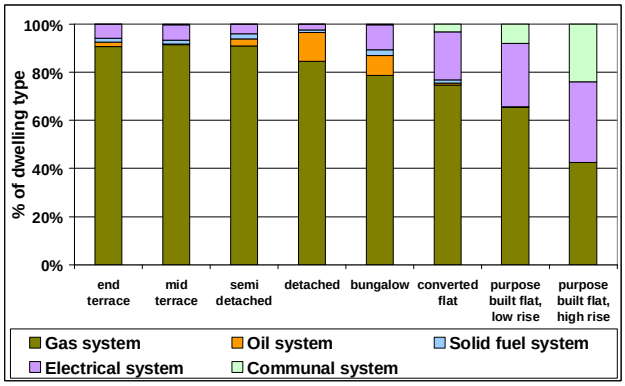

Figure 17: Comparison of space heating fuels by dwelling type

26. There is not such a marked deviation from the total stock proportions of fuel use, when comparing different construction dates, as indicated in Figure 18. Although pre-1919 dwellings show the highest use of oil and solid fuel (comprising 39% and 45% of the respective fuel types), the use of gas in these homes is comparable with dwellings built between 1965 and 1990. The latter stock has the highest proportion of electrically heated homes and communal heating, with the key factor in this being a large number of purpose built flats constructed in this period.

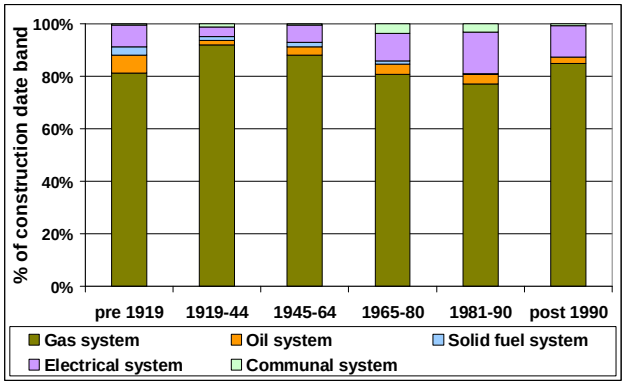

Figure 18: Comparison of space heating fuels by dwelling construction date

27. Dwellings occupying the smallest quintile of floor area are often flats, therefore a relatively low proportion of gas heating and a high use of electricity and

communal systems exist in this quintile (Figure 19). The larger size of detached houses gives the reason for nearly two thirds of oil fuelled dwellings being in the highest floor area quintile, whilst the prominence of gas systems in semi-detached and terraced homes explains the high proportions of these systems found in the middle set of quintiles.

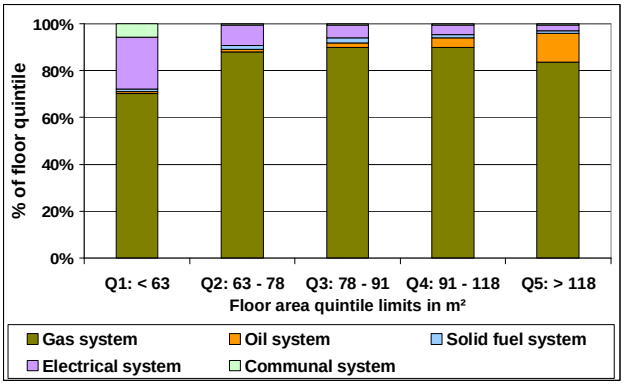

Figure 19: Comparison of space heating fuels by floor area quintile

Dwelling Location

28. The rural or urban nature of a particular region leads to some predictable conclusions in their mix of heating fuels. The South West and the East of England have lower than average gas use, with the South West in particular (72% gas) containing many areas that are off the gas network. These regions also have more than twice the national proportion of oil fuelled systems and, indeed, they, along with the East Midlands have over a third of dwellings in rural areas. The dwellings in all rural areas make up 93% of oil fired systems.

Region	% Gas system	% Oil system	% Electrical system
North West	89.5	1.5	6.7
Yorks & Humber	89.0	2.2	5.6
North East	88.6	1.7	5.2
London	87.4	0.0	8.7
East Midlands	85.6	4.5	6.6
South East	85.1	4.0	8.9
West Midlands	84.1	3.7	9.2
East England	77.3	9.4	10.1
South West	71.9	9.4	15.4
Total	84.3	3.9	8.7

Table 2: Comparison of key space heating fuels by region

29. The northern regions, which include the highest proportions of urban areas outside London, have the highest incidence of gas use and the lowest incidence of electricity, as shown in Table 2, reflecting the relatively high concentration of suburban residential areas. In general 91% of suburban neighbourhoods have gas fired systems and a below average 7% have electric systems.

Tenure

30. Gas fired systems are found in only 72% of vacant properties compared with 85% of occupied stock, whilst solid fuel and electric systems are found in double the proportion of vacant dwellings than inhabited ones.

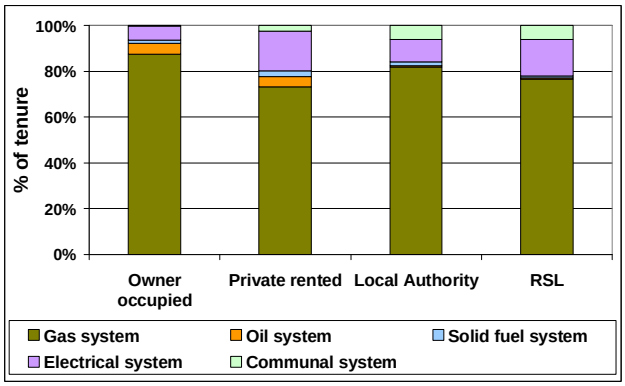

Figure 20: Comparison of space heating fuels by tenure

31. As seen in paragraph 16, the tenure category that most closely matches the heating patterns seen in vacant stock is the private rented sector and this is the case with fuel mix: this tenure uses 73% gas and 17% electric systems with the solid fuel use also well above average, (Figure 20). Owner occupiers dominate the use of gas and oil fuelled systems, whilst the high proportions of flats found in the social sector gives local authority and RSL stock a relatively high use of electricity through storage radiators, but a minimal number of oil powered systems.

Household Type

32. Following the pattern seen in paragraph 18, single person households i.e. the most likely to live in flats, have the lowest proportion of gas and oil systems and the highest use of electricity, as shown in Figure 21. Couples with and without children, who are the most likely to live in larger homes, use 80% of the gas fuelled systems (this category makes up 60% of all households). Single parent families, who are least likely to live in detached houses or bungalows, show the lowest incidence of oil systems but the second highest of gas.

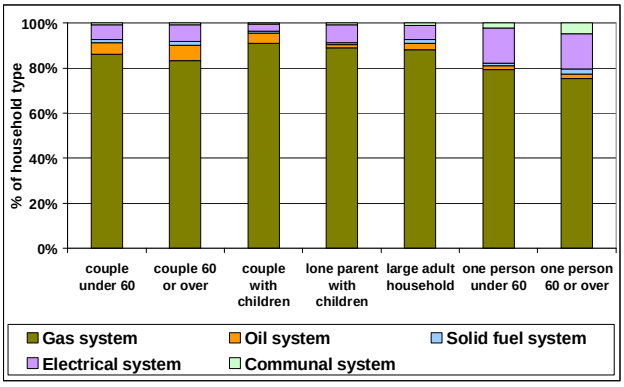

Figure 21: Comparison of space heating fuels by household group

33. Electrical heating systems are used in 13% of dwellings containing an HRP of below 30 years old, the group that is most likely to live in flats. Among older householders, the fuel use is split between the more affluent, living in detached houses heated by oil or gas central heating, and the less well off, particularly pensioners, living in flats or small terraced houses heated by electricity or gas fires.

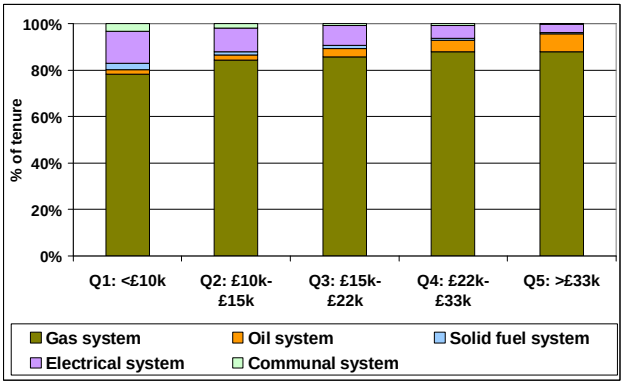

Figure 22: Comparison of space heating fuels by household income

34. As the income band increases, the scale of gas and oil increases which matches a reduction in solid fuel and electrical system incidence, as in Figure 22. The highest income quintile shows a four-fold increase in oil systems over the lowest quintile and vice versa for electricity.

Secondary Heating Systems

35. The EHCS collects information on the predominant form of secondary heating in a dwelling, although there could be others omitted from this analysis. The data is drawn from the SAP methodology, which assumes that no secondary system is present in communally heated dwellings. It also gives homes with storage heaters as their primary system some form of portable back-up system. These assumptions are included in the analysis. In 2005 16.2 million (74%) of dwellings had some form of secondary heating system. Examples include individual storage radiators, fixed or portable room heaters as a back-up source to central heating; room heaters where storage heaters are primary but not present in all rooms; or room heaters identified as the primary source, such as several gas fires, but an additional storage or electric fixed heater for other rooms.

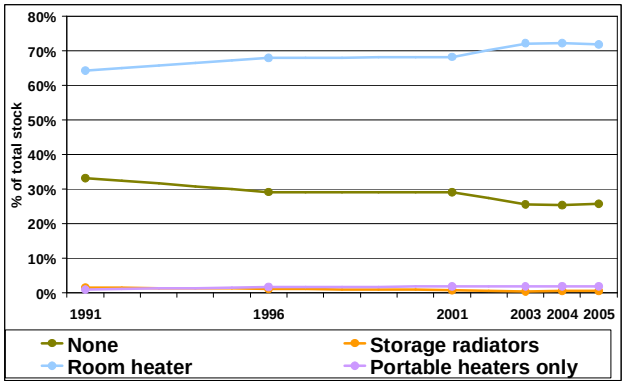

Figure 23: Timeline of secondary space heating systems

36. The majority of secondary systems are fixed room heaters fuelled by mains gas (59% of all secondary systems), electricity (20%) or coal (16%). The proportion of homes with an additional system has gradually increased over time, due to the installation of central heating in dwellings with existing room heaters, which have then been retained. In 1991 13.1 million homes (67%) had an additional system, with 14.4 million (71%) in 1996, increasing further to 74% in 2005, as shown above in Figure 23.

Dwelling Type

37. Typically larger dwelling types are more likely to contain more than one heating system, as indicated in Figure 24, with detached houses (86%), bungalows (82%) and semi-detached (79%) having the most multi-system dwellings, whilst almost half of all flats do not. In flats where an additional system does exist, it is far more likely to be a portable heater than in other dwelling types. Secondary heating is more predominant in older dwellings – around 80% of pre-1965 stock has an additional source, compared with 67% of post 1965 dwellings. This correlates with the practice of fitting central heating in newer houses (or electric storage systems in flats) during construction, whilst older houses will have had it retrospectively installed. As expected, dwellings with larger floor areas more frequently have additional heating systems: 86% in the largest quintile, compared with 60% in the smallest.

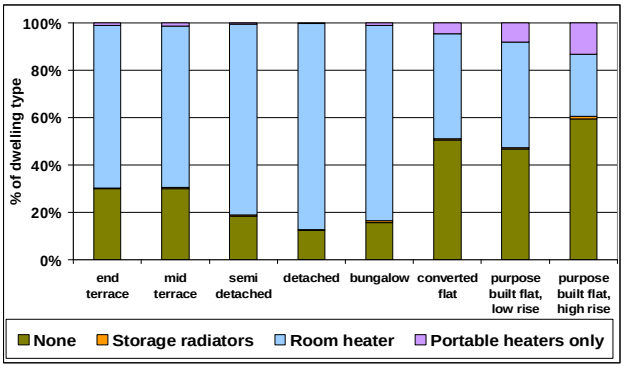

Figure 24: Comparison of secondary space heating systems by dwelling type

Dwelling Location

38. There is a significant difference in the incidence of additional systems between the North and South. Northern and midlands regions all have around 85% of stock with secondary heating compared with 77% in the South West, 72% in the Eastern region, 69% in the South East and 50% in London. In the capital it is the high proportion of flats (45% of all dwellings) that this can be attributed to, whilst relatively high proportions of both flats and newer dwellings in the other southern regions are contributing factors. The smaller flats and terraces found in urban areas and the newer suburban estates lead to fewer multi-heating systems in these types of area (Figure 25), whilst only 16% of older, larger rural stock is without a secondary source heating system.

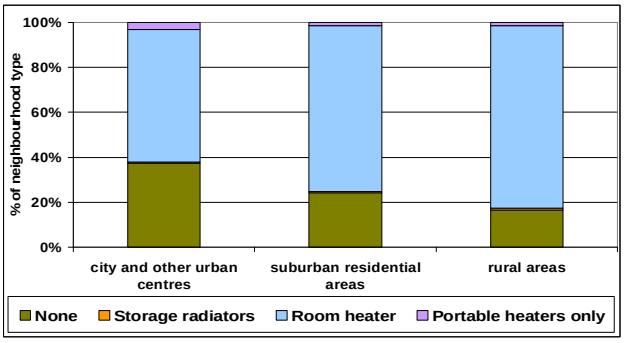

Figure 25: Comparison of secondary space heating systems by neighbourhood type

Tenure

39. Whilst 75% of occupied stock have additional heating systems, the figure is only 54% for vacant dwellings. This is due to the larger proportion of flats, particularly converted or non-residential, found among vacant homes. Owner occupied homes have the highest proportion of secondary heating systems (80%), as in Figure 26. This tenure dominates the detached and semi-detached categories and, therefore, the larger floor areas bands. Private rented and social sector housing have around 60% of their stock with more than one heating system. Although the private rented tenure includes many older dwellings, which typically have additional heating sources, these are often converted flats or small terraced houses, which are likely to have only one system. Social stock holds a high incidence of purpose built flats (paragraph 17), again this suggests smaller dwellings without secondary heating.

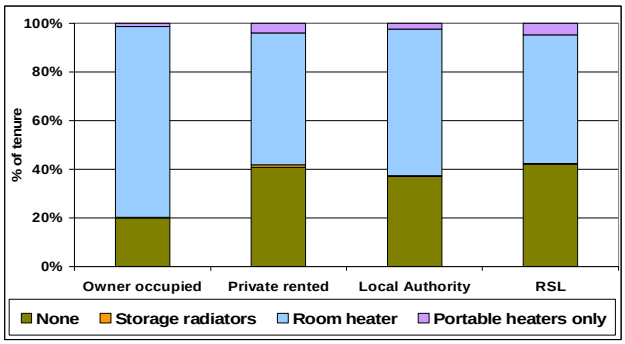

Figure 26: Comparison of secondary space heating systems by tenure

Household Type

40. The household types least likely to have a secondary heating system are single people under 60 and lone parent families. These two categories each have 36% of households without additional heating. Single non-pensioners are the most likely to occupy flats, whilst single parent families have a high proportion of households in smaller social sector housing (particularly terraces), both of which are typical of stock using single space heating sources. Following this pattern we find that households with younger HRP's are also less likely to use additional heating systems – 43% of those under 30 do not (Figure 27). Finally, there is steady trend of lower income households corresponding to lower incidence of secondary systems and, where they do exist, portable electric heaters are more prevalent than in higher income households.

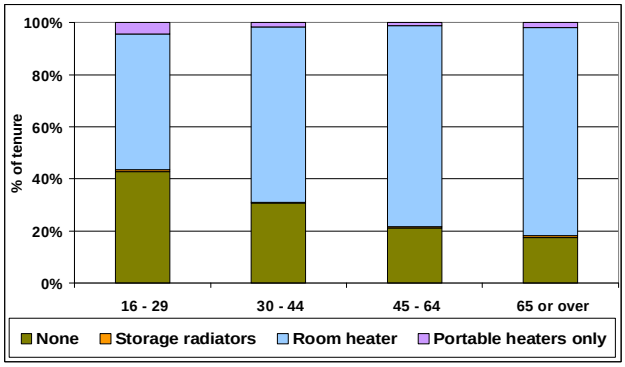

Figure 27: Comparison of secondary space heating systems by age of household reference person

Water Heating Systems

41. With gas central heating predominant among space heating systems, it is unsurprising that the vast majority of domestic hot water is supplied through the central heating system, fuelled by gas. Around 18.6 million dwellings (85%) heat their water via the central heating system, an increase of 0.25 million from 2004, and a rise of 12% since 1991, as shown in Figure 28.

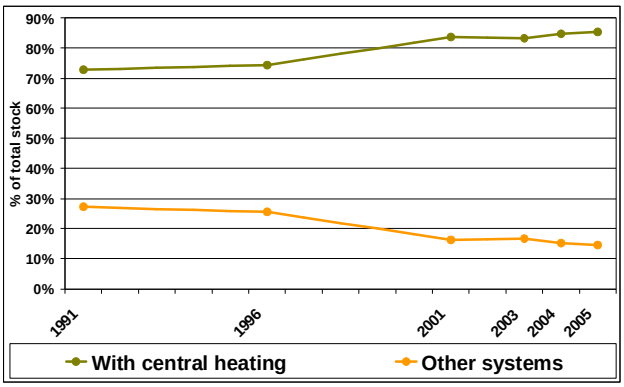

Figure 28: Timeline of water heated with central heating against other hot water systems

42. The second most prevalent system is the electric immersion heater. In 1991 a quarter of the housing stock (5 million homes) used electric immersion heaters as their main water heater. By 2005 this had reduced to 2.4 million dwellings (11% of the stock). However, immersion heaters are more widespread than the above figure suggests, but are often used in addition to the primary boiler heated system. A minority of households use a dedicated water boiler (1.5%) or an instantaneous system (2.5%), completing the picture shown in Figure 29. Although these figures represent a small proportion of all systems the number of households using these has remained fairly constant over recent years, mainly due to a hot water storage system not necessarily being appropriate in very small dwellings.

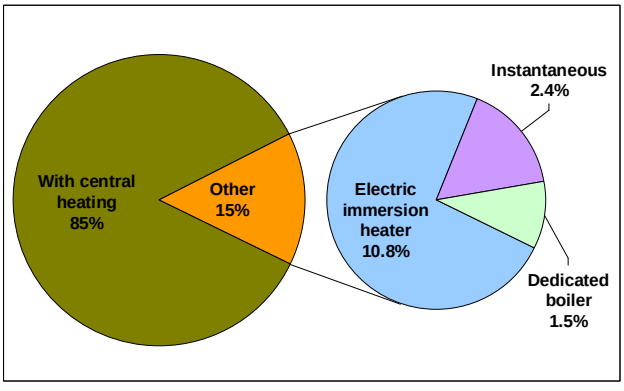

Figure 29: Proportions of water heating systems

Dwelling Type

43. Houses have similar proportions of dwellings using centrally heated water, between 84% for mid terraces and 94% for detached (Figure 30). However, the higher reliance of flats on storage and room heaters increases the need for alternative systems: 30% of purpose built and 18% of converted flats use an immersion, with a further 6% of the latter using instantaneous water heaters.

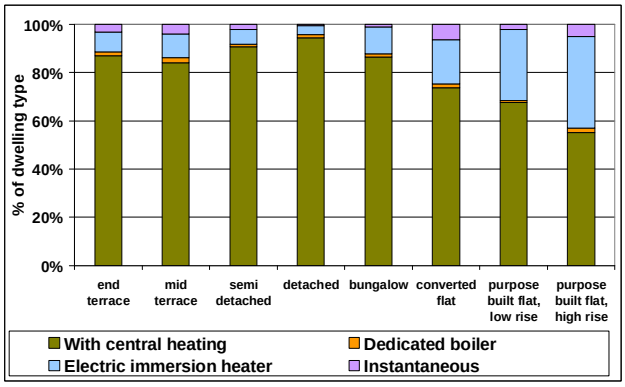

Figure 30: Comparison of water heating systems by dwelling type

44. The two construction date categories with the lowest proportion of hot water through central heating systems are 1965 – 1990 and pre-1919, both below the 82% average (Figure 31). The oldest stock has a low incidence of central space heating, thus leading to the use of room heaters (paragraph 11) and electric immersions for their hot water supply. The period 1965 – 1990 saw the construction of over half of all purpose built flats, many using storage heater systems and electric immersions.

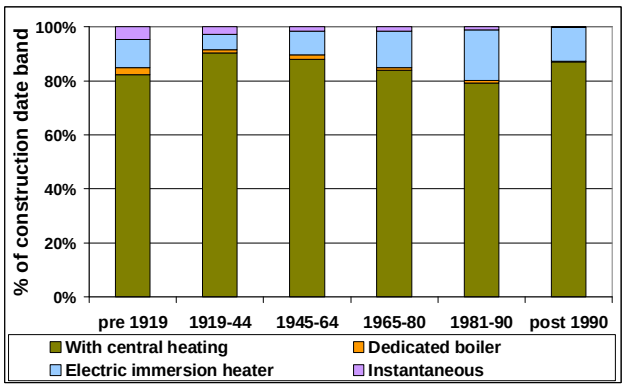

Figure 31: Comparison of water heating systems by construction date

45. Again, a correlation exists between the use of minority water heating systems and dwellings with the smallest floor areas, typically flats and terraced houses, as seen in Figure 32. The lowest floor area

quintile is made up of 70% centrally heated water and 25% immersion heating and the two lowest floor area quintiles include over half of the instantaneous systems. Dedicated boilers are however found in approximately equal proportions in all sizes of dwelling.

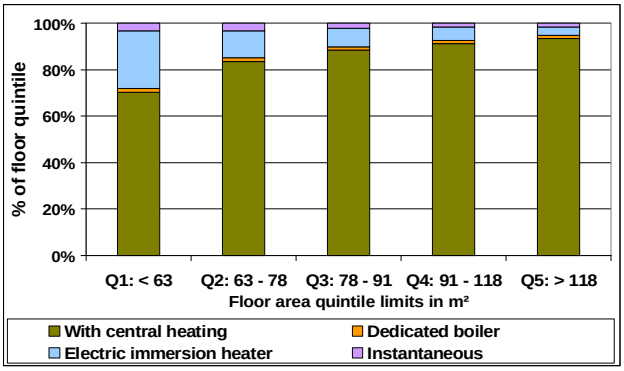

Figure 32: Comparison of water heating systems by floor area quintile

Dwelling Location

46. There is little significant difference in the sources of hot water between the regions, although the South West's use of centrally heated water is several percent lower than any other region. Again, electric immersions make up the majority of the shortfall, with the northern regions seeing the minority systems most heavily weighted towards dedicated boilers and instantaneous systems.

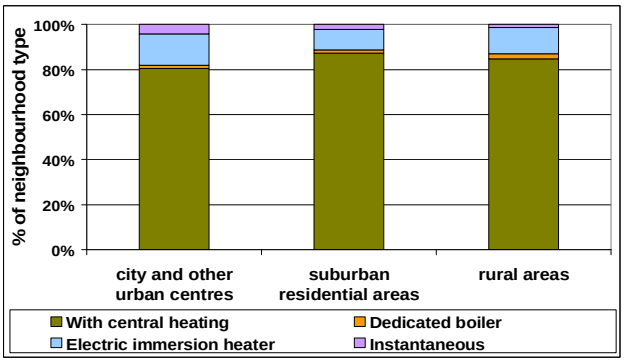

Figure 33: Comparison of water heating systems by neighbourhood type

47. Suburban homes are the most likely to be supplied with hot water through their central heating (Figure 33), whilst the quantity of flats in urban and city areas make these the most likely to use immersions and instantaneous systems. Relatively high use of central heating in rural locations means that a fairly high proportion of dwellings use this method for water too, although the incidence of separate water boilers is proportionally highest in the rural location category.

Tenure

48. All minority water heating systems are proportionally more common in vacant dwellings, with only 74% using central heating and 9% using older instantaneous systems, four times more than the proportion of occupied homes (Figure 34). As with space heating, it is the private rented sector that falls behind other tenures in its use of centrally heated water, with similar proportions to the vacant stock. Immersion heaters are also more widely used in social housing than the overall average, but individual water heating boilers and instantaneous systems are both at lower levels than the private sector.

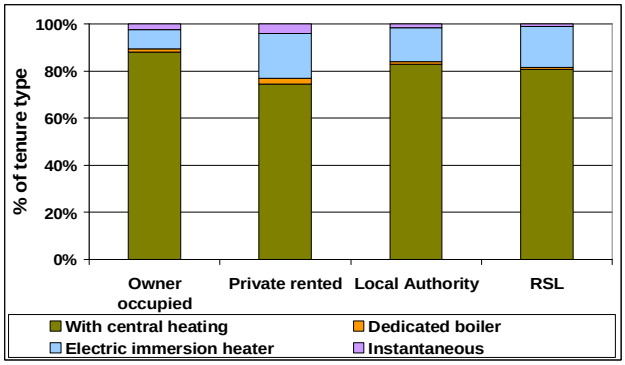

Figure 34: Comparison of water heating systems by tenure

Household Type

49. Use of electric immersions is commonest in single person households of all ages, with the minority systems also proportionally above average. This profile matches that of flats in which many of these households reside (paragraph 18). The highest proportion (92%) of centrally heated water is found among couples with dependent children. Households with the oldest and youngest HRP (often the smallest households, living in dwellings with the smallest floor areas), also tend to use immersions and instantaneous heaters more than the remaining households, as shown in Figure 35.

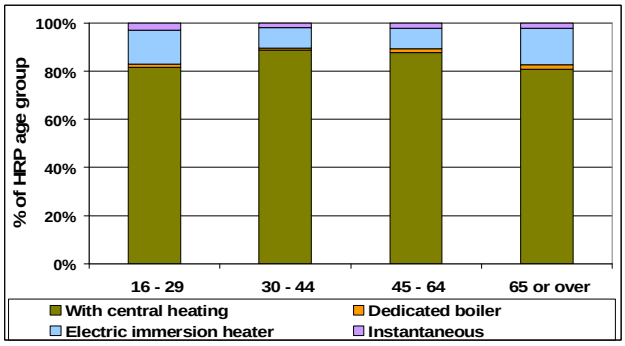

Figure 35: Comparison of water heating systems by age of household reference person

50. Dedicated boilers, instantaneous systems and immersion heaters are all found more regularly as lower bands of household income are examined, with centrally heated water used in 78% of the lowest quintile compared with 93% of the highest. Looking at a householders' perception of satisfaction with their hot water system, there is (as first indicated in paragraph 21), a correlation between a high level of satisfaction and use of central heating, (Figure 36). 73% of those using central heating to supply hot water considered their system to be "very effective", compared with 62% who used dedicated boilers or electric immersions and 61% for instantaneous systems.

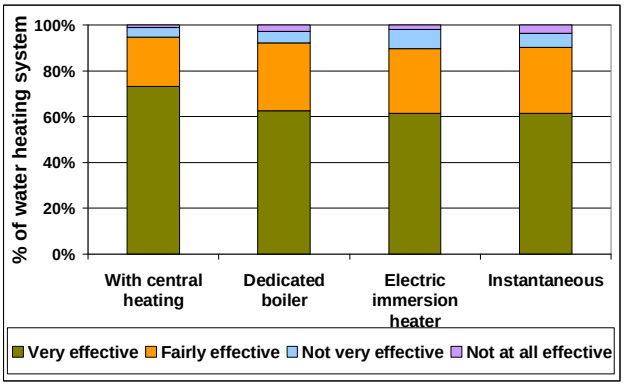

Figure 36: Comparison of water heating systems by household satisfaction rating for water heating

Boiler Categories

51. Figure 37 shows that of the 18.9 million dwellings with boilers, 43% are standard units, 10% are back boilers, 29% are combination boilers and 5% are condensing boilers, which includes over 3%, or 0.7 million, condensing-combination boilers. Condensing boilers were first measured in the 2001 EHCS, by which time there just under 0.5 million, this increased to over 0.6 million in 2004, increasing further to 1.0 million as measured in 2005.

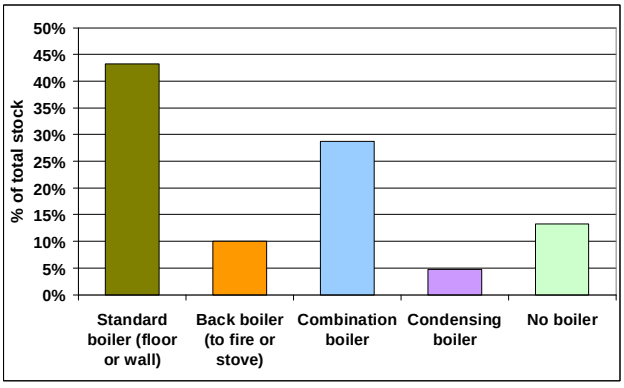

Figure 37: Proportions of boiler models

52. Changes to the building regulations in April 2005 specify the installation of condensing boilers as standard in both new homes and when replacing existing boilers or upgrading from a non-central heating system. This helps to explain the recent steep trend in condensing boiler numbers.

53. The number of combination boilers saw a rapid increase throughout the 1990's, with installations in less than 2% of dwellings identified in 1991, increasing to 14% in 1996, 18% in 2001 and 27% in 2004, as shown in Figure 38. The current figure of around 6.2 million non-condensing combination units should stabilise and then gradually decrease as they are replaced with the mandatory condensing boilers. The proportion of standard boilers has gradually fallen over the same period, as did those of back boilers, whose numbers decreased from 3.0 million in 1991 to 2.2 million in 2005.

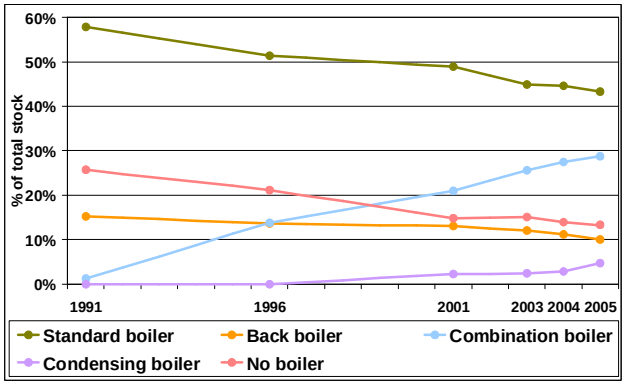

Figure 38: Timeline of boiler models

54. Standard boilers can be floor-standing or wall-hung and their installation over a number of decades has lead to a wide range of models and efficiencies, with most typically ranging from 60-80% depending on their age. Back boilers are generally fitted behind a gas fire and are less efficient at around 60-70%, although the most recently installed can reach 80%. The newest condensing units can reach 90-95% efficiency.

Dwelling Type

55. Condensing boiler numbers have seen an increase in all dwelling types, as expected due to the changes to the building regulations (as mentioned in paragraph 52), with the highest proportion of 6% found in detached houses (Figure 39). This is the only category in which the majority of condensing units are regular rather than combination, since the larger size of the dwellings precludes the need to keep water storage in the same unit as the boiler. The need for economy of space, which promotes the installation of combination boilers, is greatest in flats and terraced

housing and indeed is reflected in the proportions of 34% of terraces and 46% of converted flats using non-condensing combination boilers. There is also a high percentage among those purpose built flats with central heating systems.

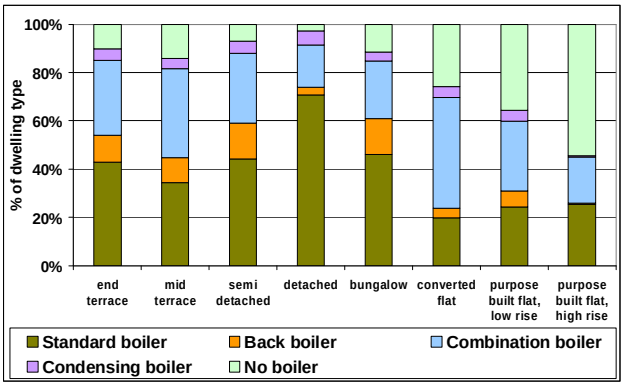

Figure 39: Comparison of boiler models by dwelling type

56. Comparing boiler types to dwelling age, we most commonly see combination boilers in earlier stock, due to replacements of older boilers in these dwellings or installations of central heating systems, making 45% of pre-1919 boilers combination models, compared with 25% in post-1990 stock. The oldest dwellings also have the highest proportion of condensing-combination boilers for the same reasons, as shown in Figure 40.

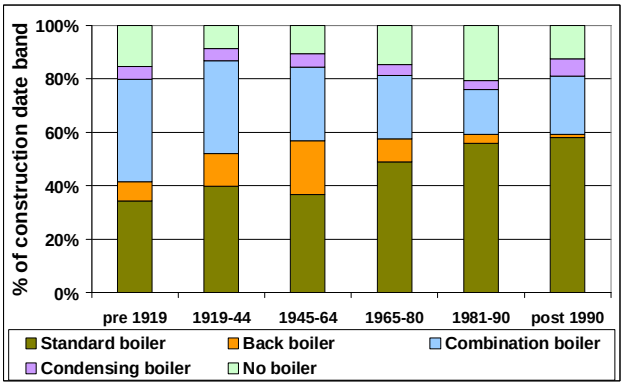

Figure 40: Comparison of boiler models by construction date

57. The newest stock, however, has the highest total proportion of all condensing boilers, due in part to recent new build. These quantities of more modern boilers at either end of the age scale mean that back boilers are most prominent in 1945 – 1964 housing, making up 20% of this age band, but only 10% of all dwellings. Standard boilers have also been replaced more frequently in older homes, with post 1990 dwellings having a higher proportion of the more efficient standard units, which do not yet need replacing with condensing boilers.

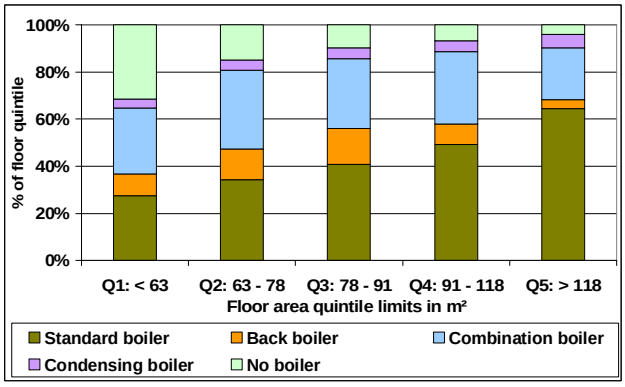

Figure 41: Comparison of boiler models by floor area quintile

58. Looking at dwellings with larger floor areas we find a higher proportion of standard boilers, as shown in Figure 41, where a boiler exists, and lower percentages of back and combination boilers. The largest dwelling types are typically detached or semi-detached built relatively recently but before the introduction of condensing units. At the same time combination boilers were being installed in homes with more limited space, such as flats. Of the dwellings in the smallest floor area quintile which use a boiler, 41% are combination boilers compared with 23% in the largest quintile. Condensing boilers show a similar proportion within each band, although the non-combination models are again more likely in the largest homes.

Dwelling Location

59. Rural areas show a somewhat different spread of boiler types to other neighbourhoods, with the proportion of boiler driven systems using standard units being 61% in rural locations, 41% in city and urban locations and 49% in suburban, (Figure 42). Combination boilers make up only 22% of all boilers in rural areas, compared with 46% in cities and 32% in suburban stock. This indicates the different sizes of typical dwellings in each type of area and this is mirrored in certain regions. Typically, metropolitan centres such as London along with the northern regions, have above average proportions of combination boilers and correspondingly high proportions of pre-1945 dwellings. Higher concentrations of standard and back boilers tend to be in regions with more rural or suburban stock, to the South and East of the country.

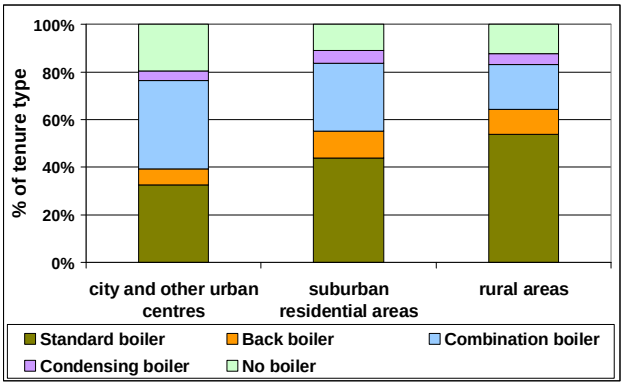

Figure 42: Comparison of boiler models by neighbourhood type

Tenure

60. As previously identified, vacant dwellings are typified by flats and terraced housing and we see a higher proportion of the space saving combination boilers in this stock, along with non-boiler driven systems. Again this theme continues in the private rented sector, although the uptake of condensing boilers here has been as strong as in the owner occupied and RSL tenures, (Figure 43). Back boilers feature more prominently in the social sector, comprising 22% of all boilers compared with 10% in the private sector. These will typically be found in the older local authority owned bungalows and terraced housing, many of which are now in the hands of Housing Associations.

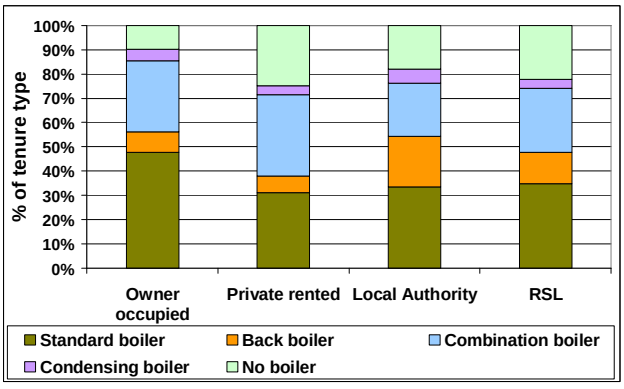

Figure 43: Comparison of boiler models by tenure

Household Type

61. Younger single people, the most predominant household living in flats, have the highest proportion of combination boilers, (Figure 44), whilst couples with and without children have the highest ownership of standard boilers as they are the most likely to live in larger dwellings. Back boilers are most commonly used by older single people, often in social housing such as smaller terraces and bungalows. This is repeated in the proportion of households with older HRP's, 17% of these use back boilers compared with 12% of all boiler systems. The group of households whose HRP is less than 30 years old is the only one in which combination boilers outweigh standard models.

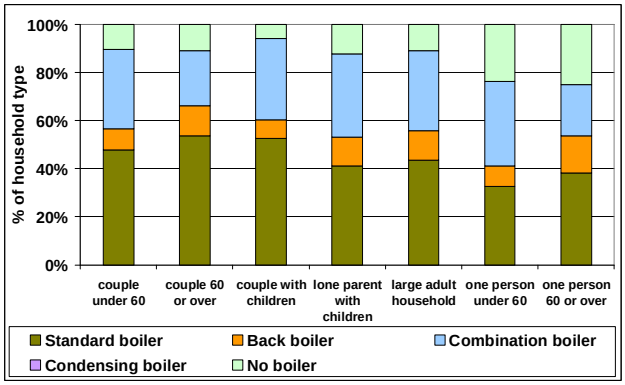

Figure 44: Comparison of boiler models by household group

62. With condensing boilers being more expensive we see the highest income households using the highest proportion, although the relatively high number of installations in social housing means that those with lower incomes, more likely to live outside the private sector, are not far behind. However the less efficient back boilers show a strong correlation with low income households (Figure 45), whilst, with high income typically equating to a large dwelling size, standard models are found more frequently at this end of the scale.

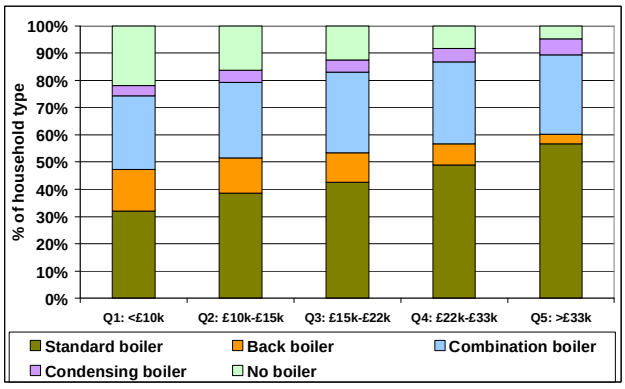

Figure 45: Comparison of boiler models by household income

63. When rating the effectiveness of their heating system, those with condensing boilers gave the highest endorsement, as shown in Figure 46, with 77% perceiving the system to be "very effective", compared with 73% for combination boilers, 67% for standard units and only 65% for back boilers. However this is still some way clear of the 37% rating given to non-boiler systems.

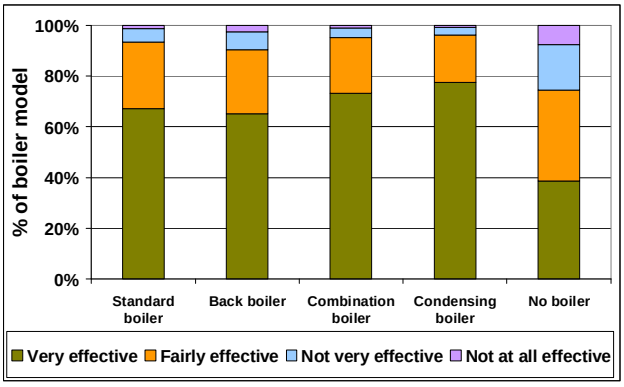

Figure 46: Comparison of boiler models by household satisfaction rating for heating

Conclusions and Future Issues

64. As Building Regulations continue to drive the use of more energy efficient heating upwards, EHCS data confirms the steady increases in central heating use and gas fuelled systems, with all areas of housing moving away from solid fuel and electricity. Where central heating already exists, standard and back boilers are being replaced with combination and condensing boilers.

65. In the future we should expect to see the use of condensing boiler increase markedly, as these have recently become mandatory for new and replacement units. We should equally see a high incidence of condensing-combination boilers being installed in smaller dwellings in particular. Whilst a consistent area of the stock may continue to use oil, we should expect gas systems to continue replacing electric and solid fuel. A slow upward trend of centrally heated water should continue, but there may also be more modern instantaneous systems.

Space and Water Heating Update Update Tables 2005

These tables give detailed breakdowns of the four main heating groups (primary space heating type and fuel, water heating type and boiler type) against key variables, as an appendix to the Space and Water Heating Update Report 2005.

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Table 3.3 Water heating system - Proportion of water heating system by dwelling age
Table 3.4 Water heating system - Proportion of water heating system by floor area
Table 3.5 Water heating system - Proportion of water heating system by dwelling tenure
Table 3.6 Water heating system - Proportion of water heating system by household composition
Table 3.7 Water heating system - Proportion of water heating system by the age of the household representative
Table 3.8 Water heating system - Proportion of water heating system by household income

Table 4.1 Type of boiler - Proportion of boiler type
Table 4.2 Type of boiler - Proportion of boiler type by dwelling type
Table 4.3 Type of boiler - Proportion of boiler type by dwelling age
Table 4.4 Type of boiler - Proportion of boiler type by floor area
Table 4.5 Type of boiler - Proportion of boiler type by dwelling tenure
Table 4.6 Type of boiler - Proportion of boiler type by household composition
Table 4.7 Type of boiler - Proportion of boiler type by the household representative
Table 4.8 Type of boiler - Proportion of boiler type by household income

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

	count(000s), (column%)
Primary space heating system	Dwellings
Boiler system with radiators	18,512
	(85.0)
Storage radiators	1,605
	(7.4)
Warm air system	318
	(1.5)
Room heater	959
	(4.4)
Other Systems	12
	(0.1)
Communal	341
	(1.6)
Portable heaters only	34
	(0.2)
Total	21,781
	(100.0)

Base: All Dwellings

Table 1.2 Primary space heating system - Proportion of space heating type by dwelling type

count(000s), (row%), (column%)

	Boiler system with radiators	Storage radiators	Warm air system	Room heater	Other systems	Communal	Portable heaters only	Total
end terrace	1,871	89	30	124	1	2		2,118
	(88.3)	(4.2)	(1.4)	(5.9)	(0.1)	(0.1)	(0.0)	(100.0)
	(10.1)	(5.5)	(9.4)	(13.0)	(12.2)	(0.6)	(0.0)	(9.7)
mid terrace	3,520	220	71	348	2	14	6	4,181
	(84.2)	(5.3)	(1.7)	(8.3)	(0.0)	(0.3)	(0.1)	(100.0)
	(19.0)	(13.7)	(22.4)	(36.3)	(14.8)	(4.2)	(16.1)	(19.2)
semi detached	5,445	185	44	217	2	2	2	5,897
	(92.3)	(3.1)	(0.7)	(3.7)	(0.0)	(0.0)	(0.0)	(100.0)
	(29.4)	(11.5)	(13.9)	(22.6)	(13.8)	(0.6)	(5.4)	(27.1)
detached	3,592	72	59	29		1	1	3,754
	(95.7)	(1.9)	(1.6)	(0.8)	(0.0)	(0.0)	(0.0)	(100.0)
	(19.4)	(4.5)	(18.4)	(3.0)	(0.0)	(0.4)	(2.6)	(17.2)
bungalow	1,749	193	45	30		5	4	2,026
	(86.3)	(9.5)	(2.2)	(1.5)	(0.0)	(0.2)	(0.2)	(100.0)
	(9.4)	(12.0)	(14.1)	(3.1)	(0.0)	(1.5)	(13.0)	(9.3)
converted flat	524	96		62		23	11	716
	(73.1)	(13.4)	(0.0)	(8.7)	(0.0)	(3.1)	(1.6)	(100.0)
	(2.8)	(6.0)	(0.0)	(6.5)	(0.0)	(6.6)	(33.4)	(3.3)
purpose built flat, low rise	1,689	663	61	136	3	220	10	2,780
	(60.7)	(23.8)	(2.2)	(4.9)	(0.1)	(7.9)	(0.3)	(100.0)
	(9.1)	(41.3)	(19.0)	(14.2)	(24.3)	(64.5)	(27.9)	(12.8)
purpose built flat, high rise	122	86	9	13	4	73	1	308
	(39.6)	(28.0)	(2.9)	(4.1)	(1.4)	(23.8)	(0.2)	(100.0)
	(0.7)	(5.4)	(2.8)	(1.3)	(34.9)	(21.5)	(1.6)	(1.4)
Total	18,512	1,605	318	959	12	341	34	21,781
	(85.0)	(7.4)	(1.5)	(4.4)	(0.1)	(1.6)	(0.2)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 1.3 Primary space heating system - Proportion of space heating type by dwelling age

count(000s), (row%), (column%)

	Boiler system with radiators	Storage radiators	Warm air system	Room heater	Other systems	Communal	Portable heaters only	Total
pre 1919	3,991	281	5	413	2	22	18	4,731
	(84.4)	(5.9)	(0.1)	(8.7)	(0.0)	(0.5)	(0.4)	(100.0)
	(21.6)	(17.5)	(1.5)	(43.1)	(15.2)	(6.6)	(51.3)	(21.7)
1919-44	3,462	106	2	193		42	3	3,808
	(90.9)	(2.8)	(0.0)	(5.1)	(0.0)	(1.1)	(0.1)	(100.0)
	(18.7)	(6.6)	(0.5)	(20.1)	(0.0)	(12.3)	(9.7)	(17.5)
1945-64	3,779	251	51	175		21	3	4,279
	(88.3)	(5.9)	(1.2)	(4.1)	(0.0)	(0.5)	(0.1)	(100.0)
	(20.4)	(15.6)	(16.0)	(18.2)	(0.0)	(6.3)	(7.4)	(19.6)
1965-80	3,957	459	224	95	9	176	7	4,928
	(80.3)	(9.3)	(4.6)	(1.9)	(0.2)	(3.6)	(0.1)	(100.0)
	(21.4)	(28.6)	(70.6)	(9.9)	(72.6)	(51.8)	(21.5)	(22.6)
1981-90	1,473	275	35	66		62	3	1,915
	(76.9)	(14.4)	(1.8)	(3.5)	(0.0)	(3.2)	(0.2)	(100.0)
	(8.0)	(17.2)	(10.9)	(6.9)	(0.0)	(18.2)	(10.1)	(8.8)
post 1990	1,849	233	2	17	1	16		2,119
	(87.3)	(11.0)	(0.1)	(0.8)	(0.1)	(0.8)	(0.0)	(100.0)
	(10.0)	(14.5)	(0.6)	(1.8)	(12.2)	(4.8)	(0.0)	(9.7)
Total	18,512	1,605	318	959	12	341	34	21,781
	(85.0)	(7.4)	(1.5)	(4.4)	(0.1)	(1.6)	(0.2)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 1.4 Primary space heating system - Proportion of space heating type by floor area

count(000s), (row%), (column%)

	Boiler system with radiators	Storage radiators	Warm air system	Room heater	Other systems	Communal	Portable heaters only	Total
Quintile 1: < 63m^2	2,863	840	78	300	3	250	19	4,354
	(65.8)	(19.3)	(1.8)	(6.9)	(0.1)	(5.8)	(0.4)	(100.0)
	(15.5)	(52.4)	(24.7)	(31.2)	(24.3)	(73.5)	(56.1)	(20.0)
Quintile 2: 63m² - 78m²	3,645	316	64	301	2	24	2	4,355
	(83.7)	(7.3)	(1.5)	(6.9)	(0.1)	(0.6)	(0.0)	(100.0)
	(19.7)	(19.7)	(20.0)	(31.4)	(19.7)	(7.2)	(4.6)	(20.0)
Quintile 3: 78m² - 91m²	3,872	194	55	199	4	28	3	4,354
	(88.9)	(4.5)	(1.3)	(4.6)	(0.1)	(0.6)	(0.1)	(100.0)
	(20.9)	(12.1)	(17.3)	(20.7)	(28.6)	(8.1)	(7.7)	(20.0)
Quintile 4: 91m² - 118m²	3,996	160	75	107	1	20	5	4,363
	(91.6)	(3.7)	(1.7)	(2.5)	(0.0)	(0.4)	(0.1)	(100.0)
	(21.6)	(9.9)	(23.6)	(11.2)	(12.2)	(5.8)	(13.7)	(20.0)
Quintile 5: > 118m²	4,136	95	46	53	2	19	6	4,356
	(95.0)	(2.2)	(1.0)	(1.2)	(0.0)	(0.4)	(0.1)	(100.0)
	(22.3)	(5.9)	(14.3)	(5.5)	(15.2)	(5.4)	(17.9)	(20.0)
Total	18,512	1,605	318	959	12	341	34	21,781
	(85.0)	(7.4)	(1.5)	(4.4)	(0.1)	(1.6)	(0.2)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 1.5 Primary space heating system - Proportion of space heating type by dwelling tenure

count(000s), (row%), (column%)

	Boiler system with radiators	Storage radiators	Warm air system	Room heater	Other systems	Communal	Portable heaters only	Total
owner occupied	13,636	814	205	624	7	33	11	15,331
	(88.9)	(5.3)	(1.3)	(4.1)	(0.0)	(0.2)	(0.1)	(100.0)
	(73.7)	(50.7)	(64.5)	(65.0)	(60.5)	(9.8)	(31.9)	(70.4)
private rented	1,826	326	13	217	3	65	17	2,467
	(74.0)	(13.2)	(0.5)	(8.8)	(0.1)	(2.6)	(0.7)	(100.0)
	(9.9)	(20.3)	(4.1)	(22.6)	(23.6)	(19.0)	(49.4)	(11.3)
local authority	1,690	186	69	85	1	130	5	2,166
	(78.0)	(8.6)	(3.2)	(3.9)	(0.1)	(6.0)	(0.2)	(100.0)
	(9.1)	(11.6)	(21.6)	(8.9)	(9.6)	(38.2)	(15.0)	(9.9)
RSL	1,359	279	31	33	1	112	1	1,817
	(74.8)	(15.3)	(1.7)	(1.8)	(0.0)	(6.2)	(0.1)	(100.0)
	(7.3)	(17.4)	(9.8)	(3.5)	(6.3)	(33.0)	(3.7)	(8.3)
Total	18,512	1,605	318	959	12	341	34	21,781
	(85.0)	(7.4)	(1.5)	(4.4)	(0.1)	(1.6)	(0.2)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 1.6 Primary space heating system - Proportion of space heating type by household composition

count(000s), (row%), (column%)

	Boiler system with radiators	Storage radiators	Warm air system	Room heater	Other systems	Communal	Portable heaters only	Total
couple under 60	3,506	213	43	145	4	29	8	3,948
	(88.8)	(5.4)	(1.1)	(3.7)	(0.1)	(0.7)	(0.2)	(100.0)
	(19.6)	(14.1)	(13.9)	(16.7)	(29.0)	(9.7)	(26.7)	(18.8)
couple 60 or over	3,055	230	69	118	2	26		3,501
	(87.3)	(6.6)	(2.0)	(3.4)	(0.1)	(0.7)	(0.0)	(100.0)
	(17.0)	(15.2)	(22.3)	(13.6)	(14.8)	(8.9)	(0.0)	(16.7)
couple with children	4,720	139	50	125	1	21	2	5,059
	(93.3)	(2.7)	(1.0)	(2.5)	(0.0)	(0.4)	(0.0)	(100.0)
	(26.3)	(9.2)	(16.1)	(14.3)	(12.2)	(7.2)	(7.3)	(24.1)
lone parent with children	1,318	102	33	64		13	3	1,532
	(86.0)	(6.7)	(2.1)	(4.2)	(0.0)	(0.8)	(0.2)	(100.0)
	(7.3)	(6.8)	(10.6)	(7.3)	(0.0)	(4.3)	(8.5)	(7.3)
large adult household	1,260	72	19	60	2	15	1	1,429
	(88.2)	(5.0)	(1.3)	(4.2)	(0.2)	(1.0)	(0.0)	(100.0)
	(7.0)	(4.8)	(6.2)	(6.9)	(19.7)	(5.0)	(1.9)	(6.8)
one person under 60	1,892	331	31	181	2	50	10	2,497
	(75.8)	(13.3)	(1.2)	(7.3)	(0.1)	(2.0)	(0.4)	(100.0)
	(10.6)	(21.9)	(10.0)	(20.8)	(19.3)	(16.9)	(32.8)	(11.9)
one person 60 or over	2,178	423	64	178	1	141	7	2,992
	(72.8)	(14.1)	(2.2)	(6.0)	(0.0)	(4.7)	(0.2)	(100.0)
	(12.1)	(28.0)	(20.9)	(20.5)	(5.0)	(48.0)	(22.8)	(14.3)
Total	17,929	1,511	308	872	12	293	32	20,957
	(85.6)	(7.2)	(1.5)	(4.2)	(0.1)	(1.4)	(0.2)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 1.7 Primary space heating system - Proportion of space heating type by age of the household representative

count(000s), (row%), (column%)

	Boiler system with radiators	Storage radiators	Warm air system	Room heater	Other systems	Communal	Portable heaters only	Total
16 - 29	1,446	203	25	75	1	19	8	1,777
	(81.4)	(11.4)	(1.4)	(4.2)	(0.0)	(1.1)	(0.5)	(100.0)
	(8.1)	(13.4)	(8.1)	(8.6)	(4.7)	(6.4)	(25.6)	(8.5)
30 - 44	5,608	351	59	212	3	55	11	6,298
	(89.0)	(5.6)	(0.9)	(3.4)	(0.0)	(0.9)	(0.2)	(100.0)
	(31.3)	(23.2)	(19.3)	(24.3)	(20.5)	(18.6)	(34.8)	(30.1)
45 - 64	6,561	384	108	312	6	73	7	7,452
	(88.1)	(5.1)	(1.5)	(4.2)	(0.1)	(1.0)	(0.1)	(100.0)
	(36.6)	(25.4)	(35.2)	(35.8)	(50.1)	(24.9)	(23.4)	(35.6)
65 or over	4,314	574	115	273	3	147	5	5,431
	(79.4)	(10.6)	(2.1)	(5.0)	(0.1)	(2.7)	(0.1)	(100.0)
	(24.1)	(38.0)	(37.4)	(31.3)	(24.7)	(50.0)	(16.1)	(25.9)
Total	17,929	1,511	308	872	12	293	32	20,957
	(85.6)	(7.2)	(1.5)	(4.2)	(0.1)	(1.4)	(0.2)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 1.8 Primary space heating system - Proportion of space heating type by household income

count(000s), (row%), (column%)

	Boiler system with radiators	Storage radiators	Warm air system	Room heater	Other systems	Communal	Portable heaters only	Total
Quintile 1: < £9k	3,154	504	93	288	1	134	12	4,185
	(75.4)	(12.0)	(2.2)	(6.9)	(0.0)	(3.2)	(0.3)	(100.0)
	(17.6)	(33.3)	(30.3)	(33.0)	(6.3)	(45.8)	(37.5)	(20.0)
Quintile 2: £9k - £15k	3,433	360	63	246	1	83	5	4,190
	(81.9)	(8.6)	(1.5)	(5.9)	(0.0)	(2.0)	(0.1)	(100.0)
	(19.1)	(23.8)	(20.4)	(28.2)	(9.6)	(28.1)	(15.3)	(20.0)
Quintile 3: £15k - £22k	3,610	312	46	175	2	36	8	4,190
	(86.2)	(7.5)	(1.1)	(4.2)	(0.0)	(0.9)	(0.2)	(100.0)
	(20.1)	(20.7)	(15.1)	(20.1)	(14.8)	(12.2)	(26.1)	(20.0)
Quintile 4: £22k - £33k	3,775	208	61	103	2	32	5	4,186
	(90.2)	(5.0)	(1.5)	(2.5)	(0.0)	(0.8)	(0.1)	(100.0)
	(21.1)	(13.7)	(19.9)	(11.9)	(13.8)	(10.9)	(15.2)	(20.0)
Quintile 5: > £33k	3,958	127	44	60	7	9	2	4,206
	(94.1)	(3.0)	(1.1)	(1.4)	(0.2)	(0.2)	(0.0)	(100.0)
	(22.1)	(8.4)	(14.4)	(6.9)	(55.5)	(3.0)	(6.0)	(20.1)
Total	17,929	1,511	308	872	12	293	32	20,957
	(85.6)	(7.2)	(1.5)	(4.2)	(0.1)	(1.4)	(0.2)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

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

	count(000s), (column%)
Primary space heating fuel	Dwellings
Gas fired system	18,368
	(84.3)
Oil fired system	857
	(3.9)
Solid fuel fired system	330
	(1.5)
Electrical system	1,886
	(8.7)
Communal system	341
	(1.6)
Total	21,781
	(100.0)

Base: All Dwellings

Table 2.2 Primary space heating fuel - Proportion of space heating fuel by dwelling type

count(000s), (row%), (column%)

	Gas fired system	Oil fired system	Solid fuel fired system	Electrical system	Communal system	Total
end terrace	1,922	40	34	120	2	2,118
	(90.7)	(1.9)	(1.6)	(5.7)	(0.1)	(100.0)
	(10.5)	(4.7)	(10.3)	(6.4)	(0.6)	(9.7)
mid terrace	3,823	19	60	265	14	4,181
	(91.4)	(0.5)	(1.4)	(6.3)	(0.3)	(100.0)
	(20.8)	(2.3)	(18.1)	(14.0)	(4.2)	(19.2)
semi detached	5,367	174	128	225	2	5,897
	(91.0)	(3.0)	(2.2)	(3.8)	(0.0)	(100.0)
	(29.2)	(20.3)	(38.9)	(12.0)	(0.6)	(27.1)
detached	3,179	447	43	84	1	3,754
	(84.7)	(11.9)	(1.1)	(2.2)	(0.0)	(100.0)
	(17.3)	(52.2)	(12.9)	(4.4)	(0.4)	(17.2)
bungalow	1,593	170	48	210	5	2,026
	(78.6)	(8.4)	(2.4)	(10.4)	(0.2)	(100.0)
	(8.7)	(19.9)	(14.5)	(11.1)	(1.5)	(9.3)
converted flat	535	5	10	144	23	716
	(74.7)	(0.7)	(1.4)	(20.1)	(3.1)	(100.0)
	(2.9)	(0.6)	(3.0)	(7.6)	(6.6)	(3.3)
purpose built flat, low rise	1,819		8	734	220	2,780
	(65.4)	(0.0)	(0.3)	(26.4)	(7.9)	(100.0)
	(9.9)	(0.0)	(2.4)	(38.9)	(64.5)	(12.8)
purpose built flat, high rise	131			104	73	308
	(42.4)	(0.0)	(0.0)	(33.7)	(23.8)	(100.0)
	(0.7)	(0.0)	(0.0)	(5.5)	(21.5)	(1.4)
Total	18,368	857	330	1,886	341	21,781
	(84.3)	(3.9)	(1.5)	(8.7)	(1.6)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 2.3 Primary space heating fuel - Proportion of space heating fuel by dwelling age

count(000s), (row%), (column%)

	Gas fired system	Oil fired system	Solid fuel fired system	Electrical system	Communal system	Total
pre 1919	3,843	330	147	388	22	4,731
	(81.2)	(7.0)	(3.1)	(8.2)	(0.5)	(100.0)
	(20.9)	(38.6)	(44.6)	(20.6)	(6.6)	(21.7)
1919-44	3,499	70	55	141	42	3,808
	(91.9)	(1.8)	(1.5)	(3.7)	(1.1)	(100.0)
	(19.1)	(8.2)	(16.8)	(7.5)	(12.3)	(17.5)
1945-64	3,770	137	68	283	21	4,279
	(88.1)	(3.2)	(1.6)	(6.6)	(0.5)	(100.0)
	(20.5)	(16.0)	(20.6)	(15.0)	(6.3)	(19.6)
1965-80	3,977	197	54	524	176	4,928
	(80.7)	(4.0)	(1.1)	(10.6)	(3.6)	(100.0)
	(21.7)	(22.9)	(16.5)	(27.8)	(51.8)	(22.6)
1981-90	1,478	70	5	300	62	1,915
	(77.2)	(3.7)	(0.3)	(15.7)	(3.2)	(100.0)
	(8.0)	(8.2)	(1.6)	(15.9)	(18.2)	(8.8)
post 1990	1,801	53		249	16	2,119
	(85.0)	(2.5)	(0.0)	(11.8)	(0.8)	(100.0)
	(9.8)	(6.1)	(0.0)	(13.2)	(4.8)	(9.7)
Total	18,368	857	330	1,886	341	21,781
	(84.3)	(3.9)	(1.5)	(8.7)	(1.6)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 2.4 Primary space heating fuel - Proportion of space heating fuel by floor area

count(000s), (row%), (column%)

	Gas fired system	Oil fired system	Solid fuel fired system	Electrical system	Communal system	Total
Quintile 1: < 63m2	3,056	34	48	965	250	4,354
	(70.2)	(0.8)	(1.1)	(22.2)	(5.8)	(100.0)
	(16.6)	(4.0)	(14.7)	(51.2)	(73.5)	(20.0)
Quintile 2: 63m² - 78m²	3,825	50	72	383	24	4,355
	(87.8)	(1.2)	(1.7)	(8.8)	(0.6)	(100.0)
	(20.8)	(5.9)	(21.9)	(20.3)	(7.2)	(20.0)
Quintile 3: 78m² - 91m²	3,917	76	94	239	28	4,354
	(90.0)	(1.8)	(2.2)	(5.5)	(0.6)	(100.0)
	(21.3)	(8.9)	(28.4)	(12.7)	(8.1)	(20.0)
Quintile 4: 91m² - 118m²	3,924	171	67	182	20	4,363
	(89.9)	(3.9)	(1.5)	(4.2)	(0.4)	(100.0)
	(21.4)	(19.9)	(20.3)	(9.6)	(5.8)	(20.0)
Quintile 5: > 118m²	3,646	525	49	117	19	4,356
	(83.7)	(12.1)	(1.1)	(2.7)	(0.4)	(100.0)
	(19.9)	(61.3)	(14.7)	(6.2)	(5.4)	(20.0)
Total	18,368	857	330	1,886	341	21,781
	(84.3)	(3.9)	(1.5)	(8.7)	(1.6)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 2.5 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	13,396	731	210	961	33	15,331
	(87.4)	(4.8)	(1.4)	(6.3)	(0.2)	(100.0)
	(72.9)	(85.4)	(63.5)	(51.0)	(9.8)	(70.4)
private rented	1,807	107	67	421	65	2,467
	(73.3)	(4.3)	(2.7)	(17.1)	(2.6)	(100.0)
	(9.8)	(12.5)	(20.2)	(22.3)	(19.0)	(11.3)
local authority	1,774	11	37	214	130	2,166
	(81.9)	(0.5)	(1.7)	(9.9)	(6.0)	(100.0)
	(9.7)	(1.3)	(11.3)	(11.3)	(38.2)	(9.9)
RSL	1,391	7	16	290	112	1,817
	(76.6)	(0.4)	(0.9)	(16.0)	(6.2)	(100.0)
	(7.6)	(0.9)	(4.9)	(15.4)	(33.0)	(8.3)
Total	18,368	857	330	1,886	341	21,781
	(84.3)	(3.9)	(1.5)	(8.7)	(1.6)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 2.6 Primary space heating fuel - Proportion of space heating fuel by household composition

count(000s), (row%), (column%)

	Gas fired system	Oil fired system	Solid fuel fired system	Electrical system	Communal system	Total
couple under 60	3,401	204	57	258	29	3,948
	(86.1)	(5.2)	(1.5)	(6.5)	(0.7)	(100.0)
	(19.1)	(24.3)	(18.8)	(14.8)	(9.7)	(18.8)
couple 60 or over	2,918	235	66	256	26	3,501
	(83.3)	(6.7)	(1.9)	(7.3)	(0.7)	(100.0)
	(16.4)	(28.1)	(21.5)	(14.7)	(8.9)	(16.7)
couple with children	4,602	232	44	160	21	5,059
	(91.0)	(4.6)	(0.9)	(3.2)	(0.4)	(100.0)
	(25.9)	(27.7)	(14.4)	(9.2)	(7.2)	(24.1)
lone parent with children	1,362	22	13	121	13	1,532
	(88.9)	(1.5)	(0.9)	(7.9)	(0.8)	(100.0)
	(7.7)	(2.7)	(4.4)	(6.9)	(4.3)	(7.3)
large adult household	1,261	39	26	89	15	1,429
	(88.2)	(2.7)	(1.8)	(6.2)	(1.0)	(100.0)
	(7.1)	(4.6)	(8.5)	(5.1)	(5.0)	(6.8)
one person under 60	1,980	41	36	391	50	2,497
	(79.3)	(1.6)	(1.4)	(15.7)	(2.0)	(100.0)
	(11.1)	(4.8)	(11.7)	(22.4)	(16.9)	(11.9)
one person 60 or over	2,252	65	63	471	141	2,992
	(75.3)	(2.2)	(2.1)	(15.8)	(4.7)	(100.0)
	(12.7)	(7.7)	(20.8)	(27.0)	(48.0)	(14.3)
Total	17,776	837	306	1,745	293	20,957
	(84.8)	(4.0)	(1.5)	(8.3)	(1.4)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 2.7 Primary space heating fuel - Proportion of space heating fuel by the age of the household representative

count(000s), (row%), (column%)

	Gas fired system	Oil fired system	Solid fuel fired system	Electrical system	Communal system	Total
16 - 29	1,495	18	15	230	19	1,777
	(84.2)	(1.0)	(0.8)	(12.9)	(1.1)	(100.0)
	(8.4)	(2.2)	(4.8)	(13.2)	(6.4)	(8.5)
30 - 44	5,601	179	49	414	55	6,298
	(88.9)	(2.8)	(0.8)	(6.6)	(0.9)	(100.0)
	(31.5)	(21.4)	(16.1)	(23.7)	(18.6)	(30.1)
45 - 64	6,399	402	121	457	73	7,452
	(85.9)	(5.4)	(1.6)	(6.1)	(1.0)	(100.0)
	(36.0)	(48.0)	(39.7)	(26.2)	(24.9)	(35.6)
65 or over	4,281	238	120	645	147	5,431
	(78.8)	(4.4)	(2.2)	(11.9)	(2.7)	(100.0)
	(24.1)	(28.4)	(39.4)	(36.9)	(50.0)	(25.9)
Total	17,776	837	306	1,745	293	20,957
	(84.8)	(4.0)	(1.5)	(8.3)	(1.4)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 2.8 Primary space heating fuel - Proportion of space heating fuel by household income

count(000s), (row%), (column%)

	Gas fired system	Oil fired system	Solid fuel fired system	Electrical system	Communal system	Total
Quintile 1: < £9k	3,280	74	117	579	134	4,185
	(78.4)	(1.8)	(2.8)	(13.8)	(3.2)	(100.0)
	(18.5)	(8.9)	(38.2)	(33.2)	(45.8)	(20.0)
Quintile 2: £9k - £15k	3,527	95	65	421	83	4,190
	(84.2)	(2.3)	(1.5)	(10.0)	(2.0)	(100.0)
	(19.8)	(11.3)	(21.2)	(24.1)	(28.1)	(20.0)
Quintile 3: £15k - £22k	3,591	146	59	358	36	4,190
	(85.7)	(3.5)	(1.4)	(8.5)	(0.9)	(100.0)
	(20.2)	(17.5)	(19.3)	(20.5)	(12.2)	(20.0)
Quintile 4: £22k - £33k	3,680	202	38	234	32	4,186
	(87.9)	(4.8)	(0.9)	(5.6)	(0.8)	(100.0)
	(20.7)	(24.2)	(12.3)	(13.4)	(10.9)	(20.0)
Quintile 5: > £33k	3,698	319	27	153	9	4,206
	(87.9)	(7.6)	(0.7)	(3.6)	(0.2)	(100.0)
	(20.8)	(38.1)	(9.0)	(8.8)	(3.0)	(20.1)
Total	17,776	837	306	1,745	293	20,957
	(84.8)	(4.0)	(1.5)	(8.3)	(1.4)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Households

Table 3.1 Water heating system - Proportion of water heating system

	count(000s), (column%)
Water heating system	Dwellings
With central heating	18,586
	(85.3)
Dedicated boiler	317
	(1.5)
Electric immersion heater	2,362
	(10.8)
Instantaneous (including kettles)	517
	(2.4)
Total	21,781
	(100.0)

Base: All Dwellings

Table 3.2 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
end terrace	1,844	35	172	67	2,118
	(87.1)	(1.6)	(8.1)	(3.1)	(100.0)
	(9.9)	(11.0)	(7.3)	(12.9)	(9.7)
mid terrace	3,519	89	410	164	4,181
	(84.2)	(2.1)	(9.8)	(3.9)	(100.0)
	(18.9)	(28.0)	(17.4)	(31.7)	(19.2)
semi detached	5,348	69	354	126	5,897
	(90.7)	(1.2)	(6.0)	(2.1)	(100.0)
	(28.8)	(21.7)	(15.0)	(24.4)	(27.1)
detached	3,543	57	132	21	3,754
	(94.4)	(1.5)	(3.5)	(0.6)	(100.0)
	(19.1)	(18.2)	(5.6)	(4.2)	(17.2)
bungalow	1,754	24	228	20	2,026
	(86.6)	(1.2)	(11.3)	(1.0)	(100.0)
	(9.4)	(7.5)	(9.7)	(3.9)	(9.3)
converted flat	528	11	132	44	716
	(73.7)	(1.6)	(18.5)	(6.2)	(100.0)
	(2.8)	(3.6)	(5.6)	(8.6)	(3.3)
purpose built flat, low rise	1,879	27	816	59	2,780
	(67.6)	(1.0)	(29.3)	(2.1)	(100.0)
	(10.1)	(8.5)	(34.5)	(11.5)	(12.8)
purpose built flat, high rise	170	5	117	15	308
	(55.2)	(1.7)	(38.1)	(5.0)	(100.0)
	(0.9)	(1.6)	(5.0)	(3.0)	(1.4)
Total	18,586	317	2,362	517	21,781
	(85.3)	(1.5)	(10.8)	(2.4)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 3.3 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
pre 1919	3,895	124	484	227	4,731
	(82.3)	(2.6)	(10.2)	(4.8)	(100.0)
	(21.0)	(39.2)	(20.5)	(44.0)	(21.7)
1919-44	3,438	45	215	109	3,808
	(90.3)	(1.2)	(5.7)	(2.9)	(100.0)
	(18.5)	(14.2)	(9.1)	(21.2)	(17.5)
1945-64	3,765	71	368	75	4,279
	(88.0)	(1.7)	(8.6)	(1.8)	(100.0)
	(20.3)	(22.4)	(15.6)	(14.5)	(19.6)
1965-80	4,129	50	671	77	4,928
	(83.8)	(1.0)	(13.6)	(1.6)	(100.0)
	(22.2)	(15.9)	(28.4)	(15.0)	(22.6)
1981-90	1,515	22	357	23	1,915
	(79.1)	(1.1)	(18.6)	(1.2)	(100.0)
	(8.1)	(6.8)	(15.1)	(4.4)	(8.8)
post 1990	1,843	5	266	5	2,119
	(87.0)	(0.2)	(12.6)	(0.2)	(100.0)
	(9.9)	(1.5)	(11.3)	(1.0)	(9.7)
Total	18,586	317	2,362	517	21,781
	(85.3)	(1.5)	(10.8)	(2.4)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 3.4 Water heating system - Proportion of water heating system by floor area

count(000s), (row%), (column%)

	With central heating	Dedicated boiler	Electric immersion heater	Instantaneous	Total
Quintile 1: < 63m2	3,056	68	1,091	139	4,354
	(70.2)	(1.6)	(25.0)	(3.2)	(100.0)
	(16.4)	(21.6)	(46.2)	(26.9)	(20.0)
Quintile 2: 63m² - 78m²	3,637	65	514	139	4,355
	(83.5)	(1.5)	(11.8)	(3.2)	(100.0)
	(19.6)	(20.5)	(21.7)	(26.9)	(20.0)
Quintile 3: 78m² - 91m²	3,846	65	346	97	4,354
	(88.3)	(1.5)	(7.9)	(2.2)	(100.0)
	(20.7)	(20.5)	(14.6)	(18.8)	(20.0)
Quintile 4: 91m² - 118m²	3,982	55	256	69	4,363
	(91.3)	(1.3)	(5.9)	(1.6)	(100.0)
	(21.4)	(17.5)	(10.9)	(13.3)	(20.0)
Quintile 5: > 118m²	4,064	63	155	73	4,356
	(93.3)	(1.5)	(3.6)	(1.7)	(100.0)
	(21.9)	(20.0)	(6.6)	(14.1)	(20.0)
Total	18,586	317	2,362	517	21,781
	(85.3)	(1.5)	(10.8)	(2.4)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 3.5 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	13,485	222	1,269	356	15,331
	(88.0)	(1.4)	(8.3)	(2.3)	(100.0)
	(72.6)	(70.1)	(53.7)	(68.8)	(70.4)
private rented	1,840	56	467	104	2,467
	(74.6)	(2.3)	(18.9)	(4.2)	(100.0)
	(9.9)	(17.8)	(19.8)	(20.1)	(11.3)
local authority	1,796	24	310	36	2,166
	(82.9)	(1.1)	(14.3)	(1.7)	(100.0)
	(9.7)	(7.5)	(13.1)	(7.0)	(9.9)
RSL	1,465	15	316	21	1,817
	(80.6)	(0.8)	(17.4)	(1.2)	(100.0)
	(7.9)	(4.7)	(13.4)	(4.1)	(8.3)
Total	18,586	317	2,362	517	21,781
	(85.3)	(1.5)	(10.8)	(2.4)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 3.6 Water heating system - Proportion of water heating system by household composition

count(000s), (row%), (column%)

	With central heating	Dedicated boiler	Electric immersion heater	Instantaneous	Total
couple under 60	3,481	51	338	77	3,948
	(88.2)	(1.3)	(8.6)	(2.0)	(100.0)
	(19.4)	(17.1)	(15.1)	(17.5)	(18.8)
couple 60 or over	3,050	59	327	65	3,501
	(87.1)	(1.7)	(9.3)	(1.9)	(100.0)
	(17.0)	(19.9)	(14.6)	(14.6)	(16.7)
couple with children	4,674	48	241	96	5,059
	(92.4)	(1.0)	(4.8)	(1.9)	(100.0)
	(26.0)	(16.4)	(10.8)	(21.6)	(24.1)
lone parent with children	1,326	15	158	32	1,532
	(86.6)	(1.0)	(10.3)	(2.1)	(100.0)
	(7.4)	(5.2)	(7.1)	(7.2)	(7.3)
large adult household	1,248	19	131	31	1,429
	(87.4)	(1.4)	(9.1)	(2.1)	(100.0)
	(6.9)	(6.6)	(5.8)	(6.9)	(6.8)
one person under 60	1,917	50	459	71	2,497
	(76.8)	(2.0)	(18.4)	(2.9)	(100.0)
	(10.7)	(16.9)	(20.5)	(16.1)	(11.9)
one person 60 or over	2,282	53	586	72	2,992
	(76.3)	(1.8)	(19.6)	(2.4)	(100.0)
	(12.7)	(17.9)	(26.2)	(16.2)	(14.3)
Total	17,979	295	2,239	443	20,957
	(85.8)	(1.4)	(10.7)	(2.1)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 3.7 Water heating system - Proportion of water heating system by the age of the household representative

count(000s), (row%), (column%)

	With central heating	Dedicated boiler	Electric immersion heater	Instantaneous	Total
16 - 29	1,448	23	255	50	1,777
	(81.5)	(1.3)	(14.3)	(2.8)	(100.0)
	(8.1)	(7.9)	(11.4)	(11.3)	(8.5)
30 - 44	5,596	56	529	118	6,298
	(88.8)	(0.9)	(8.4)	(1.9)	(100.0)
	(31.1)	(18.8)	(23.6)	(26.6)	(30.1)
45 - 64	6,540	115	639	157	7,452
	(87.8)	(1.5)	(8.6)	(2.1)	(100.0)
	(36.4)	(38.9)	(28.6)	(35.5)	(35.6)
65 or over	4,395	101	816	118	5,431
	(80.9)	(1.9)	(15.0)	(2.2)	(100.0)
	(24.4)	(34.3)	(36.4)	(26.6)	(25.9)
Total	17,979	295	2,239	443	20,957
	(85.8)	(1.4)	(10.7)	(2.1)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 3.8 Water heating system - Proportion of water heating system by household income

count(000s), (row%), (column%)

	With central heating	Dedicated boiler	Electric immersion heater	Instantaneous	Total
Quintile 1: < £9k	3,259	90	714	121	4,185
	(77.9)	(2.2)	(17.1)	(2.9)	(100.0)
	(18.1)	(30.6)	(31.9)	(27.3)	(20.0)
Quintile 2: £9k - £15k	3,441	76	572	102	4,190
	(82.1)	(1.8)	(13.6)	(2.4)	(100.0)
	(19.1)	(25.6)	(25.5)	(22.9)	(20.0)
Quintile 3: £15k - £22k	3,603	50	439	98	4,190
	(86.0)	(1.2)	(10.5)	(2.3)	(100.0)
	(20.0)	(16.9)	(19.6)	(22.2)	(20.0)
Quintile 4: £22k - £33k	3,766	50	305	64	4,186
	(90.0)	(1.2)	(7.3)	(1.5)	(100.0)
	(20.9)	(16.9)	(13.6)	(14.5)	(20.0)
Quintile 5: > £33k	3,911	29	208	58	4,206
	(93.0)	(0.7)	(5.0)	(1.4)	(100.0)
	(21.8)	(10.0)	(9.3)	(13.1)	(20.1)
Total	17,979	295	2,239	443	20,957
	(85.8)	(1.4)	(10.7)	(2.1)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 4.1 Type of boiler - Proportion of boiler type

	count(000s), (column%)
Type of boiler	Dwellings
Standard boiler	9,425
	(43.3)
Back boiler	2,181
	(10.0)
Combination boiler	6,254
	(28.7)
Condensing boiler	300
	(1.4)
Condensing-combination boiler	727
	(3.3)
No boiler	2,894
	(13.3)
Total	21,781
	(100.0)

Base: All Dwellings

Table 4.2 Type of boiler - Proportion of boiler type by dwelling type

count(000s), (row%), (column%)

	Standard boiler (floor or wall)	Back boiler (to fire or stove)	Combination boiler	Condensing boiler	Condensing-combination boiler	No boiler	Total
end terrace	906	239	656	26	73	217	2,118
	(42.8)	(11.3)	(31.0)	(1.2)	(3.5)	(10.2)	(100.0)
	(9.6)	(11.0)	(10.5)	(8.7)	(10.1)	(7.5)	(9.7)
mid terrace	1,433	437	1,539	39	142	590	4,181
	(34.3)	(10.5)	(36.8)	(0.9)	(3.4)	(14.1)	(100.0)
	(15.2)	(20.0)	(24.6)	(13.1)	(19.6)	(20.4)	(19.2)
semi detached	2,602	872	1,719	72	224	408	5,897
	(44.1)	(14.8)	(29.1)	(1.2)	(3.8)	(6.9)	(100.0)
	(27.6)	(40.0)	(27.5)	(24.0)	(30.8)	(14.1)	(27.1)
detached	2,656	117	663	113	102	103	3,754
	(70.7)	(3.1)	(17.7)	(3.0)	(2.7)	(2.8)	(100.0)
	(28.2)	(5.4)	(10.6)	(37.7)	(14.0)	(3.6)	(17.2)
bungalow	933	302	484	22	53	232	2,026
	(46.0)	(14.9)	(23.9)	(1.1)	(2.6)	(11.5)	(100.0)
	(9.9)	(13.9)	(7.7)	(7.4)	(7.3)	(8.0)	(9.3)
converted flat	142	29	329	2	30	184	716
	(19.8)	(4.0)	(46.0)	(0.3)	(4.2)	(25.7)	(100.0)
	(1.5)	(1.3)	(5.3)	(0.7)	(4.2)	(6.4)	(3.3)
purpose built flat, low rise	675	183	806	24	101	991	2,780
	(24.3)	(6.6)	(29.0)	(0.9)	(3.6)	(35.7)	(100.0)
	(7.2)	(8.4)	(12.9)	(8.1)	(13.9)	(34.3)	(12.8)
purpose built flat, high rise	78	2	58	1	1	168	308
	(25.3)	(0.6)	(18.9)	(0.4)	(0.3)	(54.4)	(100.0)
	(0.8)	(0.1)	(0.9)	(0.4)	(0.1)	(5.8)	(1.4)
Total	9,425	2,181	6,254	300	727	2,894	21,781
	(43.3)	(10.0)	(28.7)	(1.4)	(3.3)	(13.3)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 4.3 Type of boiler - Proportion of boiler type by dwelling age

count(000s), (row%), (column%)

	Standard boiler (floor or wall)	Back boiler (to fire or stove)	Combination boiler	Condensing boiler	Condensing-combination boiler	No boiler	Total
pre 1919	1,620	351	1,807	49	173	731	4,731
	(34.2)	(7.4)	(38.2)	(1.0)	(3.7)	(15.5)	(100.0)
	(17.2)	(16.1)	(28.9)	(16.4)	(23.8)	(25.3)	(21.7)
1919-44	1,516	461	1,324	30	143	332	3,808
	(39.8)	(12.1)	(34.8)	(0.8)	(3.8)	(8.7)	(100.0)
	(16.1)	(21.1)	(21.2)	(10.0)	(19.7)	(11.5)	(17.5)
1945-64	1,576	856	1,176	63	159	448	4,279
	(36.8)	(20.0)	(27.5)	(1.5)	(3.7)	(10.5)	(100.0)
	(16.7)	(39.3)	(18.8)	(20.9)	(21.9)	(15.5)	(19.6)
1965-80	2,412	424	1,162	74	134	722	4,928
	(48.9)	(8.6)	(23.6)	(1.5)	(2.7)	(14.6)	(100.0)
	(25.6)	(19.4)	(18.6)	(24.7)	(18.4)	(24.9)	(22.6)
1981-90	1,069	65	320	16	49	396	1,915
	(55.8)	(3.4)	(16.7)	(0.9)	(2.6)	(20.6)	(100.0)
	(11.3)	(3.0)	(5.1)	(5.5)	(6.7)	(13.7)	(8.8)
post 1990	1,231	25	464	68	68	264	2,119
	(58.1)	(1.2)	(21.9)	(3.2)	(3.2)	(12.5)	(100.0)
	(13.1)	(1.1)	(7.4)	(22.5)	(9.4)	(9.1)	(9.7)
Total	9,425	2,181	6,254	300	727	2,894	21,781
	(43.3)	(10.0)	(28.7)	(1.4)	(3.3)	(13.3)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 4.4 Type of boiler - Proportion of boiler type by floor area

count(000s), (row%), (column%)

	Standard boiler (floor or wall)	Back boiler (to fire or stove)	Combination boiler	Condensing boiler	Condensing-combination boiler	No boiler	Total
Quintile 1: < 63m2	1,200	397	1,219	24	149	1,366	4,354
	(27.6)	(9.1)	(28.0)	(0.5)	(3.4)	(31.4)	(100.0)
	(12.7)	(18.2)	(19.5)	(7.9)	(20.5)	(47.2)	(20.0)
Quintile 2: 63m² - 78m²	1,490	573	1,457	37	155	643	4,355
	(34.2)	(13.2)	(33.5)	(0.9)	(3.6)	(14.8)	(100.0)
	(15.8)	(26.3)	(23.3)	(12.4)	(21.4)	(22.2)	(20.0)
Quintile 3: 78m² - 91m²	1,780	659	1,290	62	139	424	4,354
	(40.9)	(15.1)	(29.6)	(1.4)	(3.2)	(9.7)	(100.0)
	(18.9)	(30.2)	(20.6)	(20.5)	(19.2)	(14.7)	(20.0)
Quintile 4: 91m² - 118m²	2,147	387	1,331	43	163	292	4,363
	(49.2)	(8.9)	(30.5)	(1.0)	(3.7)	(6.7)	(100.0)
	(22.8)	(17.7)	(21.3)	(14.4)	(22.4)	(10.1)	(20.0)
Quintile 5: > 118m²	2,809	165	957	135	121	169	4,356
	(64.5)	(3.8)	(22.0)	(3.1)	(2.8)	(3.9)	(100.0)
	(29.8)	(7.6)	(15.3)	(44.8)	(16.6)	(5.9)	(20.0)
Total	9,425	2,181	6,254	300	727	2,894	21,781
	(43.3)	(10.0)	(28.7)	(1.4)	(3.3)	(13.3)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 4.5 Type of boiler - Proportion of boiler type by dwelling tenure

count(000s), (row%), (column%)

	Standard boiler (floor or wall)	Back boiler (to fire or stove)	Combination boiler	Condensing boiler	Condensing-combination boiler	No boiler	Total
owner occupied	7,301	1,325	4,479	225	517	1,485	15,331
	(47.6)	(8.6)	(29.2)	(1.5)	(3.4)	(9.7)	(100.0)
	(77.5)	(60.7)	(71.6)	(75.0)	(71.1)	(51.3)	(70.4)
private rented	768	170	822	14	79	614	2,467
	(31.1)	(6.9)	(33.3)	(0.6)	(3.2)	(24.9)	(100.0)
	(8.1)	(7.8)	(13.1)	(4.6)	(10.8)	(21.2)	(11.3)
local authority	725	452	474	36	88	392	2,166
	(33.5)	(20.9)	(21.9)	(1.7)	(4.1)	(18.1)	(100.0)
	(7.7)	(20.7)	(7.6)	(11.9)	(12.1)	(13.5)	(9.9)
RSL	631	234	480	25	43	403	1,817
	(34.8)	(12.9)	(26.4)	(1.4)	(2.4)	(22.2)	(100.0)
	(6.7)	(10.7)	(7.7)	(8.5)	(5.9)	(13.9)	(8.3)
Total	9,425	2,181	6,254	300	727	2,894	21,781
	(43.3)	(10.0)	(28.7)	(1.4)	(3.3)	(13.3)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 4.6 Type of boiler - Proportion of boiler type by household composition

count(000s), (row%), (column%)

	Standard boiler (floor or wall)	Back boiler (to fire or stove)	Combination boiler	Condensing boiler	Condensing-combination boiler	No boiler	Total
couple under 60	1,812	332	1,242	40	124	397	3,948
	(45.9)	(8.4)	(31.5)	(1.0)	(3.1)	(10.1)	(100.0)
	(19.7)	(15.8)	(20.6)	(13.4)	(18.0)	(14.9)	(18.8)
couple 60 or over	1,801	413	764	68	83	371	3,501
	(51.4)	(11.8)	(21.8)	(1.9)	(2.4)	(10.6)	(100.0)
	(19.6)	(19.6)	(12.7)	(22.9)	(12.0)	(13.9)	(16.7)
couple with children	2,505	373	1,608	106	180	287	5,059
	(49.5)	(7.4)	(31.8)	(2.1)	(3.6)	(5.7)	(100.0)
	(27.3)	(17.7)	(26.7)	(35.8)	(26.0)	(10.7)	(24.1)
lone parent with children	600	173	504	22	50	181	1,532
	(39.2)	(11.3)	(32.9)	(1.4)	(3.3)	(11.8)	(100.0)
	(6.5)	(8.2)	(8.4)	(7.5)	(7.2)	(6.8)	(7.3)
large adult household	590	164	451	18	58	148	1,429
	(41.3)	(11.5)	(31.6)	(1.2)	(4.0)	(10.4)	(100.0)
	(6.4)	(7.8)	(7.5)	(6.0)	(8.4)	(5.5)	(6.8)
one person under 60	772	206	832	22	105	561	2,497
	(30.9)	(8.2)	(33.3)	(0.9)	(4.2)	(22.5)	(100.0)
	(8.4)	(9.8)	(13.8)	(7.4)	(15.2)	(21.0)	(11.9)
one person 60 or over	1,098	444	613	21	91	726	2,992
	(36.7)	(14.8)	(20.5)	(0.7)	(3.0)	(24.3)	(100.0)
	(12.0)	(21.1)	(10.2)	(7.0)	(13.2)	(27.2)	(14.3)
Total	9,178	2,105	6,014	297	691	2,672	20,957
	(43.8)	(10.0)	(28.7)	(1.4)	(3.3)	(12.7)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 4.7 Type of boiler - Proportion of boiler type by the age of the household representative

count(000s), (row%), (column%)

	Standard boiler (floor or wall)	Back boiler (to fire or stove)	Combination boiler	Condensing boiler	Condensing-combination boiler	No boiler	Total
16 - 29	558	156	671	14	74	303	1,777
	(31.4)	(8.8)	(37.8)	(0.8)	(4.2)	(17.1)	(100.0)
	(6.1)	(7.4)	(11.2)	(4.6)	(10.7)	(11.3)	(8.5)
30 - 44	2,673	464	2,186	98	254	622	6,298
	(42.4)	(7.4)	(34.7)	(1.6)	(4.0)	(9.9)	(100.0)
	(29.1)	(22.1)	(36.4)	(33.1)	(36.7)	(23.3)	(30.1)
45 - 64	3,564	712	2,066	105	230	774	7,452
	(47.8)	(9.6)	(27.7)	(1.4)	(3.1)	(10.4)	(100.0)
	(38.8)	(33.8)	(34.4)	(35.5)	(33.3)	(29.0)	(35.6)
65 or over	2,383	772	1,091	79	132	973	5,431
	(43.9)	(14.2)	(20.1)	(1.5)	(2.4)	(17.9)	(100.0)
	(26.0)	(36.7)	(18.1)	(26.8)	(19.2)	(36.4)	(25.9)
Total	9,178	2,105	6,014	297	691	2,672	20,957
	(43.8)	(10.0)	(28.7)	(1.4)	(3.3)	(12.7)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings

Table 4.8 Type of boiler - Proportion of boiler type by household income

count(000s), (row%), (column%)

	Standard boiler (floor or wall)	Back boiler (to fire or stove)	Combination boiler	Condensing boiler	Condensing-combination boiler	No boiler	Total
Quintile 1: < £9k	1,337	640	1,130	37	128	914	4,185
	(31.9)	(15.3)	(27.0)	(0.9)	(3.1)	(21.8)	(100.0)
	(14.6)	(30.4)	(18.8)	(12.5)	(18.5)	(34.2)	(20.0)
Quintile 2: £9k - £15k	1,620	543	1,160	61	124	681	4,190
	(38.7)	(13.0)	(27.7)	(1.5)	(3.0)	(16.3)	(100.0)
	(17.7)	(25.8)	(19.3)	(20.6)	(18.0)	(25.5)	(20.0)
Quintile 3: £15k - £22k	1,787	454	1,239	47	136	527	4,190
	(42.6)	(10.8)	(29.6)	(1.1)	(3.3)	(12.6)	(100.0)
	(19.5)	(21.6)	(20.6)	(15.8)	(19.7)	(19.7)	(20.0)
Quintile 4: £22k - £33k	2,052	321	1,263	54	151	345	4,186
	(49.0)	(7.7)	(30.2)	(1.3)	(3.6)	(8.2)	(100.0)
	(22.4)	(15.2)	(21.0)	(18.3)	(21.9)	(12.9)	(20.0)
Quintile 5: > £33k	2,383	148	1,222	97	152	204	4,206
	(56.6)	(3.5)	(29.1)	(2.3)	(3.6)	(4.8)	(100.0)
	(26.0)	(7.0)	(20.3)	(32.8)	(21.9)	(7.6)	(20.1)
Total	9,178	2,105	6,014	297	691	2,672	20,957
	(43.8)	(10.0)	(28.7)	(1.4)	(3.3)	(12.7)	(100.0)
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Base: All Dwellings