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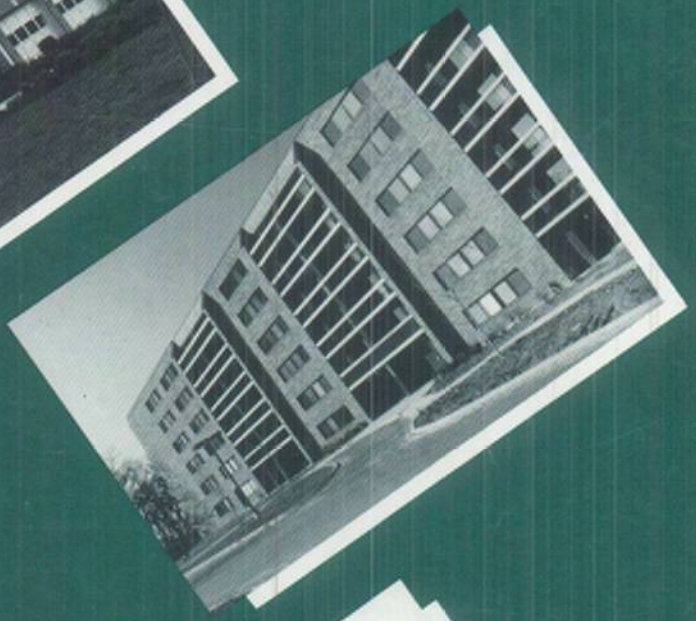
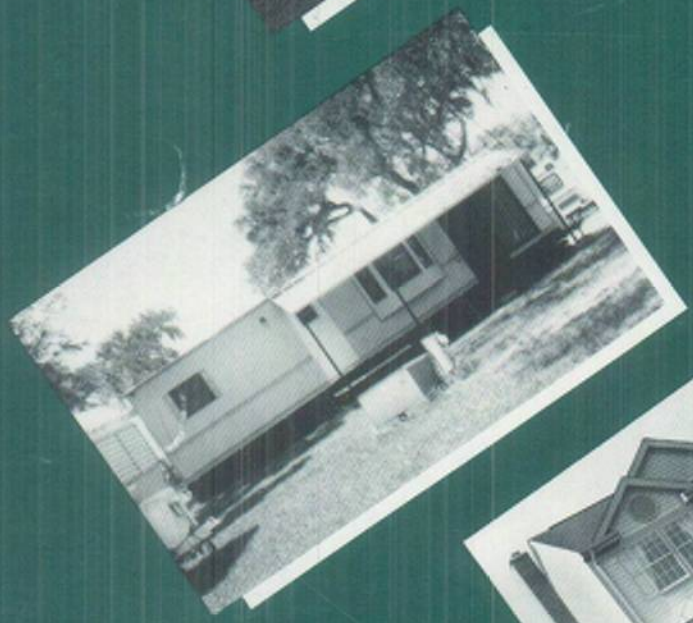
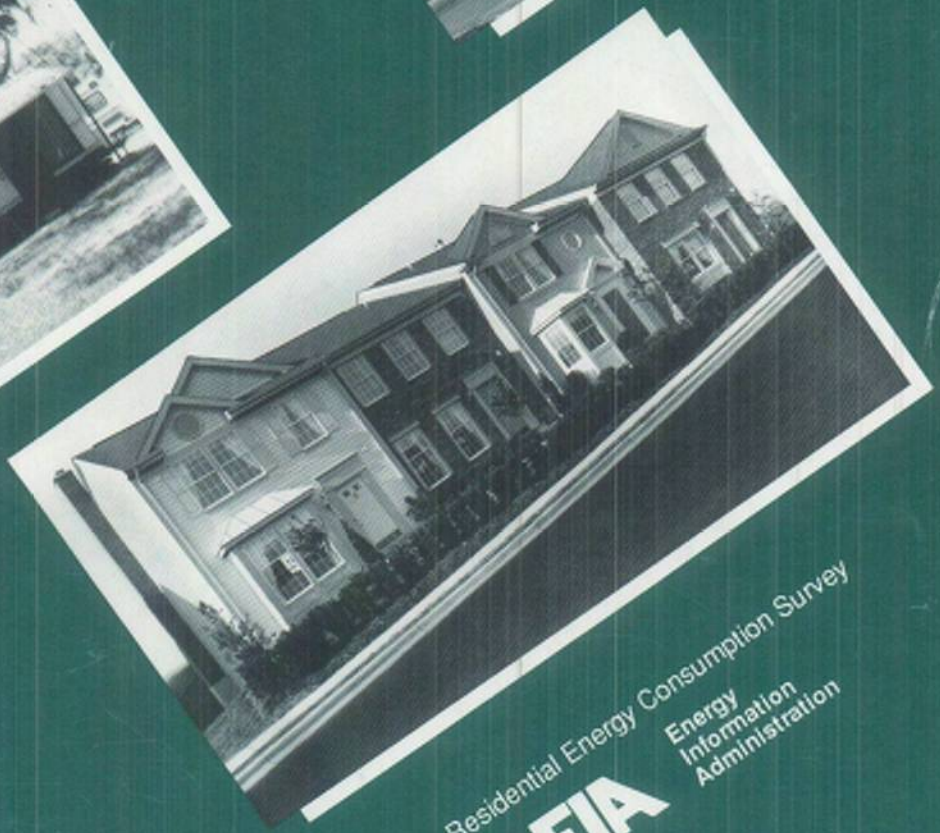
Housing Characteristics 1987







Residential Energy Consumption Survey

Energy Information Administration

EIA

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Note: Title for this report, *Housing Characteristics 1987* has been shortened. Previous editions included the survey in the title: *Residential Energy Consumption Survey: Housing Characteristics.*

Cover Caption: *The single-family home, mobile home, townhouses and apartment buildings are examples of sampled housing units in the Residential Energy Consumption Survey.*

Released for Printing May 26, 1989

DOE/EIA-0314(87)
Distribution Category UC-98

Housing Characteristics 1987

Residential Energy Consumption Survey

Energy Information Administration
Office of Energy Markets and End Use
U.S. Department of Energy
Washington, DC 20585

Contacts

General information concerning the contents of this report may be obtained from Lynda T. Carlson, Director of the Energy End Use Division (202-586-1112). Specific information regarding the contents or preparation of the publication may be obtained from Nancy L. Leach, Chief of the Residential and Commercial Branch (202-586-1114). The RECS Survey Manager is Wendel Thompson (202-586-1119). Principal author for this publication is Martha Johnson (202-586-1135). Robert Latta (202-586-1385) had responsibilities related to the sample design and variances. Public use data files and related system design were prepared by Nanno Smith (202-586-5841) and M. Vicki Moorhead (202-586-1133).

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Executive Summary

Two important changes occurred in household energy use between 1984 and 1987. First, there was a marked movement **away** from energy conservation behavior, reflected in higher indoor heating temperatures, longer operating hours for air conditioners and an increased use of energy-intensive appliances. Second, there was a continued movement **toward** greater electricity usage, exemplified by more electrically-heated homes and larger numbers of electrical appliances per household. These findings are from the 1987 Residential Energy Consumption Survey (RECS) conducted by the Energy Information Administration (EIA).

Some important changes for 1987 compared with 1984 follow:

- In 1987, the average indoor heating temperature was 70.1 degrees Fahrenheit (F), 0.8 degrees F higher than the 69.3 degrees F average for 1984.
- In 1987, 32.4 percent of households operated their air conditioners all summer, compared to 22.9 percent in 1984.
- In 1987, 13.9 percent of households had at least one heated waterbed and 13.6 percent had two or more refrigerators. In 1984, heated waterbeds were found in 9.8 percent of households and multiple refrigerators in 11.9 percent.
- In 1987, 19.8 percent of households used electricity as a main heating fuel and 5.6 percent used wood for heating. In 1984, 16.8 percent heated primarily with electricity and 7.5 percent heated with wood.
- In 1987, 60.8 percent of households used a microwave oven. In 1984, microwave ovens were found in 34.3 percent of the households.
- A majority of new construction was electrically heated. In 1987, 55.7 percent of occupied housing units constructed between 1985 and 1987 were electrically heated.

This report is the first of a series of reports based on data from the 1987 RECS. The 1987 RECS is the seventh in the series of national surveys of households and their energy suppliers. These surveys provide baseline information on how households in the United States use energy. A cross section of housing types such as single-family detached homes, townhouses, large and small apartment buildings, condominiums, and mobile homes were included in the survey. Data from the RECS and a companion survey, the Residential Transportation Energy Consumption Survey (RTECS), are available to the public in published reports such as this one and on public use tapes.[1]

Table ES1 provides a summary of selected energy-related items from the 1978, 1981, 1984, and 1987 RECS. This table allows the reader to discern quickly energy information related to various household characteristics.

[1]Published reports are available from the National Energy Information Center (NEIC) or the U.S. Government Printing Office (GPO). Addresses and telephone numbers are provided on the inside front cover of this report. Data tapes for public use are available from the National Technical Information Service (NTIS), Computer Products Division, 5285 Port Royal Road, Springfield, Virginia 22161 (telephone (703) 487-4808). See Appendix G, "Related Publications on Energy Consumption," for a list of EIA publications available concerning the consumption of energy.

Table ES1. Selected Household Data by Survey Year

	1978		1981		1984		1987	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total Households (million)	76.6	100.0	83.1	100.0	86.3	100.0	90.5	100.0
Main Heating Fuel (million households)								
Natural Gas	41.8	54.6	46.2	55.6	47.8	55.4	50.0	55.2
Electricity	12.1	15.8	14.2	17.1	14.5	16.8	17.9	19.8
Fuel Oil	[a] 16.9	22.1	11.3	13.6	10.7	12.4	10.9	12.0
Kerosene	NA	NA	0.8	1.0	1.5	1.7	1.3	1.5
LPG	3.1	4.0	3.7	4.4	3.9	4.5	4.2	4.6
Wood	1.9	2.5	5.4	6.4	6.5	7.5	5.1	5.6
Other/None	0.8	1.0	1.4	1.7	1.5	1.7	1.2	1.3
Selected Appliances Used (million households)								
Heat Pumps	1.2	1.6	2.7	3.3	3.1	3.6	4.5	5.0
Waterbed Heaters	NA	NA	NA	NA	8.4	9.8	12.5	13.9
Central Air Conditioners	17.6	23.0	22.4	26.9	25.7	29.7	30.7	33.9
Whole-House Fan	NA	NA	NA	NA	6.7	7.8	8.6	9.5
Window or Ceiling Fan	NA	NA	NA	NA	30.6	35.5	41.8	46.2
Dehumidifier	NA	NA	7.8	9.4	7.5	8.7	9.0	10.0
Microwave Oven	6.0	7.8	14.0	16.9	29.6	34.3	55.0	60.8
Outdoor LPG Grill	NA	NA	NA	NA	8.6	10.0	15.4	17.0
Two or More Refrigerators	10.4	13.6	10.5	12.6	10.3	11.9	12.3	13.6
Average Daytime Indoor Temperatrure During Winter Months (Degrees Fahrenheit)	NA		68.9		69.3		70.1	

[a] Fuel oil and kerosene were combined in the 1978 RECS.

NA = Not available.

Notes: • Households that have a central air conditioner but do not necessarily use it are included in the central air conditioner category. • Because of rounding data may not sum to totals.

Sources: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1978, 1981, 1984, and 1987 Residential Energy Consumption Surveys.

Introduction

The *Housing Characteristics 1987* is the first publication in a series from the 1987 Residential Energy Consumption Survey (RECS). It is prepared by the Energy End Use Division (EEUD) of the Office of Energy Markets and End Use (EMEU), Energy Information Administration (EIA). The EIA collects and publishes comprehensive data on energy consumption in the residential sector through the RECS.

Background

The data for this report are based on the household interviews from the 1987 RECS, conducted in the fall of 1987. The 1987 RECS represents 90.5 million households in the 50 States and the District of Columbia.

The RECS is a national multistage probability sample survey currently conducted on a triennial basis. The 1987 RECS is the seventh RECS. Previous RECS were conducted annually from 1978 to 1982 and then in 1984. The RECS is collected in two stages. Household characteristics data are collected via a personal interview with the householder. At the end of that interview, the respondent is asked to sign a waiver allowing the suppliers of energy to the household to release household billing information. The second stage of RECS is a mail survey requesting household energy consumption and expenditure information from the energy suppliers. The RECS includes both a longitudinal component that measures energy changes over time and a subsample that provides information on residential vehicles. The longitudinal component collects data on the same housing units in two subsequent surveys. The transportation subsample is drawn from the RECS based on initial information on household vehicles. Additional vehicle related data are then collected in the Residential Transportation Energy Consumption Survey (RTECS) and reported in the publication titled *Household Vehicles Energy Consumption 1988*, to be published at the end of 1989. The EIA also conducts energy consumption surveys in the commercial and manufacturing sectors. See Appendix G, "Related Publications on Energy Consumption," for a listing of publications from the RECS and other EIA surveys in the residential transportation, commercial, and manufacturing sectors.

This report covers the descriptive characteristics of the residential building stock that affect energy use. These characteristics were collected during the personal interview at the households. Estimates of the consumption and expenditures of electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas will be reported in the *Household Energy Consumption and Expenditures 1987, Part 1, National Data* and *Part 2, Regional Data*, to be published at the end of 1989.

The housing characteristics described in this report include: physical characteristics of the housing unit, such as the type, size, and age of the structure; fuel usage and fuel equipment characteristics, such as the type of main and secondary space heating fuel used (including wood consumption), the type and age of the heating equipment, the type of cooling equipment, and the types of appliances used in the home; thermal characteristics, such as insulation usage and retrofits; and behavioral characteristics, such as thermostat settings and how equipment is used.

Data are also collected on household characteristics such as the number and age of household members and family income. These data are linked to geographical characteristics such as Census regions and divisions and climate zones.

The data in this report are published to provide objective, accurate energy information for a wide audience including Congress, Federal and State agencies, industry, and the general public. The data presented in this report were collected and published by the EIA to fulfill its responsibilities as specified in the Federal Energy Administration Act of 1974 (Public Law 93-275), as amended.

The statistics published in this report are based on a sample from the population of all residential housing units in the United States as of November 1987. As a result, all the numbers are estimates rather than exact measures for the population. As described in Appendix C, "Quality of the Data," the accuracy of each estimate is indicated by the relative standard error (RSE). No estimates were published that were based on fewer than 10 sample households or that had a Relative Standard Error (RSE) greater than 50 percent. All the tables of estimates in the section titled, "Detailed Tables" include corresponding RSE's that are calculated using row/column RSE factors. All comparisons reported in the text were made at the 0.05 level of sta-

tistical significance. No adjustments were made for simultaneous inference. Unless noted, percents shown in the text tables are calculated on rounded numbers.

The EIA gratefully acknowledges the cooperation of the respondents in supplying the information used to produce the estimates in this report.

Organization of the Report

A discussion of the highlights detailed in the Executive Summary follows this section. Tables interspersed throughout the text highlight information of special interest or summarize a finer breakdown given in the Detailed Tables. Extensive cross-tabulations of housing characteristic indices appear in the section "Detailed Tables," following the main text. Appendices A through C contain information on how the survey was conducted, estimates of the size of the housing unit in square feet and the quality of the data. Procedures for calculating RSE's are located in Appendix C, "Quality of the Data." The data for the RECS are collected on Forms EIA-457 A through G. This report is based on data collected on Forms EIA-457 A through C, found in Appendix D, "Survey Forms." Climate Zone and Census Region and Division maps are located in Appendices E and F, respectively. A list of related EIA publications are located in Appendix G. Definition of the terms used in this report are located in the "Glossary."

Thermostat Settings Higher, Air Conditioners Operated Longer, More Energy-Intensive Appliances Used

The 1987 RECS data indicate that from 1984 through 1987, a movement away from energy-related conservation measures occurred among households. The conservation measures most affected by this change were indoor temperature settings and the prevalence of energy-intensive appliances in the household.

Home Heating

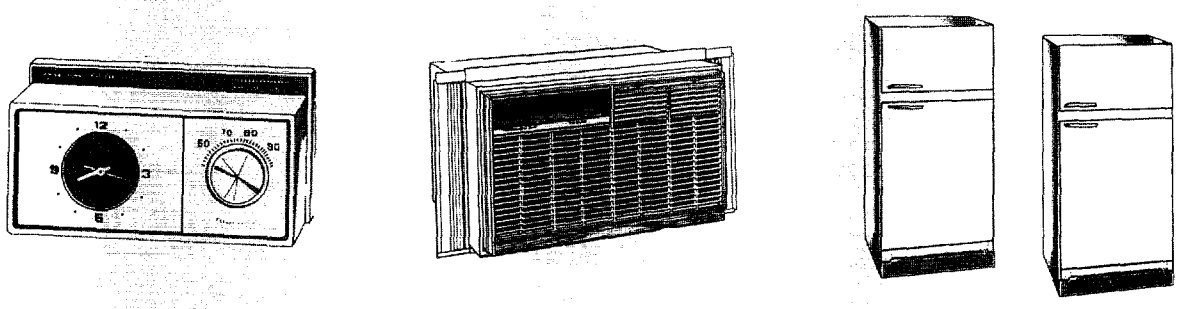
The setting of indoor house temperature is one important determinant of residential energy use. Indoor temperatures during the colder months are regulated primarily by thermostat settings and through the use of additional individual room heating equipment, such as portable heaters. During the warmer months, indoor temperatures are regulated mainly through the use of air conditioners, fans, and other cooling devices.

Thermostat Settings

The RECS includes several questions on home heating temperatures to learn about the energy-related behavior of a household. The data presented in this section are based on the respondent's answers to the following three questions:

1. At what temperature do you usually keep your home during the day in wintertime when someone is at home?
2. At what temperature do you usually keep your home during the day in wintertime when no one is at home?
3. At what temperature do you usually keep your home during sleeping hours in the wintertime?

The 1987 RECS data show an important change between 1984 and 1987 in household behavior in terms of thermostat settings--households maintained higher indoor heating temperatures in 1987. Households in 1987 kept their average indoor temperatures higher during the daytime, whether or not someone was present in the home, and also during the sleeping hours. In 1987 during the daytime hours, households kept their indoor temperature at an average of 70.1 degrees Fahrenheit (F) when someone was at home--up from 69.3 degrees F in 1984. The average temperature was 66.0 degrees F during the day when no one was at home. During the sleeping hours the average temperature was 66.8 degrees F.[2]



More households maintained higher indoor temperatures, operated their air conditioners longer, and used more energy-intensive appliances in 1987.

[2]Earlier RECS data suggest that this increase in higher indoor heating temperatures may have begun as a gradual increase between 1981 and 1984, becoming more accelerated in the three years between 1984 and 1987.

Table 1. Indoor Temperatures Greater than 70 Degrees Fahrenheit, 1984 and 1987

(Percent of U.S. Households)

	1984	1987
Daytime-Someone Home	24.9	32.6
Daytime-No One Home	9.7	13.7
Nighttime	11.4	15.6

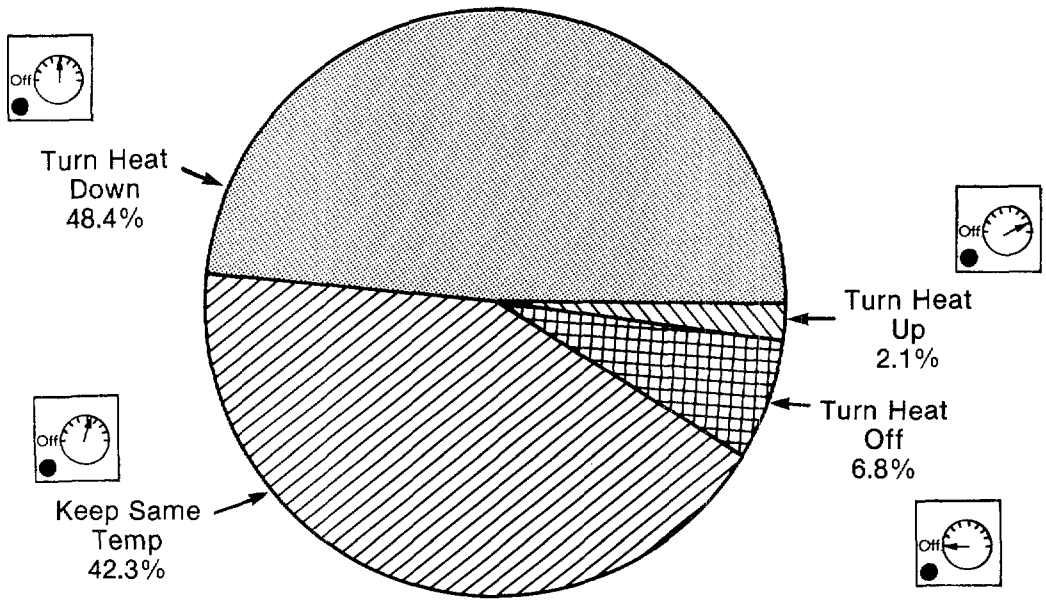
Note: Only households with heating controls are reported in this table.
Sources: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1984 and 1987 Residential Energy Consumption Surveys.

In addition to higher average temperatures, a greater proportion of households in 1987 were maintaining temperatures greater than 70 degrees F (Table 1).

Energy conservation behavior is also reflected in the way households manage their indoor heating temperatures during the sleeping hours. The RECS respondents were also asked whether they lowered their thermostats during the sleeping hours. In 1987, not only were households maintaining higher thermostat settings during working hours, they were also less likely to dial-down their thermostat during sleeping hours. Forty-two percent of the households kept the same thermostat setting at night as during the day, compared with 39.8 percent in 1984. The average temperature for the households that did not vary their thermostat settings between daytime and nighttime was 69.7 degrees F in 1987 (Figure 1).

The RECS data indicate that thermostat settings varied by Census region with households in the warmest part of the country setting their thermostats the highest during the winter months and households in the coldest region setting their thermostats the lowest. Homes in the South had average indoor temperatures between

Figure 1. Thermostat Setting During Sleeping Hours, 1987



Note: Percents based on those households having temperature controls.
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1987 Residential Energy Consumption Survey.

Table 2. U.S. Household Average Thermostat Settings by Census Region and Climate Zone, 1984 and 1987

(Degrees Fahrenheit)

	1984	1987	Change
U.S. Total	69.3	70.1	+0.8
Northeast			
5,500 HDD or More	68.1	68.6	NS
Fewer than 5,500 HDD	68.0	69.8	+1.8
Midwest			
4,000 HDD or More	69.6	70.0	+0.4
South			
Fewer than 2,000 CDD	69.9	70.4	+0.5
2,000 CDD or More	70.9	72.4	+1.5
West			
4,000 HDD or More	68.1	69.1	+1.0
Fewer than 4,000 HDD	69.1	69.7	+0.6

HDD = Heating Degree-Day, CDD = Cooling Degree-Day. (For definitions of HDD and CDD see the "Glossary")
NS = Not statistically significant at the 0.05 level
Note: Thermostat settings in this table are reported for the winter months, during the daytime and when someone is at home.
Sources: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1984 and 1987 Residential Energy Consumption Surveys.

70.4 degrees F and 72.4 degrees F, depending on the climate zone. Average indoor temperature was 68.6 degrees F in the coldest region of the Northeast. These northern households were the only households that did not show a statistically significant increase in their indoor heating temperature between 1984 and 1987 (Table 2).

A household decision to maintain the indoor temperature at a particular level can be influenced by factors other than climate zone. The physical characteristics of a housing structure, such as the age, the type or the size of the structure, and the sociodemographic characteristics of a household, such as the age and the income level of the household members, might affect an individual's decision to maintain a particular level of indoor comfort. There was a statistically significant relationship between the proportion of households maintaining an indoor temperature of greater than 70 degrees F and the size of the housing unit, the age of the householder, and the family income. Higher thermostat settings were maintained by a greater proportion of the elderly, the lower income group, and households living in smaller homes (Table 3).

Table 3. Indoor Temperatures Greater than 70 Degrees Fahrenheit by Selected Household Characteristics, 1987

(Percent of U.S. Households)

Age of Householder	
Under 60 Years	29.4
60 Years and Over	40.5
Measured Heated Area of Residence (square feet)	
Fewer than 1,000	34.9
1,000 to 1,999	33.7
2,000 or More	28.4
1987 Family Income	
Less than $20,000	37.8
$20,000 or More	29.3

Notes: • Indoor temperatures in this table are for the winter months, during the daytime and when someone is at home. • Households reported in this table have heating controls. • The RECS data indicate that although there are significant differences in the average indoor temperature among certain demographic categories, there is also considerable variability in the temperature settings among households within any individual category.
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1987 Residential Energy Consumption Survey.

Home Cooling

Air Conditioning

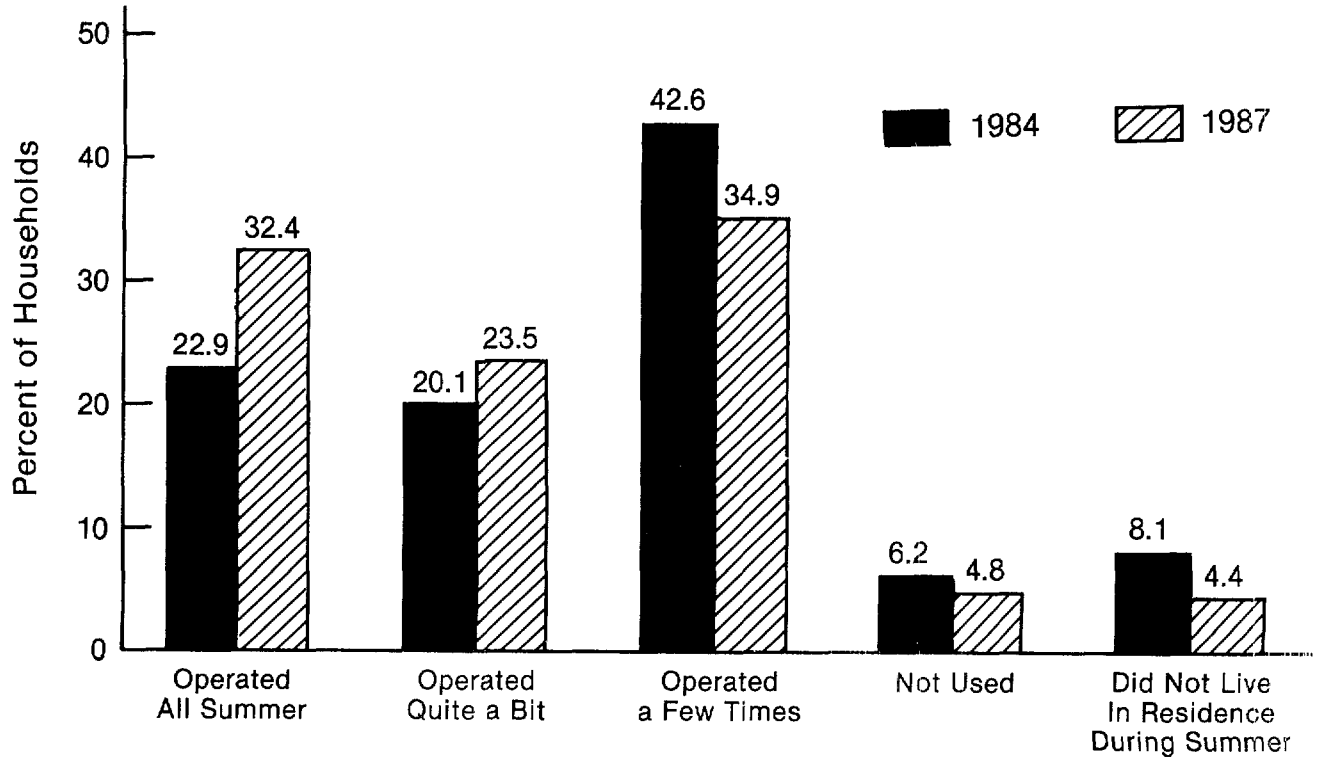
Air conditioning was present in more homes in 1987 than previous years and was used to cool them for longer periods of time. In the three years between 1984 and 1987, the proportion of households that had either window air conditioners or central air conditioning rose from 59.6 percent in 1984 to 63.6 percent in 1987. Among these 1987 air-conditioned households, 53.3 percent had central air and 46.7 percent had window units, constituting a 20 percent increase between 1984 and 1987 in the number of households with central air. The 4 percent increase in the number of households with wall units was not statistically significant. Several reasons could account for this increase in the presence of central air conditioners. First, households previously using room air conditioners may have switched to central air conditioning, and second, there may have been a greater increase among households choosing central air rather than room air conditioners among the first-time air conditioner users.

There was a marked change in the way households operated their air conditioners. In 1984 among the households with air conditioning, fewer than one in four households (22.9 percent) reported operating their air conditioner all summer. By 1987, this proportion had increased to almost one in three households (32.4 percent). The predominance of households with central air conditioners that tend to be operated continuously rather than turned on and off as window units are, can contribute to this increase. (44 percent of households with central air conditioning operated their air conditioner all summer compared to 19 percent of households with window units.) The increase in "all summer" users coincided with a drop in the proportion of households that operated their air conditioner only a few times during the summer months when it was necessary (Figure 2).

The increased use of air conditioning could, in part, be a reaction to the warmer weather in 1987. All regions of the U.S. except the West Census region experienced a statistically significant increase in warm weather from 1984 to 1987, as reflected by the number of cooling degree-days (CDD). Nationally, there was almost a 20 percent increase in CDD's. In 1984 the average number of CDD's was 1,153. In 1987, there were 1,368 CDD's. (See Table 51, "Detailed Tables" for the 1987 average annual CDD's.)

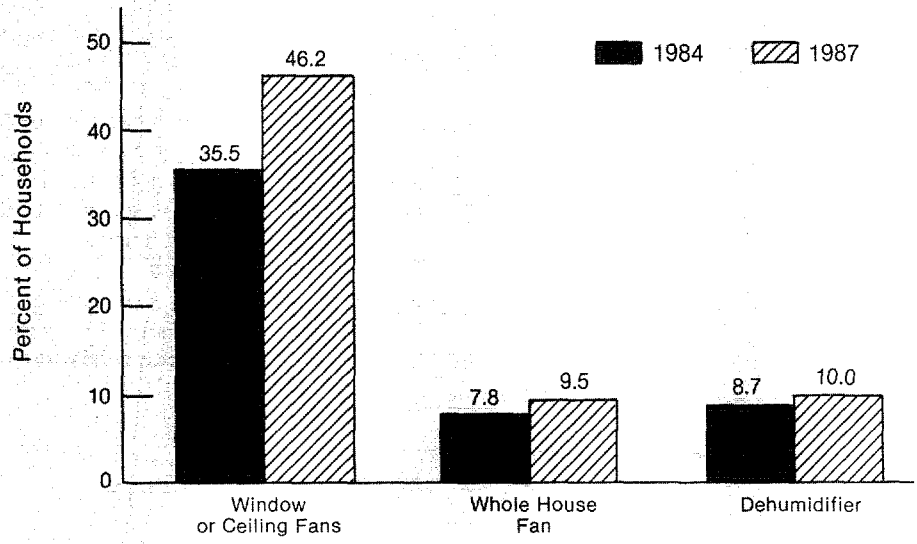
As expected, a greater proportion of the air-conditioned homes were found in the areas with more CDD's. Forty-four percent of air-conditioned homes were located in the South Census region. Air conditioning was used the least in the West. Only 11.6 percent of all air-conditioned homes were located in the West Census region.

Figure 2. Patterns of Air Conditioner Use, 1984 and 1987



Sources: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1984 and 1987 Residential Energy Consumption Surveys.

Figure 3. Distribution of Window Fans, Whole House Fans, or Dehumidifiers, 1984 and 1987



Sources: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1984 and 1987 *Residential Energy Consumption Surveys*.

Other Cooling

Air conditioning is only one method of reducing the discomfort of hot, humid weather. Fans, (both whole-house or window) and dehumidifiers that remove the moisture from the air are also used for increased comfort in warm weather. Between 1984 and 1987 there was an increase in the use of all three types of cooling equipment: the proportion of households using a window fan increased from 35.5 percent to 46.2 percent, those using a whole-house fan increased from 7.8 percent to 9.5 percent. Households using a dehumidifier increased from 8.7 percent to 10.0 percent (Figure 3). Table 4 shows the distribution of home cooling equipment by Census region and the average number of CDD's.

Appliance Usage

Another measure of a household's energy-related behavior is the number and type of appliances used in the home. The 1987 RECS data show a statistically significant increase in the use of several energy-intensive appliances--suggesting again a movement away from energy-conserving behavior.

The RECS collects information about the household's use of appliances ranging from the number and type of refrigerators to the use of outdoor gas lights. For several appliances, there was a statistically significant increase in usage between 1984 and 1987. (For many appliances the increase in usage shown between the

Table 4. Cooling Equipment by Census Region and Average Cooling Degree-Days, 1987

Census Region and State	Total Households (million)	CDD (average)	Cooling Equipment Used (percent of households)				
			Air Conditioning		Fan		Dehumidifier
			Central	Room	Whole-House	Window	
United States	90.5	1,368	32.5	30.8	9.5	46.2	10.0
Census Region							
Northeast	19.0	828	14.7	39.7	7.8	40.9	15.1
Midwest	22.3	1,041	31.7	36.3	11.0	46.3	21.0
South	30.9	2,141	50.4	31.4	11.5	58.0	4.4
West	18.3	1,024	21.9	13.8	5.9	31.7	.8

CDD = Cooling Degree-Day. (For definition of CDD see the "Glossary")
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1987 Residential Energy Consumption Survey.

1984 RECS and the 1987 RECS was not statistically significant). More households reported using heated waterbeds, two or more refrigerators, LPG gas grills, electric ranges and microwave ovens. Of these appliances, waterbeds and refrigerators are considered major consumers of energy.

Heated Waterbeds

In 1987, approximately 14 percent of all households (12.5 million) had at least one heated waterbed. Although the presence of heated waterbeds in the home is still far below the market saturation level, the number of homes using them has increased by about 50 percent in three years. Waterbeds are more prevalent in the West and Midwest Census regions, with 19.4 percent and 17.8 percent of households, respectively, using them. It is estimated that a heated waterbed consumes about 4.4 kilowatthours (kWh) per day or approximately 1,600 kWh annually. In terms of energy consumption, this places the heated waterbeds in the same category of appliances as a refrigerator, one of the most energy-intensive appliances found in a home.

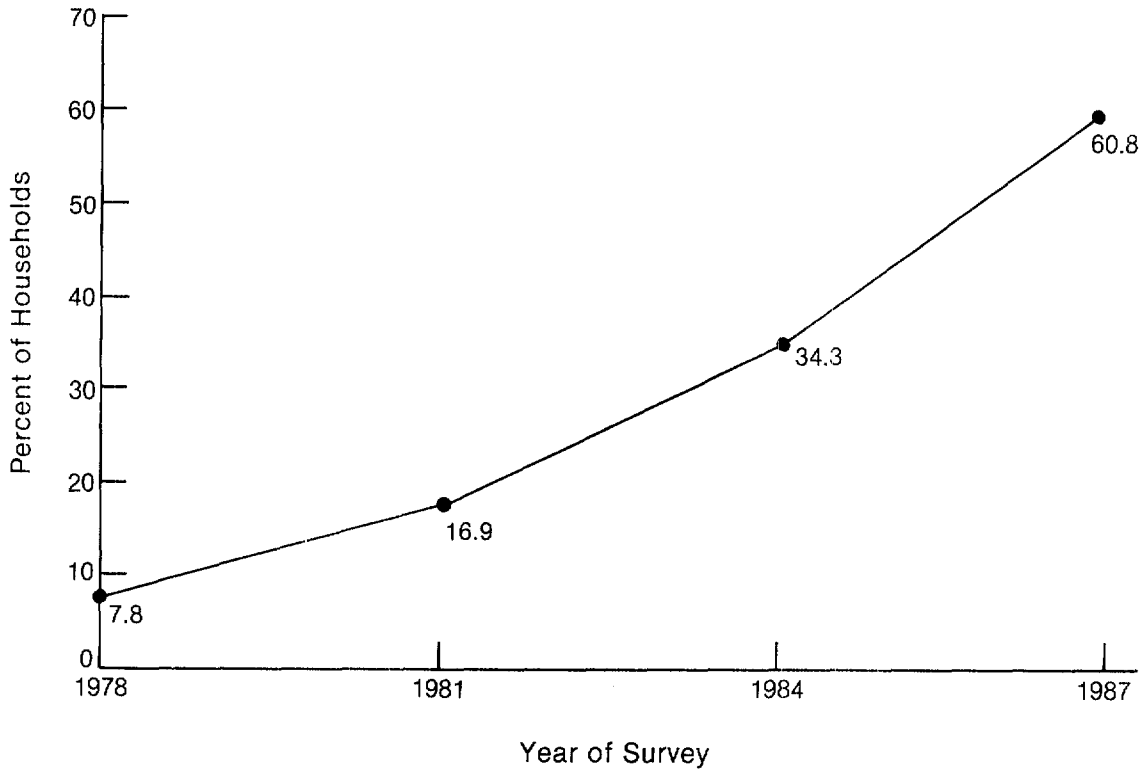
Two or More Refrigerators

By 1987, the proportion of households using two or more refrigerators in their homes had returned to the 1978 level of approximately one in seven households. Between the 1978 RECS and the 1984 RECS, the proportion of households using two or more refrigerators decreased from 13.6 percent of the households to 11.9 percent. In 1987, the proportion of households with multiple refrigerators was again 13.6 percent. Estimations of the amount of energy used annually by a refrigerator are in the order of 1,500 kWh, with a frost-free refrigerator using more energy than the nonfrost-free models. The second most used refrigerator was generally a nonfrost-free refrigerator.

Microwave Ovens

In 1987, three out of five households (60.8 percent) used a microwave oven for cooking which made microwave ovens one of the most popular types of cooking equipment used in U.S. homes. In 1978, only 7.8 percent of the RECS households used a microwave oven. The proportion of users had increased to 34.3 percent in 1984 and to 60.8 percent in 1987 (Figure 4).

Figure 4. Distribution of Microwave Ovens, 1978, 1981, 1984, and 1987



Sources: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1978, 1981, 1984, and 1987 Residential Energy Consumption Surveys.

Microwave ovens were more prevalent in upper-income households with approximately 80 percent of the households using one. However, one-third of all households with an annual income of less than $10,000 also used a microwave oven for cooking (Figure 5).

LPG Gas Grills

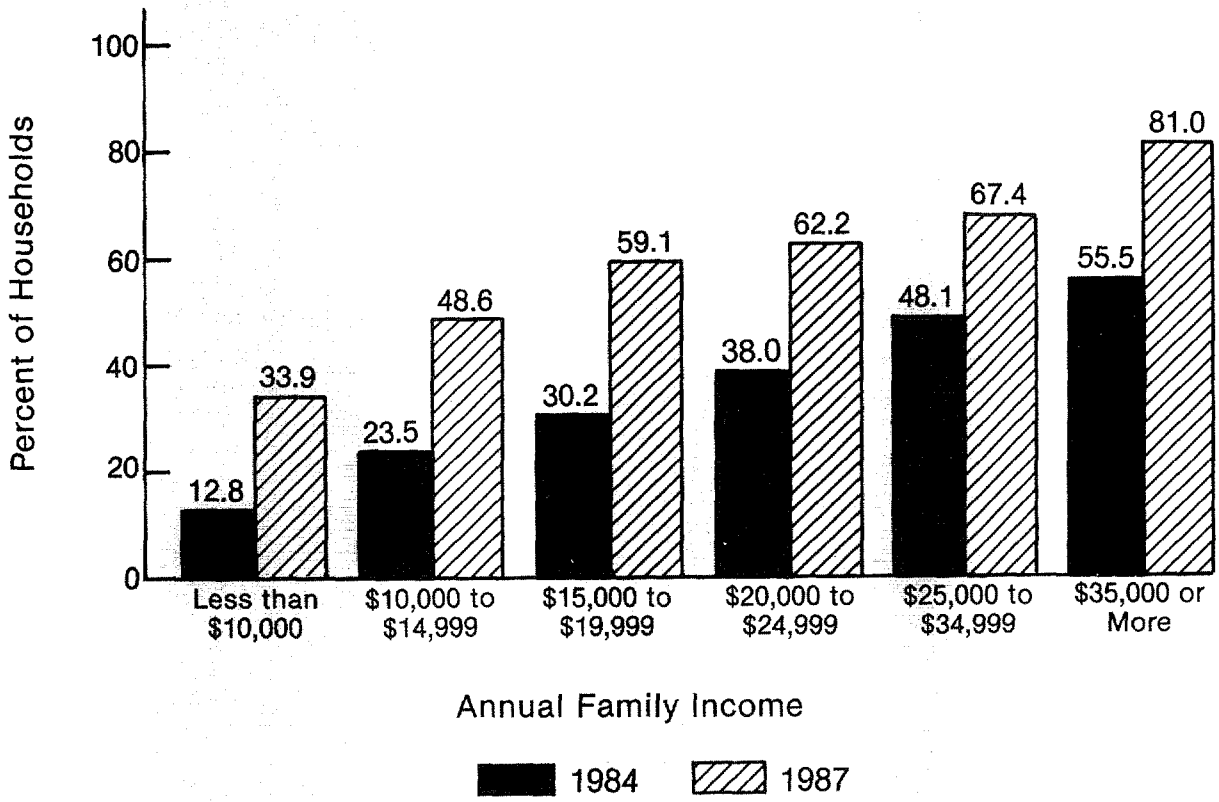
Another type of cooking equipment that increased in popularity between 1984 and 1987 was the LPG gas grill. In 1987, 15.4 million (17.0 percent) households had LPG gas grills, 6.8 million more than in 1984.

Electric Ranges

Electricity is still the preferred source of energy for cooking; 58.1 percent of the households used it as the main energy source for cooking. For the purposes of the RECS, a kitchen stove consisting of an oven and stove-top burners is considered two separate appliances. There was an 11 percent increase in the number of electric stove-top burners between 1984 and 1987.[3]

Generally, if electricity was the source of energy used for heating a home, it was also the source of energy used for cooking. The exception was the 0.9 million households that heated with electricity but cooked with natural gas or LPG. This pattern of identical heating and cooking fuels exemplified by electricity users was not found among natural gas users.

Figure 5. Distribution of Microwave Ovens by Family Income, 1984 and 1987



Sources: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1984 and 1987 Residential Energy Consumption Surveys.

[3]The RECS data also show a 21 percent increase in the number of households using an electric oven for cooking. However, a portion of this increase may be due to improved interviewer awareness that a kitchen range is divided into the stove-top burners and the oven.

Among the 50.0 million households that used natural gas for heating, 44.0 percent used another type of energy for cooking. There were approximately 4.5 million households (11.3 percent) that cooked with natural gas but did not use it for heating (Table 5). Among these households, almost 70 percent were located in the Census division comprised of New York, New Jersey, and Pennsylvania. The housing structures were predominately older apartment buildings located in cities. Approximately one-third of the households were headed by someone 60 years or older. Generally, among these households the main heating fuel was fuel oil.

Table 5. Main Cooking Fuel by Main Space-Heating Fuel, 1987

	Number of U.S. Households (million)	Percent of U.S. Households
Main Heating Fuel: Electricity	17.9	100.0
Cook with Electricity	17.0	95.0
Do not Cook with Electricity	0.9	5.0
Main Heating Fuel: Natural Gas	50.0	100.0
Cook with Natural Gas	28.0	56.0
Do not Cook with Natural Gas	21.9	43.8
Main Heating Fuel: Other than Natural Gas	39.9	100.0
Cook with Natural Gas	4.5	11.3

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1987 Residential Energy Consumption Survey.

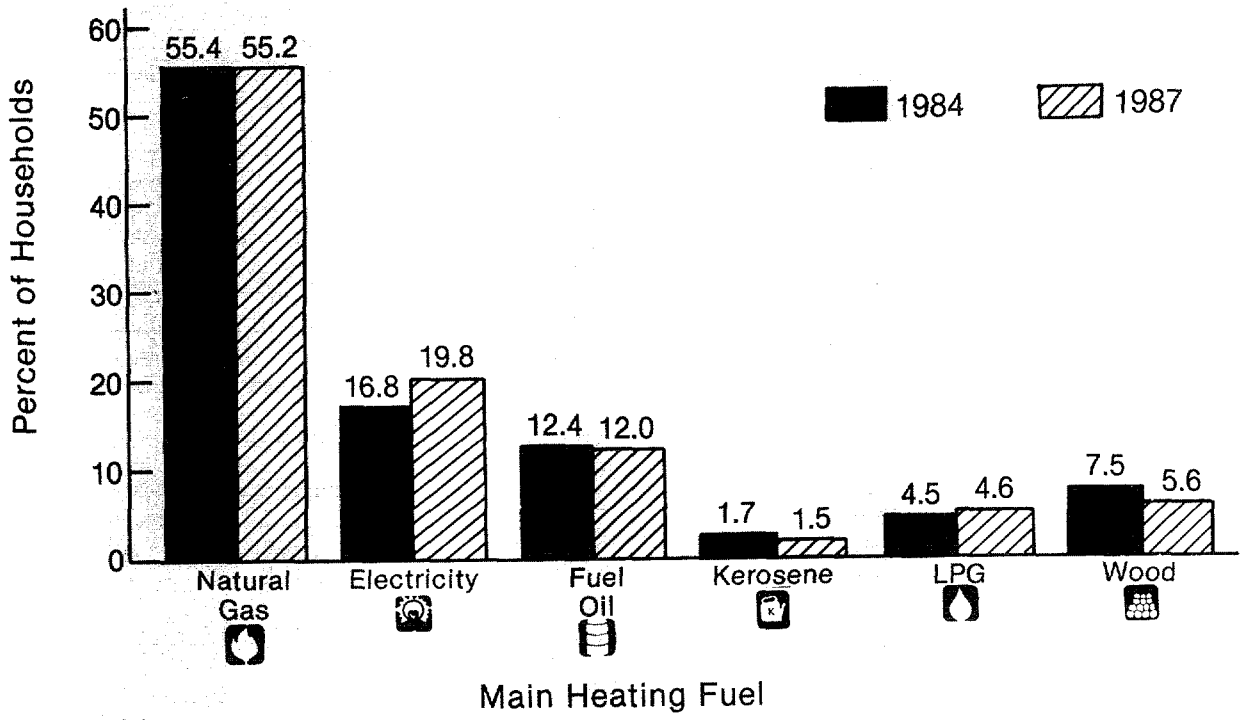
Electricity Usage Up As a Primary Source of Home Heating: Wood Usage Down

Statistically significant changes in the distribution of main heating fuel were found only in the use of electricity and wood between 1984 and 1987. Over one-half of all households still continued to heat their homes with natural gas; the slight increase in the proportion of homes heating with gas between 1984 and 1987 was not statistically significant. The use of electricity, on the other hand, increased as a primary heating fuel. By 1987, approximately one in five households (17.9 million) were heating their homes with electricity. This was an increase of 3.4 million households over 1984. During the same period of time, households using wood as the main source of energy for home heating decreased by 1.4 million households (Figure 6). This decrease in the number of households using wood for heating suggests yet another example of a movement away from conservation-oriented behavior. Some of these households may have switched from primary wood users to secondary users.

In 1987, 3.1 million households reported that they had changed their main heating fuel sometime within the previous three years. The RECS respondents were asked the following three questions in an effort to elicit information on the changeovers in main heating fuel between 1984 and 1987:

1. In November of 1984 was the main fuel used to heat this house/apartment the same as it is now?
2. If no, what was the main fuel used to heat this house/apartment in November of 1984?
3. In what month and year was the main heating fuel changed?

Figure 6. Distribution of Main Heating Fuel, 1984 and 1987



Sources: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1984 and 1987 Residential Energy Consumption Surveys.

Table 6. U.S. Households Main Space-Heating Fuel For Households that Changed Heating Fuel

(Million Households)

	1984	1987	Net Change
Total Households	3.1	3.1	
Main Heating Fuel (million households)			
Natural Gas	0.5	1.0	+0.5
Electricity	0.5	0.3	NS
Fuel Oil	0.9	0.3	-0.6
LPG	0.3	0.4	NS
Kerosene	0.1	0.4	NS
Wood	0.7	0.7	NS

NS = Not statistically significant at the 0.05 level.
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1987 Residential Energy Consumption Survey.

Among these 3.1 million homes, only the number of households switching to natural gas and the number of those switching away from fuel oil were statistically significant. Approximately 0.6 million households that used fuel oil to heat their homes in 1984 were using another type of energy, (primarily natural gas), for heating by 1987 (Table 6).

Over One-Half of New Homes Heat With Electricity

The increase from 1984 to 1987 in the number of households using electricity for main space heating was due to the large number of new housing units that were heated with electricity. For this report, new homes are defined as occupied housing units constructed from 1985 through 1987. Among the 3.9 million housing units constructed in this period, 55.7 percent were heated by electricity compared to 29.3 percent of new homes heated by natural gas. Fewer than one percent of new housing units constructed in the same time frame were heated by fuel oil. The proportion of homes heated with electricity increased steadily by the year of construction (Figure 7). Only 5.1 percent of the 21.5 million housing units constructed before 1940 used electricity for main space heating. This proportion increased to approximately 35 percent for homes constructed during the 1970's. The proportion of homes heated by natural gas, on the other hand, appears to have peaked in homes constructed in the 1960's. For homes constructed after 1970, there has been a gradual decline in the use of natural gas for heating.[4]

One of the reasons for the large number of new electrically heated homes is the popularity of the heat pump as a type of heating and cooling equipment.

Almost one-third (31.5 percent) of all housing units built from 1985 through 1987 used a heat pump as the main type of heating equipment. A heat pump is a year-round combined heating and air-conditioning system in which refrigeration equipment transfers both heating and cooling through ducts leading to individual rooms. Heat pumps are operated by electricity and thus, are found primarily in housing units that use electricity as the main space-heating fuel.

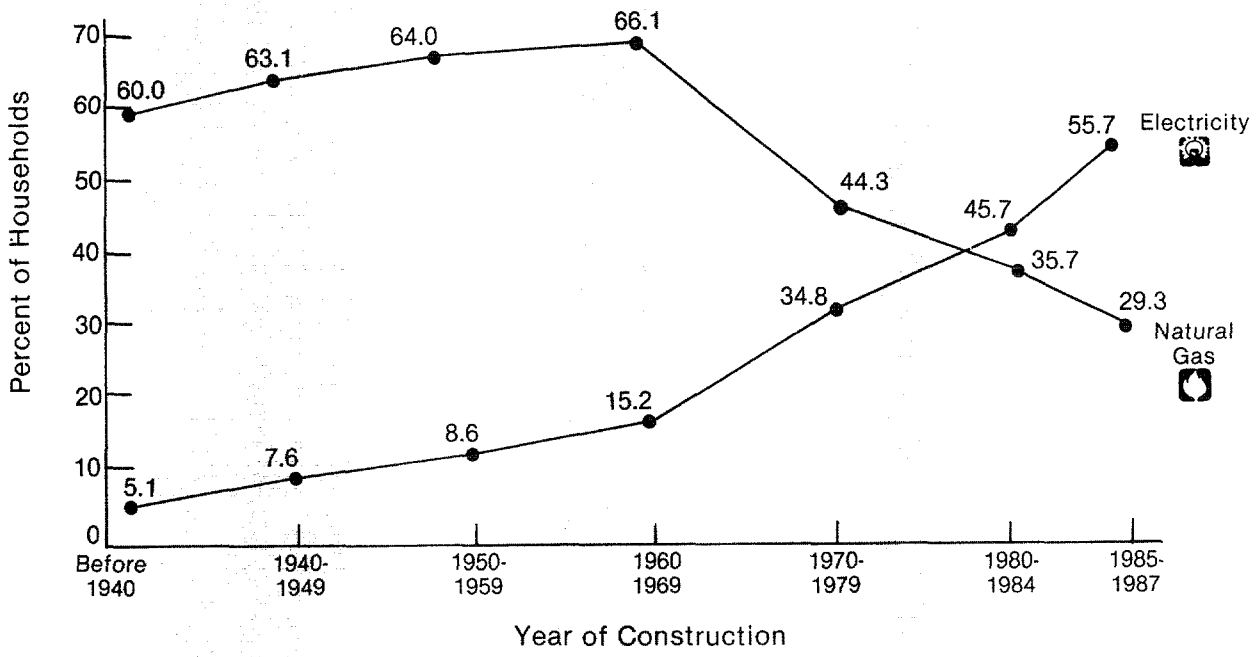
Among the 17.9 million electrically-heated households, 4.5 million reported that they relied on heat pumps as the main heating equipment. Another 0.6 million households reported the use of a heat pump as an auxiliary piece of heating equipment.

Homes constructed from 1985 through 1987 were located primarily in the South and West Census regions with almost 50 percent located in the South and 24 percent located in the West. The South led the nation in the construction of new electrically-heated homes. Approximately three out of four homes using electricity as the primary space-heating energy were constructed in the South Census region between 1985 and 1987 (Figure 8).

Among the 2.2 million new homes, that used electricity as a primary heating source, 89.3 percent of the households stated that they did not have access to natural gas in their neighborhoods.

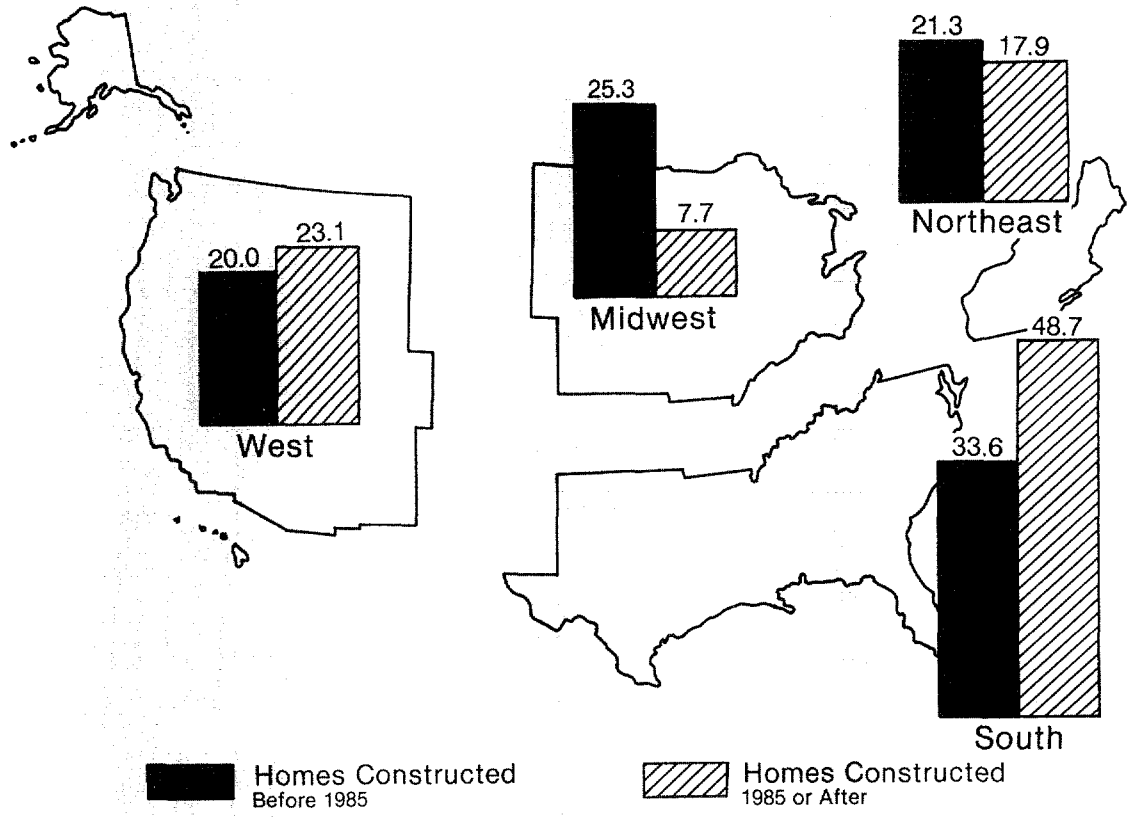
[4]Preliminary Bureau of the Census data suggest that more homes were heated by natural gas in 1988 than in 1987. For a discussion of the RECS estimates of new housing units and the U.S. Department of Housing and Urban Development's estimates of new housing, see Appendix C, "Quality of the Data."

Figure 7. Main Space-Heating Fuel by Year of Construction



Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1987 Residential Energy Consumption Survey.

Figure 8. Housing Units by Year of Construction and Census Region, 1987



Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1987 Residential Energy Consumption Survey.

Detailed Tables

The tables that follow present detailed characteristics of residential households based on the 1987 RECS. The Glossary contains the definitions of terms used in the tables.

Table Organization

Generally, there are two tables for each topic--the first gives estimates of the number of households by the indicated topic, and the second gives the percent of households. Tables have been grouped together to make it easier to find related information. The following Quick Reference to the Detailed Tables indicates the major topics of each table.

Row and Column Factors

These tables present estimates of characteristics for all households in the United States. Since the estimates are based on the sample surveyed, they are subject to error. To help the reader compute an approximate relative standard error (RSE) for each of the estimates in the detailed tables, row and column factors are displayed on the top line and in the far right column of each table. To calculate the RSE for a specific estimate, multiply the row factor by the column factor. (See Figure C1 and the related discussion in Appendix C, "Quality of the Data," for more details).

Quick Reference to the Detailed Tables

Data Item/Category	Table Numbers (Households: Number, Percent)
Housing Characteristics	
by Census Region & Metropolitan Status	7,8
by Year of Construction	9,10
by Average Square Footage	11
by Total Square Footage	12
Fuel Use	
by Census Region & Metropolitan Status	13,14
by Family Income	15,16
by Housing Structure	17,18
by Average Square Footage	19
by Total Square Footage	20
by Main Heating Fuel	21,22
by Climate Zone and Census Region	23,24
by by Year of Construction	25,26
Appliance Use	
by Census Region & Metropolitan Status	27,28
by Family Income	29,30
by Year of Construction	31,32
Thermal Characteristics	
by Census Region & Metropolitan Status	33,34
by Housing Structure	35,36
by Climate Zone and Census Region	37,38
by Year of Construction	39,40
Conservation Improvements	
by Census Region & Metropolitan Status	41,42
Consumption Usage Indicators	
Indoor Temperatures	43,44
Nighttime Temperature Settings	45,46
Mean Daytime Temperature	47
Use of Air-Conditioning Equipment	48
Wood Consumption	49
Average HDD by Main Heating Fuel	50
Average CDD by Main Heating Fuel	51

Table 7. U.S. Household Characteristics by Census Region and Metropolitan Status, November 1987

(Million Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
		Northeast	Midwest	South	West	Metropolitan			Non-Metropolitan	
						Total	Central City	Outside Central City		
RSE Column Factors:	0.616	1.170	1.201	1.157	1.257	0.704	1.013	0.952	1.171	
Total Households	90.5	19.0	22.3	30.9	18.3	70.2	29.6	40.6	20.3	0.00
Climate Zone										
Under 2,000 CDD and--										
Over 7,000 HDD	8.5	2.0	5.6	--	.9	3.7	1.5	2.2	4.8	16.62
5,500 to 7,000 HDD	25.9	8.6	13.5	NC	3.6	21.3	8.0	13.3	4.6	8.13
4,000 to 5,499 HDD	21.9	8.4	3.1	8.2	2.2	17.4	7.7	9.7	4.5	11.99
Under 4,000 HDD	17.8	--	NC	8.4	9.5	14.2	6.0	8.2	3.6	11.94
2,000 CDD or More and --										
Under 4,000 HDD	16.3	--	--	14.2	2.2	13.6	6.4	7.2	2.8	12.10
Measured Heated Area of Residence (square feet)										
Fewer than 600	8.4	2.2	1.5	2.3	2.5	6.5	4.1	2.4	1.9	8.94
600 to 999	23.9	4.4	5.5	9.4	4.7	18.6	9.1	9.5	5.3	5.50
1,000 to 1,599	25.6	4.1	4.8	10.8	5.9	18.9	8.1	10.8	6.7	5.19
1,600 to 1,999	11.3	2.6	3.0	3.6	2.1	9.2	3.2	5.9	2.1	7.50
2,000 to 2,399	8.4	1.9	2.6	2.3	1.6	7.0	2.3	4.7	1.4	8.82
2,400 to 2,999	7.7	2.4	2.9	1.4	1.0	5.9	1.7	4.2	1.8	9.44
3,000 or More	5.3	1.5	2.0	1.2	.6	4.2	1.1	3.1	1.1	10.03
Payment Method for Utilities										
All Paid by Household	73.7	13.4	18.2	27.6	14.5	54.6	20.6	34.0	19.1	2.61
Some Paid, Some in Rent	10.0	3.5	2.7	1.4	2.4	9.7	5.1	4.6	.3	16.42
All Included in Rent	4.5	1.3	.8	1.5	.9	3.9	2.8	1.1	.6	15.52
Other Method	2.3	.9	.5	.4	.5	2.0	1.1	.9	.2	20.20
Status of Unit										
Owned	58.8	12.0	15.3	20.4	11.0	43.5	15.1	28.4	15.3	2.94
Rented	31.7	7.0	6.9	10.5	7.3	26.8	14.5	12.2	5.0	5.43
Housing Structure by Status of Unit										
Single-Family Detached	55.2	9.1	14.7	20.8	10.5	39.9	13.9	26.0	15.2	3.18
Owned	47.7	8.6	12.9	17.3	8.8	35.0	11.6	23.3	12.7	3.42
Rented	7.4	.5	1.8	3.5	1.7	4.9	2.3	2.6	2.5	10.10
Single-Family Attached	5.3	2.0	.9	1.5	.9	5.1	2.1	3.0	.2	20.64
Owned	3.9	1.7	.7	1.0	.5	3.8	1.4	2.4	Q	20.94
Rented	1.5	.3	.3	.5	Q	1.4	.7	.7	Q	31.19
Building of 2 to 4 Units	10.1	3.2	2.6	2.2	2.0	8.8	5.0	3.8	1.3	10.26
Owned	2.0	.8	.6	.2	.4	1.8	.9	.8	.2	18.33
Rented	8.1	2.4	2.0	2.0	1.7	7.0	4.1	3.0	1.0	11.06
Building of 5 or More Units	14.9	4.1	2.8	4.2	3.8	14.0	8.0	6.0	.9	11.32
Owned	1.0	.3	Q	Q	Q	1.0	.5	.4	NC	41.65
Rented	13.9	3.8	2.7	4.1	3.4	13.0	7.4	5.6	.9	11.84
Mobile Home	5.1	.7	1.2	2.2	1.0	2.4	.6	1.8	2.7	19.28
Owned	4.3	.6	1.0	1.7	.9	2.0	.6	1.4	2.3	21.60
Rented	.9	Q	.2	.5	.2	.4	Q	.4	.4	28.15
Year of Construction										
1939 or Before	21.5	7.4	7.2	3.8	3.1	16.1	9.5	6.6	5.4	6.82
1940 to 1949	8.2	1.8	2.0	3.0	1.4	6.4	3.6	2.8	1.8	8.27
1950 to 1959	13.1	2.6	2.9	4.4	3.1	10.6	4.5	6.2	2.4	6.76
1960 to 1969	16.4	3.0	3.1	6.8	3.5	13.4	5.2	8.2	3.0	7.72
1970 to 1974	9.6	1.6	2.9	3.2	2.0	7.3	2.1	5.2	2.3	10.17
1975 to 1979	10.5	1.2	2.4	4.4	2.5	7.7	2.1	5.6	2.8	10.00
1980 to 1984	7.4	.9	1.4	3.5	1.7	5.8	1.9	3.9	1.6	13.55
1985 or After	3.9	.7	.3	1.9	.9	3.0	.9	2.2	.9	20.78

See footnotes at end of table.

Table 7. U.S. Household Characteristics by Census Region and Metropolitan Status, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
						Metropolitan				
		Northeast	Midwest	South	West	Total	Central City	Outside Central City	Non-Metropolitan	
RSE Column Factors:	0.616	1.170	1.201	1.157	1.257	0.704	1.013	0.952	1.171	
1987 Family Income										
Less than $5,000	6.2	1.1	1.3	3.2	0.7	4.1	2.6	1.5	2.0	11.87
$5,000 to $9,999	11.5	2.2	3.0	4.0	2.2	7.8	3.9	3.8	3.7	7.55
$10,000 to $14,999	12.6	2.4	3.4	4.8	2.0	9.2	4.7	4.6	3.4	6.93
$15,000 to $19,999	9.0	1.8	2.5	3.0	1.7	6.7	3.2	3.5	2.3	7.13
$20,000 to $24,999	8.8	1.8	2.2	3.0	1.7	6.5	2.8	3.7	2.2	8.47
$25,000 to $34,999	16.2	3.5	4.2	5.2	3.3	13.2	5.4	7.7	3.0	4.80
$35,000 or $49,999	13.4	3.1	3.2	4.0	3.0	11.0	3.4	7.5	2.4	6.64
$50,000 or More	12.9	3.1	2.5	3.6	3.7	11.7	3.5	8.3	1.2	7.60
Below 100 Percent of Poverty Line	11.8	1.9	2.5	5.6	1.8	7.9	4.7	3.3	3.8	8.50
Below 125 Percent of Poverty Line	18.2	3.2	4.4	7.7	2.9	12.3	6.9	5.4	6.0	6.68
Age of Householder										
Under 25 Years	6.5	.9	1.7	2.5	1.4	5.4	2.6	2.7	1.1	11.74
25 to 34 Years	21.5	4.5	5.3	7.0	4.8	17.1	8.0	9.1	4.5	4.55
35 to 44 Years	18.0	3.8	4.4	6.1	3.7	14.6	5.5	9.1	3.5	5.02
45 to 59 Years	18.9	3.9	4.0	7.2	3.8	14.6	5.3	9.3	4.2	5.01
60 Years and Over	25.7	6.0	6.9	8.1	4.7	18.7	8.2	10.5	7.0	4.67
Race of Householder										
White	76.6	16.3	20.3	24.2	15.8	58.7	22.2	36.6	17.9	1.95
Black	10.9	2.2	1.4	6.2	1.1	9.0	6.3	2.7	2.0	11.83
Other	3.0	.5	.5	.5	1.5	2.5	1.2	1.3	.5	15.75
Householder of Hispanic Descent										
Yes	5.0	1.2	.5	1.4	1.8	4.5	2.4	2.1	.5	13.42
No	85.5	17.8	21.7	29.5	16.5	65.8	27.3	38.5	19.8	1.05
Household Size										
1 Person	21.6	5.0	5.4	7.1	4.1	16.8	8.7	8.1	4.8	4.67
2 Persons	30.7	6.0	7.9	10.2	6.5	23.7	9.5	14.2	7.0	4.06
3 Persons	15.4	3.1	3.4	5.9	3.0	11.8	4.8	7.0	3.6	5.37
4 Persons	13.6	2.9	3.2	5.0	2.6	10.7	3.9	6.9	2.9	5.49
5 Persons	6.1	1.3	1.5	1.9	1.4	4.9	1.9	2.9	1.3	9.54
6 or More Persons	3.1	.7	.8	.8	.8	2.4	.9	1.6	.7	14.18

NC No cases in sample.
-- Data not applicable.
Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 8. U.S. Household Characteristics by Census Region and Metropolitan Status, November 1987

(Percent of Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
		Northeast	Midwest	South	West	Metropolitan			Non-Metropolitan	
						Total	Central City	Outside Central City		
RSE Column Factors:	0.616	1.170	1.201	1.157	1.257	0.704	1.013	0.952	1.171	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Climate Zone										
Under 2,000 CDD and--										
Over 7,000 HDD	9.4	10.6	25.3	--	4.8	5.3	5.0	5.4	23.8	16.62
5,500 to 7,000 HDD	28.6	45.2	60.7	NC	19.7	30.4	27.1	32.7	22.7	8.13
4,000 to 5,499 HDD	24.2	44.2	14.0	26.5	11.8	24.8	26.0	24.0	22.0	11.99
Under 4,000 HDD	19.7	--	NC	27.0	51.8	20.3	20.4	20.2	17.8	11.94
2,000 CDD or More and --										
Under 4,000 HDD	18.0	--	--	45.8	11.8	19.3	21.5	17.7	13.7	12.10
Measured Heated Area of Residence (square feet)										
Fewer than 600	9.3	11.3	6.5	7.5	13.4	9.3	13.9	5.9	9.3	8.94
600 to 999	26.4	23.2	24.6	30.4	25.4	26.5	30.7	23.4	26.2	5.50
1,000 to 1,599	28.2	21.6	21.6	34.8	32.1	26.8	27.3	26.5	33.1	5.19
1,600 to 1,999	12.4	13.6	13.5	11.6	11.4	13.0	10.9	14.6	10.4	7.50
2,000 to 2,399	9.3	10.1	11.8	7.3	8.9	10.0	7.7	11.7	7.0	8.82
2,400 to 2,999	8.5	12.4	13.1	4.6	5.5	8.4	5.8	10.3	8.8	9.44
3,000 or More	5.8	7.9	8.9	3.8	3.3	6.0	3.7	7.6	5.3	10.03
Payment Method for Utilities										
All Paid by Household	81.5	70.3	81.9	89.3	79.4	77.8	69.6	83.8	94.1	2.61
Some Paid, Some in Rent	11.1	18.5	12.0	4.6	13.2	13.8	17.3	11.3	1.6	16.42
All Included in Rent	5.0	6.6	3.8	4.9	4.7	5.5	9.3	2.7	3.2	15.52
Other Method	2.5	4.5	2.3	1.2	2.7	2.9	3.8	2.2	1.2	20.20
Status of Unit										
Owned	64.9	63.1	68.9	65.9	60.3	61.9	51.0	69.9	75.4	2.94
Rented	35.1	36.9	31.1	34.1	39.7	38.1	49.0	30.1	24.6	5.43
Housing Structure by Status of Unit										
Single-Family Detached	60.9	47.9	66.1	67.2	57.6	56.8	47.0	64.0	75.1	3.18
Owned	52.7	45.3	58.1	56.0	48.2	49.8	39.3	57.5	62.8	3.42
Rented	8.2	2.6	7.9	11.2	9.3	7.0	7.7	6.5	12.3	10.10
Single-Family Attached	5.9	10.5	4.2	4.8	4.9	7.3	7.1	7.5	.8	20.64
Owned	4.3	8.8	3.0	3.2	2.9	5.4	4.8	5.8	Q	20.94
Rented	1.6	1.7	1.2	1.6	Q	1.9	2.3	1.7	Q	31.19
Building of 2 to 4 Units	11.1	16.6	11.8	7.2	11.1	12.5	16.9	9.3	6.2	10.26
Owned	2.2	4.3	2.6	.7	1.9	2.5	3.1	2.1	1.1	18.33
Rented	8.9	12.4	9.2	6.5	9.1	10.0	13.7	7.3	5.1	11.06
Building of 5 or More Units	16.5	21.4	12.6	13.6	20.8	19.9	26.9	14.8	4.5	11.32
Owned	1.1	1.5	Q	Q	Q	1.4	1.8	1.1	NC	41.65
Rented	15.4	19.9	12.1	13.2	18.3	18.5	25.1	13.7	4.5	11.84
Mobile Home	5.6	3.5	5.4	7.2	5.6	3.4	2.2	4.4	13.3	19.28
Owned	4.7	3.2	4.6	5.6	4.7	2.8	2.0	3.4	11.2	21.60
Rented	1.0	Q	.7	1.6	.9	.6	Q	.9	2.1	28.15
Year of Construction										
1939 or Before	23.7	38.8	32.3	12.3	17.1	22.9	32.0	16.3	26.7	6.82
1940 to 1949	9.1	9.3	9.2	9.8	7.6	9.1	12.1	7.0	9.0	8.27
1950 to 1959	14.4	13.8	13.2	14.2	17.0	15.1	15.1	15.2	12.0	6.76
1960 to 1969	18.1	15.5	14.1	21.9	19.2	19.1	17.6	20.2	14.7	7.72
1970 to 1974	10.6	8.3	12.9	10.2	11.0	10.4	7.0	12.8	11.6	10.17
1975 to 1979	11.6	6.1	10.8	14.2	13.8	10.9	7.0	13.7	13.9	10.00
1980 to 1984	8.1	4.5	6.1	11.2	9.3	8.2	6.3	9.5	8.0	13.55
1985 or After	4.3	3.7	1.5	6.2	5.0	4.3	2.9	5.3	4.2	20.78

See footnotes at end of table.

Table 8. U.S. Household Characteristics by Census Region and Metropolitan Status, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
		Northeast	Midwest	South	West	Metropolitan			Non-Metropolitan	
						Total	Central City	Outside Central City		
RSE Column Factors:	0.616	1.170	1.201	1.157	1.257	0.704	1.013	0.952	1.171	
1987 Family Income										
Less than $5,000	6.8	5.6	5.8	10.2	3.6	5.9	8.9	3.7	10.0	11.87
$5,000 to $9,999	12.7	11.7	13.6	13.1	12.0	11.1	13.3	9.5	18.2	7.55
$10,000 to $14,999	13.9	12.4	15.2	15.7	11.1	13.1	15.7	11.2	16.7	6.93
$15,000 to $19,999	10.0	9.3	11.2	9.8	9.3	9.5	10.8	8.6	11.5	7.13
$20,000 to $24,999	9.7	9.4	9.9	9.8	9.4	9.3	9.6	9.1	10.9	8.47
$25,000 to $34,999	17.9	18.6	18.7	16.7	18.0	18.8	18.3	19.1	14.9	4.80
$35,000 or $49,999	14.8	16.4	14.2	13.1	16.5	15.6	11.6	18.5	11.9	6.64
$50,000 or More	14.3	16.5	11.3	11.6	20.0	16.7	11.8	20.3	5.7	7.60
Below 100 Percent of Poverty Line	13.0	9.8	11.3	18.1	9.9	11.3	15.7	8.1	18.9	8.50
Below 125 Percent of Poverty Line	20.1	16.7	19.9	24.9	16.0	17.4	23.2	13.2	29.5	6.68
Age of Householder										
Under 25 Years	7.1	4.7	7.5	8.1	7.6	7.6	8.9	6.7	5.5	11.74
25 to 34 Years	23.8	23.5	23.7	22.6	26.1	24.3	26.9	22.4	22.0	4.55
35 to 44 Years	19.9	19.8	20.0	19.8	20.1	20.7	18.6	22.3	17.0	5.02
45 to 59 Years	20.8	20.2	17.8	23.5	20.8	20.8	18.0	22.9	20.9	5.01
60 Years and Over	28.4	31.8	31.0	26.1	25.5	26.6	27.6	25.8	34.5	4.67
Race of Householder										
White	84.6	85.6	91.3	78.4	86.0	83.6	74.8	90.1	88.0	1.95
Black	12.1	11.6	6.3	20.2	5.9	12.8	21.1	6.7	9.7	11.83
Other	3.3	2.8	2.4	1.5	8.1	3.6	4.1	3.2	2.3	15.75
Householder of Hispanic Descent										
Yes	5.5	6.4	2.5	4.7	9.8	6.4	7.9	5.2	2.6	13.42
No	94.5	93.6	97.5	95.3	90.2	93.6	92.1	94.8	97.4	1.05
Household Size										
1 Person	23.9	26.2	24.3	23.1	22.3	23.9	29.4	19.9	23.7	4.67
2 Persons	33.9	31.5	35.7	33.1	35.7	33.7	32.0	34.9	34.7	4.06
3 Persons	17.0	16.5	15.1	19.1	16.2	16.7	16.1	17.2	17.8	5.37
4 Persons	15.0	15.1	14.2	16.2	14.0	15.3	13.0	17.0	14.2	5.49
5 Persons	6.8	6.9	6.9	6.2	7.5	6.9	6.5	7.2	6.3	9.54
6 or More Persons	3.5	3.8	3.8	2.5	4.4	3.5	2.9	3.9	3.4	14.18

NC No cases in sample.
-- Data not applicable.
Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 9. U.S. Household Characteristics by Year of Construction, November 1987

(Million Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.371	2.152	1.517	1.196	1.141	0.899	0.888	1.059	0.715	
Total Households	90.5	3.9	7.4	10.5	9.6	16.4	13.1	8.2	21.5	5.38
Climate Zone										
Under 2,000 CDD and--										
Over 7,000 HDD	8.5	.1	.5	1.3	.9	1.1	.9	.7	3.0	21.17
5,500 to 7,000 HDD	25.9	.9	1.5	2.4	3.4	4.0	3.3	2.2	8.1	11.76
4,000 to 5,499 HDD	21.9	.8	1.7	2.2	1.6	4.1	3.4	2.2	5.9	14.63
Under 4,000 HDD	17.8	1.0	1.6	2.1	2.1	3.5	2.8	1.8	3.0	14.51
2,000 CDD or More and --										
Under 4,000 HDD	16.3	1.0	2.1	2.6	1.5	3.8	2.7	1.2	1.5	15.12
Measured Heated Area of Residence (square feet)										
Fewer than 600	8.4	.2	.4	.8	1.2	1.7	1.0	.6	2.6	17.49
600 to 999	23.9	1.0	2.2	2.6	3.2	4.6	3.1	2.4	4.9	10.60
1,000 to 1,599	25.6	1.1	2.4	2.9	2.4	4.5	3.9	2.8	5.6	9.39
1,600 to 1,999	11.3	.6	1.0	1.1	.8	1.9	2.1	1.0	2.7	12.81
2,000 to 2,399	8.4	.4	.6	1.4	.8	1.3	1.3	.7	2.0	14.88
2,400 to 2,999	7.7	.3	.7	.9	.8	1.2	1.1	.6	2.1	14.33
3,000 or More	5.3	.2	.2	.9	.4	1.2	.6	.2	1.6	17.19
Payment Method for Utilities										
All Paid by Household	73.7	3.5	6.5	8.9	7.3	12.2	11.6	7.0	16.8	5.37
Some Paid, Some in Rent	10.0	Q	Q	.9	1.7	2.6	.9	.6	2.4	22.20
All Included in Rent	4.5	NC	.1	.5	.5	1.4	.4	.4	1.2	25.36
Other Method	2.3	Q	Q	.1	.2	.3	.2	.2	1.0	35.92
Status of Unit										
Owned	58.8	2.9	4.8	7.4	6.0	9.6	9.6	5.2	13.3	6.00
Rented	31.7	.9	2.5	3.1	3.6	6.8	3.5	3.0	8.2	10.70
Housing Structure by Status of Unit										
Single-Family Detached	55.2	2.2	3.6	5.8	4.5	9.4	10.3	5.9	13.4	6.20
Single-Family Attached	5.3	.5	.8	.9	.5	.5	.5	.3	1.3	29.08
Building of 2 to 4 Units	10.1	Q	.6	.4	.4	1.7	1.2	1.2	4.4	17.20
Building of 5 or More Units	14.9	.5	1.6	2.3	2.7	3.8	.9	.7	2.3	18.49
Mobile Home	5.1	.4	.8	1.0	1.5	.9	.2	Q	Q	17.51
1987 Family Income										
Less than $5,000	6.2	Q	.2	.6	.7	1.1	.7	.7	2.2	17.85
$5,000 to $9,999	11.5	.3	.7	1.0	1.2	2.0	1.7	1.2	3.4	13.06
$10,000 to $14,999	12.6	.3	.8	.9	1.4	2.3	2.0	1.2	3.7	12.55
$15,000 to $19,999	9.0	.4	.5	.9	1.0	1.7	1.2	1.0	2.4	13.90
$20,000 to $24,999	8.8	.4	.8	.9	.9	1.6	1.5	.6	2.0	13.55
$25,000 to $34,999	16.2	.9	1.5	1.9	1.7	2.9	2.2	1.6	3.5	9.88
$35,000 or $49,999	13.4	.8	1.8	2.0	1.4	2.3	1.7	1.1	2.3	10.91
$50,000 or More	12.9	.7	1.1	2.3	1.4	2.6	2.1	.9	1.9	11.42
Below 100 Percent of Poverty Line	11.8	.2	.6	1.1	1.3	2.1	1.7	1.2	3.7	13.71
Below 125 Percent of Poverty Line	18.2	.3	.8	1.8	2.0	3.2	2.5	1.8	5.9	11.51
Age of Householder										
Under 25 Years	6.5	.6	.7	.7	1.0	1.2	.6	.4	1.2	17.83
25 to 34 Years	21.5	1.5	2.7	2.3	1.9	3.4	3.0	1.6	5.0	8.71
35 to 44 Years	18.0	.8	2.1	2.9	1.9	2.8	2.3	1.4	3.8	9.17
45 to 59 Years	18.9	.7	1.0	2.4	2.2	3.7	2.7	2.0	3.9	8.74
60 Years and Over	25.7	.2	.9	2.1	2.5	5.2	4.4	2.8	7.6	9.78

See footnotes at end of table.

Table 9. U.S. Household Characteristics by Year of Construction, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.371	2.152	1.517	1.196	1.141	0.899	0.888	1.059	0.715	
Race of Householder										
White	76.6	3.5	6.7	9.5	8.6	13.2	10.9	6.4	17.8	5.57
Black	10.9	.3	.4	.7	.9	2.4	1.6	1.5	3.1	16.28
Other	3.0	Q	.3	.3	.2	.8	.5	.3	.6	23.07
Householder of Hispanic Descent										
Yes	5.0	.2	.4	.4	.4	.8	.9	.5	1.3	19.94
No	85.5	3.7	7.0	10.1	9.2	15.6	12.1	7.8	20.2	5.42
Household Size										
1 Person	21.6	.5	1.5	2.3	2.4	3.7	2.9	2.2	6.2	10.50
2 Persons	30.7	1.4	2.7	3.3	3.1	6.1	4.2	2.8	7.2	7.60
3 Persons	15.4	.8	1.2	1.9	1.6	2.7	2.6	1.3	3.2	9.46
4 Persons	13.6	.9	1.3	1.8	1.4	2.5	1.9	1.2	2.7	9.94
5 Persons	6.1	.2	.5	.9	.7	1.1	1.0	.5	1.4	14.86
6 or More Persons	3.1	.1	.2	.4	.4	.4	.6	.3	.8	21.37

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 10. U.S. Household Characteristics by Year of Construction, November 1987

(Percent of Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.418	2.001	1.477	1.215	1.161	0.894	0.888	1.059	0.683	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Climate Zone										
Under 2,000 CDD and--										
Over 7,000 HDD	9.4	3.8	7.0	12.4	9.7	6.7	6.6	8.6	13.7	21.27
5,500 to 7,000 HDD	28.6	23.9	20.7	22.4	35.6	24.4	25.4	27.1	37.9	10.91
4,000 to 5,499 HDD	24.2	21.0	22.6	20.9	16.8	24.7	26.2	27.3	27.4	13.56
Under 4,000 HDD	19.7	26.1	21.0	19.8	22.0	21.0	21.4	22.1	14.1	13.78
2,000 CDD or More and --										
Under 4,000 HDD	18.0	25.1	28.7	24.5	15.8	23.1	20.4	15.0	6.9	14.04
Measured Heated Area of Residence (square feet)										
Fewer than 600	9.3	6.2	5.6	7.5	11.9	10.2	7.5	7.0	12.0	17.16
600 to 999	26.4	27.0	29.3	24.3	33.5	28.0	23.5	28.8	22.9	8.69
1,000 to 1,599	28.2	28.2	32.0	28.0	24.6	27.5	30.2	33.9	25.9	7.95
1,600 to 1,999	12.4	16.5	13.9	10.5	8.3	11.5	16.2	11.8	12.7	11.99
2,000 to 2,399	9.3	9.3	7.6	13.2	8.7	8.1	9.7	8.7	9.3	14.12
2,400 to 2,999	8.5	8.0	9.3	8.3	8.4	7.5	8.5	6.9	9.9	13.96
3,000 or More	5.8	4.7	2.3	8.2	4.6	7.3	4.4	2.8	7.4	17.56
Payment Method for Utilities										
All Paid by Household	81.5	91.7	88.1	84.7	75.4	74.2	88.6	85.0	78.3	3.15
Some Paid, Some in Rent	11.1	Q	Q	8.8	17.6	15.8	7.1	7.1	11.4	20.77
All Included in Rent	5.0	NC	1.2	5.1	5.1	8.5	2.8	5.4	5.5	24.86
Other Method	2.5	Q	Q	1.3	2.0	1.5	1.6	2.5	4.8	35.47
Status of Unit										
Owned	64.9	75.8	65.5	70.1	62.4	58.6	73.2	63.2	61.9	4.36
Rented	35.1	24.2	34.5	29.9	37.6	41.4	26.8	36.8	38.1	8.62
Housing Structure by Status of Unit										
Single-Family Detached	60.9	57.0	48.4	55.2	47.2	57.5	78.9	71.5	62.5	4.89
Single-Family Attached	5.9	14.2	10.4	8.6	4.8	3.3	3.6	4.1	6.0	28.01
Building of 2 to 4 Units	11.1	Q	7.8	4.2	4.0	10.6	8.9	14.7	20.3	16.44
Building of 5 or More Units	16.5	14.1	22.4	22.1	28.2	23.0	6.7	8.9	10.7	16.77
Mobile Home	5.6	9.9	11.1	9.9	15.8	5.6	1.9	Q	Q	17.71
1987 Family Income										
Less than $5,000	6.8	Q	2.4	5.5	7.1	6.7	5.2	7.9	10.4	16.84
$5,000 to $9,999	12.7	7.9	9.0	9.7	12.0	12.5	13.0	14.5	15.9	12.12
$10,000 to $14,999	13.9	7.9	11.3	8.4	14.8	13.7	15.1	14.5	17.4	11.64
$15,000 to $19,999	10.0	10.1	6.9	8.6	9.9	10.1	9.0	12.1	11.3	12.94
$20,000 to $24,999	9.7	11.5	11.4	8.8	9.1	9.5	11.2	7.4	9.4	12.25
$25,000 to $34,999	17.9	23.5	20.2	17.9	17.5	17.7	17.2	19.2	16.3	8.70
$35,000 or $49,999	14.8	19.5	23.9	19.0	15.0	14.2	13.3	13.2	10.6	9.73
$50,000 or More	14.3	17.4	14.9	22.0	14.5	15.6	16.0	11.1	8.7	10.61
Below 100 Percent of Poverty Line	13.0	5.5	7.6	10.5	13.1	12.6	12.7	14.4	17.4	12.76
Below 125 Percent of Poverty Line	20.1	8.5	11.0	16.8	20.9	19.2	18.9	22.3	27.3	10.27
Age of Householder										
Under 25 Years	7.1	14.7	9.9	6.8	10.6	7.1	4.7	5.4	5.6	16.56
25 to 34 Years	23.8	39.3	36.0	22.3	20.2	21.0	23.1	19.8	23.2	6.93
35 to 44 Years	19.9	21.5	28.3	27.5	20.2	17.3	17.5	16.9	17.5	7.58
45 to 59 Years	20.8	19.2	14.1	23.1	23.3	22.8	21.0	24.2	18.3	8.19
60 Years and Over	28.4	5.3	11.7	20.4	25.6	31.8	33.6	33.6	35.4	8.17

See footnotes at end of table.

Table 10. U.S. Household Characteristics by Year of Construction, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.418	2.001	1.477	1.215	1.161	0.894	0.888	1.059	0.683	
Race of Householder										
White	84.6	90.0	91.3	90.2	89.2	80.5	83.7	78.0	82.8	2.09
Black	12.1	7.7	5.2	7.0	8.9	14.9	12.2	18.6	14.4	15.73
Other	3.3	Q	3.4	2.8	1.8	4.7	4.1	3.4	2.9	22.85
Householder of Hispanic Descent										
Yes	5.5	5.1	5.5	4.1	4.2	5.0	7.2	5.8	6.1	19.35
No	94.5	94.9	94.5	95.9	95.8	95.0	92.8	94.2	93.9	1.17
Household Size										
1 Person	23.9	12.9	20.4	21.6	25.2	22.3	22.1	26.2	28.9	7.95
2 Persons	33.9	35.3	36.4	31.8	32.4	36.9	32.2	33.6	33.3	5.60
3 Persons	17.0	22.0	16.6	17.8	16.9	16.4	19.5	16.3	14.9	8.47
4 Persons	15.0	22.8	17.6	16.9	14.2	15.3	14.3	14.4	12.7	9.12
5 Persons	6.8	Q	6.7	8.2	6.9	6.6	7.7	5.5	6.5	13.86
6 or More Persons	3.5	2.9	2.3	3.5	4.4	2.5	4.2	4.0	3.5	21.70

NC No cases in sample.

Q *Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.*

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 11. U.S. Household Characteristics by Average Square Footage, November 1987

Household Characteristics	Total Households (millions)	Average Number of Square Feet per Housing Unit		Average Number of Heated Square Feet per Housing Unit			Average Number of Heated Square Feet per Household Member	RSE Row Factors
		Heated and Unheated	Heated	Single-Family	Multi-Family	Mobile Home		
RSE Column Factors:	1.381	0.749	0.735	0.813	1.147	1.625	0.868	
Total Households	90.5	1,732	1,491	1,787	907	845	575	1.63
Census Region and Division								
Northeast	19.0	1,933	1,617	2,090	966	770	626	3.14
New England	4.3	1,973	1,605	2,094	1,049	689	624	4.10
Middle Atlantic	14.8	1,921	1,620	2,089	940	805	626	3.21
Midwest	22.3	1,989	1,718	2,058	933	834	671	2.76
East North Central	15.9	1,987	1,719	2,094	941	819	664	3.06
West North Central	6.4	1,994	1,716	1,979	908	879	689	4.50
South	30.9	1,525	1,347	1,550	834	802	521	3.08
South Atlantic	15.6	1,568	1,371	1,599	875	788	524	3.83
East South Central	6.1	1,513	1,344	1,538	807	800	547	6.27
West South Central	9.2	1,461	1,307	1,479	780	858	499	5.43
West	18.3	1,560	1,331	1,585	891	1,000	501	3.67
Mountain	4.4	1,628	1,440	1,710	802	940	521	4.62
Pacific	13.9	1,539	1,295	1,539	907	1,048	494	3.98
Climate Zone								
Under 2,000 CDD and--								
Over 7,000 HDD	8.5	2,000	1,659	1,956	907	757	641	5.50
5,500 to 7,000 HDD	25.9	1,976	1,685	2,088	968	868	658	2.47
4,000 to 5,499 HDD	21.9	1,772	1,549	1,866	925	876	607	3.67
Under 4,000 HDD	17.8	1,464	1,287	1,514	863	924	485	4.38
2,000 CDD or More and --								
Under 4,000 HDD	16.3	1,444	1,243	1,431	815	768	471	4.70
Measured Heated Area of Residence (square feet)								
Fewer than 600	8.4	620	435	354	457	470	219	3.94
600 to 999	23.9	907	810	848	787	799	360	1.47
1,000 to 1,599	25.6	1,521	1,271	1,296	1,192	1,226	475	1.65
1,600 to 1,999	11.3	2,108	1,784	1,785	1,781	1,734	662	3.91
2,000 to 2,399	8.4	2,511	2,177	2,176	2,190	Q	723	3.01
2,400 to 2,999	7.7	3,027	2,650	2,654	2,575	Q	879	2.11
3,000 or More	5.3	4,336	3,927	3,938	3,683	NC	1223	3.26
Payment Method for Utilities								
All Paid by Household	73.7	1,919	1,629	1,794	978	850	599	1.57
Some Paid, Some in Rent	10.0	853	846	Q	838	575	418	6.42
All Included in Rent	4.5	795	770	1,266	702	598	392	8.22
Other Method	2.3	1,393	1,310	1,248	1,351	1,064	568	8.84
Status of Unit								
Owned	58.8	2,115	1,788	1,876	1,584	858	655	1.87
Rented	31.7	1,023	943	1,274	816	780	402	2.47
Housing Structure by Status of Unit								
Single-Family Detached	55.2	2,152	1,798	1,798	--	--	633	1.55
Owned	47.7	2,251	1,880	1,880	--	--	670	1.63
Rented	7.4	1,517	1,275	1,275	--	--	415	4.06
Single-Family Attached	5.3	1,917	1,672	1,672	--	--	678	7.82
Owned	3.9	2,119	1,824	1,824	--	--	746	8.69
Rented	1.5	1,382	1,269	1,269	--	--	503	10.97
Building of 2 to 4 Units	10.1	1,156	1,072	--	1,072	--	451	3.35
Owned	2.0	1,836	1,670	--	1,670	--	712	6.62
Rented	8.1	989	925	--	925	--	387	3.40
Building of 5 or More Units	14.9	800	796	--	796	--	421	4.25
Owned	1.0	1,416	1,411	--	1,411	--	845	19.88
Rented	13.9	756	753	--	753	--	395	3.04
Mobile Home	5.1	861	845	--	--	845	335	4.00
Owned	4.3	877	858	--	--	858	341	4.51
Rented	.9	784	780	--	--	780	309	9.18

See footnotes at end of table.

Table 11. U.S. Household Characteristics by Average Square Footage, November 1987 (Continued)

Household Characteristics	Total Households (millions)	Average Number of Square Feet per Housing Unit		Average Number of Heated Square Feet per Housing Unit			Average Number of Heated Square Feet per Household Member	RSE Row Factors
		Heated and Unheated	Heated	Single-Family	Multi-Family	Mobile Home		
RSE Column Factors:	1.381	0.749	0.735	0.813	1.147	1.625	0.868	
Year of Construction								
1939 or Before	21.5	1,812	1,538	1,781	1,018	Q	622	2.97
1940 to 1949	8.2	1,575	1,393	1,565	862	Q	551	3.62
1950 to 1959	13.1	1,745	1,506	1,656	820	609	559	3.90
1960 to 1969	16.4	1,709	1,479	1,894	862	693	577	3.44
1970 to 1974	9.6	1,601	1,387	1,904	843	797	531	4.15
1975 to 1979	10.5	1,865	1,623	2,020	901	977	600	5.19
1980 to 1984	7.4	1,636	1,415	1,751	925	967	539	4.71
1985 or After	3.9	1,828	1,495	1,734	841	1,024	534	6.51
1987 Family Income								
Less than $5,000	6.2	1,020	916	1,175	721	699	482	4.00
$5,000 to $9,999	11.5	1,246	1,104	1,374	780	778	515	3.16
$10,000 to $14,999	12.6	1,385	1,188	1,416	880	780	522	3.20
$15,000 to $19,999	9.0	1,482	1,307	1,622	889	901	501	3.63
$20,000 to $24,999	8.8	1,639	1,422	1,675	896	974	549	3.30
$25,000 to $34,999	16.2	1,814	1,543	1,792	990	921	572	2.62
$35,000 or $49,999	13.4	2,100	1,806	2,007	1,014	993	599	3.41
$50,000 or More	12.9	2,598	2,192	2,336	1,306	Q	716	3.83
Below 100 Percent of Poverty Line	11.8	1,117	1,006	1,230	780	743	364	3.09
Below 125 Percent of Poverty Line	18.2	1,180	1,054	1,295	788	746	394	2.66
Age of Householder								
Under 25 Years	6.5	1,037	958	1,341	803	774	391	3.76
25 to 34 Years	21.5	1,500	1,309	1,626	855	888	446	2.43
35 to 44 Years	18.0	1,919	1,634	1,874	985	859	497	2.62
45 to 59 Years	18.9	2,028	1,733	1,952	1,031	859	646	2.93
60 Years and Over	25.7	1,754	1,501	1,751	914	821	837	2.69
Race of Householder								
White	76.6	1,808	1,547	1,834	919	841	611	1.58
Black	10.9	1,309	1,209	1,484	884	890	431	4.84
Other	3.0	1,340	1,110	1,358	834	Q	325	6.52
Householder of Hispanic Descent								
Yes	5.0	1,310	1,121	1,383	734	797	341	7.54
No	85.5	1,757	1,513	1,808	921	847	593	1.59
Household Size								
1 Person	21.6	1,260	1,114	1,485	789	772	1114	2.99
2 Persons	30.7	1,778	1,519	1,776	962	859	759	2.30
3 Persons	15.4	1,797	1,553	1,807	997	797	518	2.51
4 Persons	13.6	2,093	1,784	1,975	1,075	963	446	3.09
5 Persons	6.1	1,994	1,723	1,905	845	995	345	4.13
6 or More Persons	3.1	2,137	1,805	1,977	1,258	890	273	7.60

NC No cases in sample.
-- Data not applicable.
Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 12. U.S. Household Characteristics by Total Square Footage, November 1987

Household Characteristics	Total Households		Total Square Footage				RSE Row Factors
			Total Heated and Unheated		Total Heated		
	(millions)	(percent)	(billions)	(percent)	(billions)	(percent)	
RSE Column Factors:	0.959	0.959	1.037	1.008	1.039	1.002	
Total Households	90.5	100.0	156.8	100.0	135.0	100.0	1.11
Census Region and Main Heating Fuel							
Northeast	19.0	21.0	36.8	23.5	30.8	22.8	2.24
Fuel Oil or Kerosene	8.0	8.9	15.4	9.8	12.8	9.4	7.84
Natural Gas	8.1	9.0	15.8	10.1	13.5	10.0	11.50
Electricity	2.1	2.3	3.7	2.3	3.0	2.2	10.39
Wood	.6	.7	1.6	1.0	1.2	.9	46.51
Other/None	.2	.2	.4	.3	.3	.2	29.59
Midwest	22.3	24.6	44.3	28.2	38.2	28.3	1.92
Natural Gas	16.6	18.3	32.2	20.5	28.3	21.0	4.65
Electricity	1.4	1.6	2.8	1.8	2.2	1.7	25.19
Fuel Oil or Kerosene	1.5	1.7	3.8	2.4	3.1	2.3	15.23
LPG	1.3	1.5	2.5	1.6	2.1	1.5	19.96
Wood	1.3	1.5	2.8	1.8	2.3	1.7	17.64
Other/None	Q	Q	Q	Q	Q	Q	99.99
South	30.9	34.1	47.1	30.1	41.6	30.8	2.33
Natural Gas	13.5	14.9	21.8	13.9	19.5	14.4	8.89
Electricity	10.6	11.7	15.6	9.9	13.8	10.2	10.39
Fuel Oil or Kerosene	2.3	2.5	3.5	2.2	3.0	2.3	12.87
LPG	2.1	2.4	2.7	1.7	2.5	1.8	20.77
Wood	1.9	2.1	3.0	1.9	2.5	1.9	19.32
Other/None	.5	.5	.5	.3	Q	Q	43.15
West	18.3	20.2	28.6	18.2	24.4	18.1	1.93
Natural Gas	11.8	13.0	19.0	12.1	16.6	12.3	4.18
Electricity	3.8	4.2	4.9	3.1	4.5	3.3	10.84
Other/None	2.7	3.0	4.7	3.0	3.4	2.5	12.97
Climate Zone							
Under 2,000 CDD and--							
Over 7,000 HDD	8.5	9.4	17.1	10.9	14.1	10.5	13.74
5,500 to 7,000 HDD	25.9	28.6	51.2	32.7	43.7	32.4	5.82
4,000 to 5,499 HDD	21.9	24.2	38.8	24.7	33.9	25.1	8.25
Under 4,000 HDD	17.8	19.7	26.1	16.7	23.0	17.0	8.69
2,000 CDD or More and --							
Under 4,000 HDD	16.3	18.0	23.6	15.0	20.3	15.0	8.36
Measured Heated Area of Residence (square feet)							
Fewer than 600	8.4	9.3	5.2	3.3	3.7	2.7	6.37
600 to 999	23.9	26.4	21.7	13.8	19.4	14.4	3.56
1,000 to 1,599	25.6	28.2	38.9	24.8	32.5	24.1	3.12
1,600 to 1,999	11.3	12.4	23.7	15.1	20.1	14.9	4.53
2,000 to 2,399	8.4	9.3	21.2	13.5	18.4	13.6	5.26
2,400 to 2,999	7.7	8.5	23.3	14.9	20.4	15.1	5.46
3,000 or More	5.3	5.8	22.8	14.5	20.6	15.3	5.21
Payment Method for Utilities							
All Paid by Household	73.7	81.5	141.5	90.3	120.1	89.0	1.59
Some Paid, Some in Rent	10.0	11.1	8.6	5.5	8.5	6.3	10.75
All Included in Rent	4.5	5.0	3.6	2.3	3.5	2.6	9.67
Other Method	2.3	2.5	3.1	2.0	2.9	2.2	12.46

See footnotes at end of table.

Table 12. U.S. Household Characteristics by Total Square Footage, November 1987 (Continued)

Household Characteristics	Total Households		Total Square Footage				RSE Row Factors
			Total Heated and Unheated		Total Heated		
	(millions)	(percent)	(billions)	(percent)	(billions)	(percent)	
RSE Column Factors:	0.959	0.959	1.037	1.008	1.039	1.002	
Status of Unit							
Owned	58.8	64.9	124.3	79.3	105.1	77.8	1.66
Rented	31.7	35.1	32.5	20.7	30.0	22.2	3.46
Housing Structure by Status of Unit							
Single-Family Detached	55.2	60.9	118.7	75.7	99.2	73.5	1.76
Owned	47.7	52.7	107.4	68.5	89.7	66.4	1.92
Rented	7.4	8.2	11.3	7.2	9.5	7.0	5.87
Single-Family Attached	5.3	5.9	10.2	6.5	8.9	6.6	12.84
Owned	3.9	4.3	8.2	5.2	7.0	5.2	13.71
Rented	1.5	1.6	2.0	1.3	1.8	1.4	20.99
Building of 2 to 4 Units	10.1	11.1	11.6	7.4	10.8	8.0	6.08
Owned	2.0	2.2	3.6	2.3	3.3	2.5	11.16
Rented	8.1	8.9	8.0	5.1	7.5	5.5	6.85
Building of 5 or More Units	14.9	16.5	11.9	7.6	11.9	8.8	7.76
Owned	1.0	1.1	1.4	.9	1.4	1.0	35.77
Rented	13.9	15.4	10.5	6.7	10.5	7.8	7.69
Mobile Home	5.1	5.6	4.4	2.8	4.3	3.2	10.80
Owned	4.3	4.7	3.7	2.4	3.7	2.7	12.20
Rented	.9	1.0	.7	.4	.7	.5	17.78
Year of Construction							
1939 or Before	21.5	23.7	38.9	24.8	33.0	24.5	4.35
1940 to 1949	8.2	9.1	13.0	8.3	11.5	8.5	5.69
1950 to 1959	13.1	14.4	22.8	14.5	19.7	14.6	4.19
1960 to 1969	16.4	18.1	28.0	17.9	24.3	18.0	5.19
1970 to 1974	9.6	10.6	15.4	9.8	13.4	9.9	6.29
1975 to 1979	10.5	11.6	19.6	12.5	17.0	12.6	6.31
1980 to 1984	7.4	8.1	12.1	7.7	10.4	7.7	8.81
1985 or After	3.9	4.3	7.0	4.5	5.8	4.3	12.51
1987 Family Income							
Less than $5,000	6.2	6.8	6.3	4.0	5.7	4.2	7.67
$5,000 to $9,999	11.5	12.7	14.3	9.1	12.7	9.4	4.79
$10,000 to $14,999	12.6	13.9	17.5	11.1	15.0	11.1	4.49
$15,000 to $19,999	9.0	10.0	13.4	8.5	11.8	8.7	4.61
$20,000 to $24,999	8.8	9.7	14.3	9.1	12.4	9.2	5.72
$25,000 to $34,999	16.2	17.9	29.4	18.7	25.0	18.5	3.35
$35,000 or $49,999	13.4	14.8	28.1	17.9	24.2	17.9	4.26
$50,000 or More	12.9	14.3	33.5	21.4	28.3	21.0	4.33
Below 100 Percent of Poverty Line	11.8	13.0	13.1	8.4	11.8	8.8	5.59
Below 125 Percent of Poverty Line	18.2	20.1	21.5	13.7	19.2	14.2	4.44
Age of Householder							
Under 25 Years	6.5	7.1	6.7	4.3	6.2	4.6	7.90
25 to 34 Years	21.5	23.8	32.3	20.6	28.2	20.9	2.99
35 to 44 Years	18.0	19.9	34.6	22.0	29.4	21.8	3.28
45 to 59 Years	18.9	20.8	38.3	24.4	32.7	24.2	3.01
60 Years and Over	25.7	28.4	45.0	28.7	38.5	28.5	2.76

See footnotes at end of table.

Table 12. U.S. Household Characteristics by Total Square Footage, November 1987 (Continued)

Household Characteristics	Total Households		Total Square Footage				RSE Row Factors
			Total Heated and Unheated		Total Heated		
	(millions)	(percent)	(billions)	(percent)	(billions)	(percent)	
RSE Column Factors:	0.959	0.959	1.037	1.008	1.039	1.002	
Race of Householder							
White	76.6	84.6	138.5	88.3	118.5	87.7	1.26
Black	10.9	12.1	14.3	9.1	13.2	9.8	8.10
Other	3.0	3.3	4.0	2.6	3.3	2.5	12.13
Householder of Hispanic Descent							
Yes	5.0	5.5	6.5	4.2	5.6	4.1	8.86
No	85.5	94.5	150.3	95.8	129.4	95.9	1.13
Household Size							
1 Person	21.6	23.9	27.2	17.4	24.1	17.8	2.14
2 Persons	30.7	33.9	54.6	34.8	46.6	34.5	2.64
3 Persons	15.4	17.0	27.6	17.6	23.9	17.7	3.03
4 Persons	13.6	15.0	28.5	18.2	24.3	18.0	3.84
5 Persons	6.1	6.8	12.2	7.8	10.6	7.8	5.83
6 or More Persons	3.1	3.5	6.7	4.3	5.6	4.2	10.00

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 13. U.S. Household Fuel Use by Census Region and Metropolitan Status, November 1987

(Million Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
		Northeast	Midwest	South	West	Metropolitan			Non-Metropolitan	
						Total	Central City	Outside Central City		
RSE Column Factors:	0.628	1.229	1.220	1.136	1.164	0.726	1.038	0.883	1.206	
Total Households	90.5	19.0	22.3	30.9	18.3	70.2	29.6	40.6	20.3	0.00
Fuels Used for Any Use (more than one fuel often used)										
Electricity	90.5	19.0	22.3	30.9	18.3	70.2	29.6	40.6	20.3	0.00
Natural Gas	57.3	11.7	17.1	15.1	13.4	48.7	23.3	25.4	8.6	3.93
Wood	24.6	3.9	5.5	8.4	6.7	17.7	4.7	13.0	6.9	5.70
Fuel Oil/Kerosene	17.4	9.1	3.1	4.6	.6	12.6	5.0	7.6	4.8	9.35
Fuel Oil	12.2	8.1	1.9	1.8	.4	9.5	3.8	5.7	2.8	12.37
Kerosene	6.2	1.4	1.4	3.2	.2	3.6	1.4	2.2	2.6	13.33
LPG (excludes outdoor grill)	7.7	1.1	2.3	3.3	1.0	3.5	.6	2.9	4.2	16.11
Coal	.9	.3	Q	Q	.1	.5	Q	.4	.4	34.26
Solar Collectors	1.2	.1	Q	.2	.8	1.0	.3	.7	.2	28.75
Main Heating Fuel and Equipment										
Natural Gas	50.0	8.1	16.6	13.5	11.8	41.8	19.5	22.3	8.1	4.91
Central Warm-Air Furnace	31.6	3.5	12.1	8.5	7.6	26.4	11.2	15.2	5.3	7.20
Steam or Hot-Water System	9.2	4.3	3.3	.8	.7	8.6	4.6	4.0	.6	14.66
Floor, Wall, or Pipeless Furnace	5.1	Q	.5	1.9	2.6	4.3	2.1	2.3	.8	12.98
Room Heater/Other	4.0	.2	.6	2.3	.8	2.5	1.7	.9	1.5	15.15
Electricity	17.9	2.1	1.4	10.6	3.8	14.5	5.6	9.0	3.4	10.65
Built-In Electric Units	5.4	1.2	.7	1.8	1.8	4.1	1.8	2.4	1.3	16.35
Central Warm-Air Furnace	6.9	Q	.4	5.1	1.1	5.8	2.3	3.5	1.1	17.48
Heat Pump	4.5	.6	.2	3.0	.7	3.8	1.3	2.5	.8	19.65
Other	1.1	Q	Q	.6	.3	.8	.3	.6	.2	25.03
Fuel Oil	10.9	7.7	1.5	1.4	Q	8.7	3.5	5.2	2.2	10.43
Steam or Hot-Water System	6.3	5.9	Q	.3	Q	5.9	2.6	3.3	.5	13.87
Central Warm-Air Furnace	4.0	1.7	1.2	.9	Q	2.6	.8	1.8	1.4	14.90
Other	.5	Q	.2	.2	Q	.2	Q	Q	.3	34.07
Wood	5.1	.6	1.3	1.9	1.2	2.1	.3	1.8	3.0	18.51
Heating Stove	4.1	.5	.9	1.7	1.1	1.6	.2	1.4	2.5	18.82
Other	1.0	Q	.5	.2	.2	.5	Q	.4	.5	26.86
LPG	4.2	Q	1.3	2.1	.6	1.8	.3	1.5	2.3	19.33
Central Warm-Air Furnace	2.4	Q	1.1	1.0	.3	1.0	Q	.8	1.4	22.64
Room Heater	.9	Q	Q	.8	NC	.4	Q	.3	.5	30.36
Other	.8	NC	.2	.3	.3	.4	Q	.4	.4	39.24
Kerosene	1.3	Q	Q	.9	Q	.7	Q	.5	.6	30.19
Other	.5	Q	Q	Q	Q	.2	Q	.2	Q	46.17
None	.7	NC	NC	.3	.5	.4	.2	Q	.3	24.32
Use Secondary Heating Fuel (more than one may be used)										
Yes	37.4	6.1	8.6	13.8	8.9	27.8	9.5	18.2	9.6	4.02
Wood	19.2	3.3	4.1	6.3	5.5	15.5	4.4	11.1	3.7	6.15
Electricity	12.4	1.7	2.5	4.8	3.4	8.8	3.4	5.4	3.6	6.41
Natural Gas	2.9	.4	.6	1.2	.7	2.2	1.1	1.0	.7	16.11
Fuel Oil/Kerosene	5.9	1.3	1.6	2.7	.2	3.6	1.4	2.2	2.2	14.33
Fuel Oil	1.1	.4	.4	Q	Q	.7	Q	.5	.4	32.10
Kerosene	4.9	1.0	1.3	2.4	.2	2.9	1.2	1.7	1.9	13.32
LPG	1.0	Q	.5	.4	Q	.4	Q	.3	.6	29.89
Other	.5	.2	Q	Q	.2	.4	Q	.3	Q	24.70
No	53.2	12.9	13.7	17.1	9.4	42.5	20.1	22.4	10.7	2.78

See footnotes at end of table.

Table 13. U.S. Household Fuel Use by Census Region and Metropolitan Status, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
						Metropolitan				
		Northeast	Midwest	South	West	Total	Central City	Outside Central City	Non-Metropolitan	
RSE Column Factors:	0.628	1.229	1.220	1.136	1.164	0.726	1.038	0.883	1.206	
Use Secondary Heating Equipment (more than one may be used)										
Yes	37.4	6.1	8.6	13.8	8.9	27.8	9.5	18.2	9.6	4.02
Fireplace	15.1	2.1	3.1	5.3	4.6	12.9	4.1	8.9	2.1	8.15
Portable Electric Heater	8.2	1.2	2.0	3.0	2.1	6.1	2.5	3.7	2.1	8.15
Wood or Coal Heating Stove	4.8	1.3	1.0	1.2	1.3	3.1	.7	2.4	1.6	12.39
Built-In Electric Units	3.6	.5	.5	1.4	1.2	2.3	.9	1.4	1.2	13.62
Portable Kerosene Heater	4.8	.9	1.3	2.4	.2	2.9	1.2	1.7	1.9	13.98
Central Warm-Air Furnace	2.5	Q	1.0	.7	.5	1.4	.3	1.1	1.1	22.13
Oil or Gas Room Heater	1.7	.2	.4	1.0	.2	1.0	.3	.7	.7	21.25
Cooking Stove	1.3	.2	.3	.6	.2	1.0	.6	.4	.4	24.35
Heat Pump, Steam or Hot-Water System, Pipeless Furnace, or Other	1.9	.4	.3	.8	.4	1.4	.5	1.0	.4	24.80
No	53.2	12.9	13.7	17.1	9.4	42.5	20.1	22.4	10.7	2.78
Fuel Combinations										
Use Natural Gas for Main Heat	50.0	8.1	16.6	13.5	11.8	41.8	19.5	22.3	8.1	4.91
Use Natural Gas to Heat Water										
and Have A/C	28.5	4.3	10.7	9.4	4.1	24.4	10.4	14.0	4.1	7.29
and Lack A/C	16.3	3.5	4.1	1.9	6.8	14.2	7.6	6.6	2.1	9.46
Use Electricity to Heat Water										
and Have A/C	3.3	.2	1.1	2.0	Q	2.0	1.0	1.0	1.3	16.36
and Lack A/C	1.6	Q	.6	.3	.6	1.0	.4	.6	.6	19.32
Other	.2	Q	Q	Q	.2	.2	Q	Q	Q	34.82
Use Electricity for Main Heat	17.9	2.1	1.4	10.6	3.8	14.5	5.6	9.0	3.4	10.65
Use Electricity to Heat Water										
and Have A/C	12.4	1.6	1.1	8.6	1.2	9.8	3.6	6.2	2.6	12.63
and Lack A/C	3.0	.5	.3	.7	1.6	2.2	.7	1.5	.8	19.32
Other	2.5	Q	Q	1.3	1.1	2.5	1.2	1.3	Q	26.55
Use Fuel Oil for Main Heat	10.9	7.7	1.5	1.4	Q	8.7	3.5	5.2	2.2	10.43
Use Fuel Oil to Heat Water										
and Have A/C	2.6	2.6	Q	Q	NC	2.5	.9	1.6	.1	24.61
and Lack A/C	2.5	2.4	Q	Q	NC	2.2	1.2	1.1	.3	15.05
Use Electricity to Heat Water										
and Have A/C	2.0	.5	.6	.8	Q	1.3	.5	.8	.7	18.76
and Lack A/C	2.1	.8	.7	.3	Q	1.1	.2	.9	1.0	21.09
Other	1.7	1.3	.2	Q	Q	1.6	.7	.9	Q	13.84
Use Wood for Main Heat	5.1	.6	1.3	1.9	1.2	2.1	.3	1.8	3.0	18.51
Use LPG for Main Heat	4.2	Q	1.3	2.1	.6	1.8	.3	1.5	2.3	19.33
Use Kerosene for Main Heat	1.3	Q	Q	.9	Q	.7	Q	.5	.6	30.19
Use Coal for Main Heat	.4	Q	Q	Q	Q	.1	NC	.1	Q	51.17
No Heating Fuel/Other Fuel	.8	NC	Q	.3	.5	.4	.2	Q	.4	24.04
Water-Heating Fuel										
Natural Gas	49.3	9.0	15.3	12.6	12.4	42.8	20.1	22.8	6.4	4.67
Electricity	32.0	4.5	5.8	16.7	5.0	20.5	7.0	13.5	11.4	6.81
Fuel Oil or Kerosene	5.3	5.1	Q	Q	Q	4.9	2.1	2.7	.4	14.59
LPG	3.0	.3	1.1	1.2	.5	1.4	.3	1.2	1.6	24.51
Wood	.2	Q	Q	Q	Q	Q	NC	Q	.1	37.93
Solar	.6	Q	Q	Q	.4	.4	Q	.3	Q	29.59
Other/None	.3	Q	Q	.2	NC	Q	Q	Q	Q	41.25
Main Cooking Fuel										
Electricity	52.6	9.2	12.1	20.7	10.6	39.1	13.4	25.7	13.5	3.78
Natural Gas	32.6	8.9	8.9	7.8	7.0	28.6	15.8	12.7	4.0	6.01
LPG	5.0	.9	1.3	2.2	.7	2.4	.3	2.0	2.6	18.35
Other/None	.4	Q	Q	.3	Q	.2	Q	Q	Q	37.79

See footnotes at end of table.

Table 13. U.S. Household Fuel Use by Census Region and Metropolitan Status, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
						Metropolitan				
		Northeast	Midwest	South	West	Total	Central City	Outside Central City	Non-Metropolitan	
RSE Column Factors:	0.628	1.229	1.220	1.136	1.164	0.726	1.038	0.883	1.206	
Clothes-Drying Fuel										
With Clothes Dryer	59.6	11.3	16.2	20.1	12.0	45.5	15.5	30.0	14.1	2.64
Electricity	45.9	8.1	11.4	17.9	8.6	33.4	11.1	22.3	12.6	3.53
Natural Gas	12.9	3.1	4.3	2.1	3.4	11.7	4.3	7.4	1.2	9.09
LPG	.8	Q	.5	Q	.1	.5	Q	.4	.4	33.01
Without Clothes Dryer	31.0	7.8	6.1	10.8	6.3	24.8	14.1	10.6	6.2	5.04
Air Conditioning										
Yes	57.6	10.4	15.1	25.4	6.7	46.0	18.2	27.7	11.6	3.53
Central Unit	30.7	3.0	7.2	16.2	4.3	25.7	9.2	16.6	4.9	5.61
Electric	30.1	2.9	7.1	16.0	4.0	25.2	8.7	16.4	4.9	5.44
Individual Room Units[1]	26.9	7.4	7.9	9.2	2.4	20.2	9.1	11.2	6.7	5.88
One Unit	18.4	4.2	6.3	5.8	2.1	13.2	5.9	7.3	5.2	6.96
Two or More Units	8.6	3.2	1.6	3.4	.4	7.0	3.2	3.8	1.5	9.66
No	32.9	8.7	7.2	5.5	11.6	24.3	11.4	12.9	8.6	5.91
Number of Rooms That Can Be Air Conditioned										
All	40.8	4.9	9.7	20.9	5.4	32.8	12.8	20.1	8.0	4.75
Some	16.8	5.5	5.4	4.5	1.4	13.1	5.5	7.7	3.7	6.94
None	32.9	8.7	7.2	5.5	11.6	24.3	11.4	12.9	8.6	5.91
Wood Burned in Past 12 Months										
Yes	22.5	3.7	5.2	7.5	6.0	15.9	4.2	11.8	6.5	5.80
One-Third Cord or Less	8.6	1.3	1.9	2.8	2.6	7.5	2.3	5.2	1.1	9.57
More than One-Third Cord	13.8	2.4	3.2	4.8	3.4	8.5	1.9	6.6	5.4	9.18
No	68.1	15.3	17.1	23.4	12.3	54.3	25.5	28.8	13.8	1.86
Household Owns or Has Regular Use of a Vehicle										
Yes	79.4	15.2	19.9	27.6	16.8	61.4	23.2	38.2	18.1	1.20
No	11.1	3.9	2.4	3.3	1.5	8.9	6.4	2.4	2.2	7.31
Total Single-Family Units and Mobile Homes	65.6	11.8	16.8	24.5	12.5	47.5	16.7	30.8	18.1	2.75
Availability of Natural Gas in the Neighborhood (single-family units and mobile homes)										
Uses Any Natural Gas	38.8	6.3	12.0	11.6	8.9	31.6	12.9	18.7	7.2	6.07
Does Not Use Natural Gas	26.7	5.5	4.8	12.9	3.5	15.9	3.8	12.1	10.9	8.02
Gas Available	5.8	1.3	1.1	2.6	.8	4.4	1.6	2.7	1.4	13.80
(percent)	21.6	23.3	23.1	19.9	23.3	27.6	42.9	22.8	12.9	12.85
Gas Not Available	21.0	4.2	3.7	10.3	2.7	11.5	2.2	9.3	9.5	9.47
(percent)	78.4	76.7	76.9	80.1	76.7	72.4	57.1	77.2	87.1	3.94

See footnotes at end of table.

Table 13. U.S. Household Fuel Use by Census Region and Metropolitan Status, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
		Northeast	Midwest	South	West	Metropolitan			Non-Metropolitan	
						Total	Central City	Outside Central City		
RSE Column Factors:	0.628	1.229	1.220	1.136	1.164	0.726	1.038	0.883	1.206	
Total Households in 2-or-More-Unit Buildings	25.0	7.2	5.4	6.4	5.8	22.8	13.0	9.8	2.2	7.41
Central Main Heating System for the Building (2-or-more-unit buildings)										
Yes	10.2	4.9	3.1	1.5	.7	9.5	6.0	3.5	.7	12.18
No/No Main Heating System	14.8	2.4	2.3	5.0	5.1	13.3	7.0	6.3	1.5	10.20
Central Water-Heating System for the Building (2-or-more-unit buildings)										
Yes	13.6	5.1	3.4	2.3	2.8	12.9	7.9	5.0	.7	12.67
No/No Water-Heating Fuel No Hot Running Water	11.3	2.1	2.1	4.1	3.0	9.9	5.1	4.8	1.4	12.79
Central Air Conditioning System for the Building (2-or-more-unit buildings)										
Yes	1.0	Q	Q	.5	Q	1.0	.9	Q	Q	32.21
No	14.4	3.6	3.9	4.9	2.1	13.2	6.5	6.7	1.2	11.89
No Air Conditioning	9.6	3.5	1.5	1.1	3.5	8.6	5.5	3.1	1.0	9.44

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 14. U.S. Household Fuel Use by Census Region and Metropolitan Status, November 1987

(Percent of Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
						Metropolitan				
		Northeast	Midwest	South	West	Total	Central City	Outside Central City	Non-Metropolitan	
RSE Column Factors:	0.631	1.240	1.203	1.132	1.164	0.727	1.034	0.883	1.214	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Fuels Used for Any Use										
(more than one fuel often used)										
Electricity	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0	99.9	NE
Natural Gas	63.3	61.3	76.9	49.0	73.0	69.4	78.7	62.5	42.4	3.93
Wood	27.1	20.4	24.8	27.3	36.7	25.2	15.9	32.0	33.8	5.70
Fuel Oil/Kerosene	19.2	47.8	13.8	15.0	3.2	18.0	16.9	18.8	23.4	9.35
Fuel Oil	13.5	42.5	8.8	6.0	1.9	13.5	12.7	14.1	13.6	12.37
Kerosene	6.8	7.1	6.3	10.2	1.4	5.1	4.7	5.5	12.7	13.33
LPG (excludes outdoor grill)	8.5	5.8	10.2	10.8	5.2	5.0	1.9	7.3	20.5	16.11
Coal	.9	1.6	Q	Q	.7	.7	Q	1.0	1.9	34.13
Solar Collectors	1.3	.6	Q	.7	4.2	1.4	.9	1.7	1.0	28.70
Main Heating Fuel and Equipment										
Natural Gas	55.2	42.6	74.4	43.8	64.3	59.6	65.9	55.0	40.1	4.91
Central Warm-Air Furnace	35.0	18.3	54.5	27.4	41.3	37.5	37.6	37.4	26.1	7.20
Steam or Hot-Water System	10.2	22.8	14.9	2.7	4.0	12.3	15.6	9.8	3.0	14.66
Floor, Wall, or Pipeless Furnace	5.6	Q	2.2	6.0	14.4	6.2	7.0	5.5	3.8	12.99
Room Heater/Other	4.4	1.0	2.8	7.6	4.5	3.6	5.6	2.1	7.2	15.15
Electricity	19.8	11.0	6.5	34.2	20.9	20.7	18.8	22.1	16.7	10.65
Built-In Electric Units	6.0	6.2	2.9	5.9	9.6	5.9	5.9	5.8	6.4	16.35
Central Warm-Air Furnace	7.6	Q	2.0	16.5	5.8	8.2	7.6	8.7	5.4	17.50
Heat Pump	5.0	3.3	1.0	9.7	3.9	5.4	4.3	6.2	3.7	19.65
Other	1.2	Q	Q	2.0	1.5	1.2	1.0	1.4	1.2	25.02
Fuel Oil	12.0	40.3	6.6	4.5	Q	12.3	11.7	12.8	10.8	10.43
Steam or Hot-Water System	7.0	30.8	Q	1.0	Q	8.4	8.6	8.2	2.3	13.84
Central Warm-Air Furnace	4.4	9.1	5.2	2.8	Q	3.7	2.7	4.5	6.9	14.90
Other	.5	Q	.7	.8	Q	.2	Q	Q	1.5	34.10
Wood	5.6	3.2	5.9	6.2	6.8	2.9	1.0	4.4	14.8	18.51
Heating Stove	4.5	2.5	3.8	5.5	5.9	2.3	.7	3.4	12.5	18.82
Other	1.1	Q	2.1	.6	.9	.7	Q	1.0	2.4	26.88
LPG	4.6	Q	6.0	6.9	3.2	2.6	1.1	3.7	11.5	19.35
Central Warm-Air Furnace	2.7	Q	5.0	3.2	1.5	1.5	Q	2.0	6.9	22.66
Room Heater	1.0	Q	Q	2.6	NC	.5	Q	.7	2.7	30.31
Other	.9	NC	.7	1.1	1.7	.6	Q	1.0	1.9	39.27
Kerosene	1.5	Q	Q	2.8	Q	1.0	Q	1.2	3.0	30.14
Other	.5	Q	Q	Q	Q	.3	Q	.5	Q	46.08
None	.8	NC	NC	.8	2.6	.6	.8	Q	1.7	24.30
Use Secondary Heating Fuel										
(more than one may be used)										
Yes	41.3	32.0	38.5	44.7	48.5	39.5	32.1	44.9	47.4	4.02
Wood	21.2	17.1	18.5	20.5	29.9	22.1	14.9	27.4	18.0	6.15
Electricity	13.7	8.9	11.3	15.5	18.5	12.5	11.5	13.3	17.8	6.41
Natural Gas	3.2	2.1	2.8	3.8	3.8	3.1	3.8	2.6	3.4	16.11
Fuel Oil/Kerosene	6.5	7.0	7.3	8.6	1.3	5.2	4.8	5.4	11.0	14.33
Fuel Oil	1.3	2.1	1.6	Q	Q	1.0	Q	1.2	2.0	32.06
Kerosene	5.4	5.2	5.8	7.7	1.2	4.2	4.0	4.3	9.6	13.32
LPG	1.1	Q	2.0	1.4	Q	.5	Q	.8	3.0	29.91
Other	.6	1.2	Q	Q	.9	.6	Q	.8	Q	24.62
No	58.7	68.0	61.5	55.3	51.5	60.5	67.9	55.1	52.6	2.78

See footnotes at end of table.

Table 14. U.S. Household Fuel Use by Census Region and Metropolitan Status, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
		Northeast	Midwest	South	West	Metropolitan			Non-Metropolitan	
						Total	Central City	Outside Central City		
RSE Column Factors:	0.631	1.240	1.203	1.132	1.164	0.727	1.034	0.883	1.214	
Use Secondary Heating Equipment (more than one may be used)										
Yes	41.3	32.0	38.5	44.7	48.5	39.5	32.1	44.9	47.4	4.02
Fireplace	16.6	11.0	13.8	17.1	25.3	18.4	13.7	21.8	10.5	8.15
Portable Electric Heater	9.1	6.3	8.9	9.7	11.2	8.8	8.3	9.1	10.3	8.15
Wood or Coal Heating Stove	5.3	6.6	4.7	3.9	6.9	4.5	2.4	6.0	8.1	12.39
Built-In Electric Units	4.0	2.8	2.1	4.5	6.5	3.3	3.1	3.5	6.1	13.62
Portable Kerosene Heater	5.3	4.9	5.7	7.7	1.2	4.2	4.0	4.2	9.2	13.98
Central Warm-Air Furnace	2.7	Q	4.4	2.2	2.5	2.0	1.1	2.7	5.2	22.15
Oil or Gas Room Heater	1.9	.9	2.0	3.1	.8	1.5	1.0	1.8	3.5	21.25
Cooking Stove	1.5	.9	1.3	2.1	1.3	1.4	2.0	.9	1.9	24.35
Heat Pump, Steam or Hot-Water System, Pipeless Furnace, or Other	2.0	2.0	1.2	2.7	1.9	2.0	1.6	2.4	2.1	24.80
No	58.7	68.0	61.5	55.3	51.5	60.5	67.9	55.1	52.6	2.78
Fuel Combinations										
Use Natural Gas for Main Heat	55.2	42.6	74.4	43.8	64.3	59.6	65.9	55.0	40.1	4.91
Use Natural Gas to Heat Water and Have A/C	31.5	22.5	48.3	30.3	22.6	34.8	35.1	34.6	20.2	7.29
and Lack A/C	18.0	18.2	18.4	6.1	37.3	20.2	25.7	16.1	10.4	9.46
Use Electricity to Heat Water and Have A/C	3.7	1.1	4.9	6.3	Q	2.9	3.3	2.5	6.6	16.36
and Lack A/C	1.8	Q	2.8	.9	3.1	1.5	1.4	1.5	2.7	19.34
Other	.3	Q	Q	Q	.8	.3	Q	Q	Q	34.74
Use Electricity for Main Heat	19.8	11.0	6.5	34.2	20.9	20.7	18.8	22.1	16.7	10.65
Use Electricity to Heat Water and Have A/C	13.7	8.4	4.9	27.7	6.3	14.0	12.2	15.3	12.6	12.63
and Lack A/C	3.3	2.4	1.3	2.2	8.5	3.1	2.4	3.6	3.9	19.32
Other	2.8	Q	Q	4.2	6.0	3.6	4.2	3.1	Q	26.56
Use Fuel Oil for Main Heat	12.0	40.3	6.6	4.5	Q	12.3	11.7	12.8	10.8	10.43
Use Fuel Oil to Heat Water and Have A/C	2.9	13.5	Q	Q	NC	3.6	3.0	4.0	.5	24.54
and Lack A/C	2.8	12.7	Q	Q	NC	3.2	4.0	2.6	1.3	15.00
Use Electricity to Heat Water and Have A/C	2.2	2.6	2.7	2.7	Q	1.8	1.6	1.9	3.5	18.76
and Lack A/C	2.3	4.5	3.0	1.1	Q	1.5	.8	2.1	5.0	21.09
Other	1.8	6.9	.8	Q	Q	2.2	2.3	2.2	Q	13.84
Use Wood for Main Heat	5.6	3.2	5.9	6.2	6.8	2.9	1.0	4.4	14.8	18.51
Use LPG for Main Heat	4.6	Q	6.0	6.9	3.2	2.6	1.1	3.7	11.5	19.35
Use Kerosene for Main Heat	1.5	Q	Q	2.8	Q	1.0	Q	1.2	3.0	30.14
Use Coal for Main Heat	.5	Q	Q	Q	Q	.2	NC	.4	Q	51.07
No Heating Fuel/Other Fuel	.9	NC	Q	.8	2.7	.6	.8	Q	1.8	24.02
Water-Heating Fuel										
Natural Gas	54.4	47.3	68.6	40.7	67.6	61.0	67.8	56.0	31.6	4.67
Electricity	35.3	23.7	26.0	54.0	27.1	29.2	23.7	33.3	56.4	6.81
Fuel Oil or Kerosene	5.8	26.8	Q	Q	Q	6.9	7.2	6.7	2.0	14.55
LPG	3.3	1.4	4.8	3.8	2.8	2.0	.9	2.9	7.8	24.51
Wood	.2	Q	Q	Q	Q	Q	NC	Q	.6	37.72
Solar	.6	Q	Q	Q	2.3	.6	Q	.7	Q	29.55
Other/None	.3	Q	Q	.5	NC	Q	Q	Q	Q	41.25
Main Cooking Fuel										
Electricity	58.1	48.2	54.4	66.8	58.0	55.6	45.1	63.3	66.5	3.78
Natural Gas	36.0	46.8	39.8	25.3	38.3	40.7	53.4	31.3	19.9	6.01
LPG	5.5	4.8	5.7	7.1	3.6	3.4	1.1	5.0	13.0	18.35
Other/None	.4	Q	Q	.8	Q	.3	Q	Q	Q	37.75

See footnotes at end of table.

Table 14. U.S. Household Fuel Use by Census Region and Metropolitan Status, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
						Metropolitan			Non-Metropolitan	
		Northeast	Midwest	South	West	Total	Central City	Outside Central City		
RSE Column Factors:	0.631	1.240	1.203	1.132	1.164	0.727	1.034	0.883	1.214	
Clothes-Drying Fuel										
With Clothes Dryer	65.8	59.2	72.6	65.1	65.6	64.7	52.3	73.8	69.5	2.64
Electricity	50.7	42.4	51.2	57.9	46.7	47.5	37.5	54.8	61.9	3.53
Natural Gas	14.3	16.5	19.5	6.7	18.3	16.7	14.6	18.2	5.9	9.09
LPG	.9	Q	2.0	Q	.7	.7	Q	.9	1.9	33.01
Without Clothes Dryer	34.2	40.8	27.4	34.9	34.4	35.3	47.7	26.2	30.5	5.04
Air Conditioning										
Yes	63.6	54.5	67.9	82.1	36.8	65.4	61.5	68.3	57.4	3.53
Central Unit	33.9	15.7	32.4	52.3	23.7	36.6	30.9	40.8	24.4	5.61
Electric	33.2	15.3	31.9	51.8	22.0	35.8	29.4	40.5	24.2	5.44
Individual Room Units[1]	29.8	38.8	35.5	29.9	13.2	28.8	30.5	27.6	33.0	5.88
One Unit	20.3	22.2	28.1	18.9	11.2	18.8	19.8	18.1	25.5	6.96
Two or More Units	9.4	16.6	7.3	11.0	1.9	10.0	10.8	9.5	7.5	9.66
No	36.4	45.5	32.1	17.9	63.2	34.6	38.5	31.7	42.6	5.91
Number of Rooms That Can Be Air Conditioned										
All	45.1	25.5	43.5	67.7	29.3	46.7	43.1	49.4	39.3	4.75
Some	18.6	29.0	24.4	14.5	7.5	18.7	18.4	18.9	18.1	6.94
None	36.4	45.5	32.1	17.9	63.2	34.6	38.5	31.7	42.6	5.91
Wood Burned in Past 12 Months										
Yes	24.8	19.6	23.1	24.4	32.9	22.7	14.0	29.0	32.2	5.80
One-Third Cord or Less	9.5	7.0	8.6	9.0	14.1	10.7	7.6	12.9	5.6	9.57
More than One-Third Cord	15.3	12.6	14.5	15.4	18.8	12.0	6.4	16.1	26.6	9.18
No	75.2	80.4	76.9	75.6	67.1	77.3	86.0	71.0	67.8	1.86
Household Owns or Has Regular Use of a Vehicle										
Yes	87.7	79.6	89.2	89.3	91.6	87.4	78.3	94.0	89.0	1.20
No	12.3	20.4	10.8	10.7	8.4	12.6	21.7	6.0	11.0	7.31
Total Single-Family Units and Mobile Homes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Availability of Natural Gas in the Neighborhood (single-family units and mobile homes)										
Uses Any Natural Gas	59.2	53.3	71.3	47.4	71.7	66.6	77.2	60.9	40.0	4.86
Does Not Use Natural Gas	40.8	46.7	28.7	52.6	28.3	33.4	22.8	39.1	60.0	7.73
Gas Available	8.8	10.9	6.6	10.4	6.6	9.2	9.8	8.9	7.7	13.18
Gas Not Available	32.0	35.8	22.1	42.1	21.7	24.2	13.0	30.2	52.3	9.45

See footnotes at end of table.

Table 14. U.S. Household Fuel Use by Census Region and Metropolitan Status, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
		Northeast	Midwest	South	West	Metropolitan			Non-Metropolitan	
						Total	Central City	Outside Central City		
RSE Column Factors:	0.631	1.240	1.203	1.132	1.164	0.727	1.034	0.883	1.214	
Total Households in 2-or-More-Unit Buildings	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Central Main Heating System for the Building (2-or-more-unit buildings)										
Yes	40.8	67.0	57.9	22.7	12.6	41.7	46.2	35.7	32.2	10.49
No/No Main Heating System	59.2	33.0	42.1	77.3	87.4	58.3	53.8	64.3	67.8	6.48
Central Water-Heating System for the Building (2-or-more-unit buildings)										
Yes	54.6	70.4	62.0	36.4	48.2	56.6	60.8	50.9	34.2	9.45
No/No Water-Heating Fuel No Hot Running Water	45.4	29.6	38.0	63.6	51.8	43.4	39.2	49.1	65.8	10.56
Central Air Conditioning System for the Building (2-or-more-unit buildings)										
Yes	3.9	Q	Q	8.1	Q	4.2	7.2	Q	Q	32.66
No	57.8	49.7	71.5	75.4	35.8	58.1	50.4	68.3	54.7	6.46
No Air Conditioning	38.3	48.7	27.4	16.5	59.7	37.7	42.4	31.5	44.8	9.99

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

NE RSE row factor not estimated because RSE's for all statistics in this row are between 0.0 and 1.0 percent.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 15. U.S. Household Fuel Use by Family Income, November 1987

(Million Households)

Household Characteristics	Total	1987 Family Income								Below 100 Percent of Poverty Line	Below 125 Percent of Poverty Line	RSE Row Factors
		Less than $5,000	$5,000 to $9,999	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 or More			
RSE Column Factors:	0.486	1.523	1.113	1.027	1.082	1.136	0.862	0.968	1.092	1.121	0.942	
Total Households	90.5	6.2	11.5	12.6	9.0	8.8	16.2	13.4	12.9	11.8	18.2	4.22
Fuels Used for Any Use (more than one fuel often used)												
Electricity	90.5	6.2	11.5	12.6	9.0	8.8	16.2	13.4	12.9	11.8	18.2	4.21
Natural Gas	57.3	3.8	7.4	8.0	5.6	5.3	9.9	8.3	9.0	7.4	11.5	5.30
Wood	24.6	.8	1.5	2.2	1.6	2.3	4.5	5.4	6.3	1.8	2.7	9.07
Fuel Oil/Kerosene	17.4	1.0	2.1	2.6	1.7	1.8	3.5	2.4	2.2	2.0	3.2	10.33
Fuel Oil	12.2	.5	1.5	1.8	1.2	1.2	2.5	1.7	1.8	1.0	2.0	12.18
Kerosene	6.2	.5	.7	1.1	.6	.7	1.2	.8	.6	1.0	1.4	16.74
LPG (excludes outdoor grill)	7.7	.9	1.4	1.3	.7	.8	1.3	.6	.6	1.6	2.5	17.28
Coal	.9	.1	Q	Q	Q	Q	.2	.2	Q	.2	.2	38.75
Solar Collectors	1.2	Q	Q	Q	.2	Q	.3	.2	.4	Q	Q	33.85
Main Heating Fuel and Equipment												
Natural Gas	50.0	3.2	6.5	7.0	5.0	4.4	8.6	7.4	7.8	6.4	10.1	5.95
Central Warm-Air Furnace	31.6	1.4	3.4	3.7	2.9	2.7	6.0	5.7	6.0	2.7	4.5	8.00
Steam or Hot-Water System	9.2	.6	1.2	1.4	1.0	1.0	1.6	1.1	1.4	1.1	1.9	13.87
Floor, Wall, or Pipeless Furnace	5.1	.5	.9	1.0	.7	.5	.7	.5	.2	1.1	1.6	17.51
Room Heater/Other	4.0	.7	1.1	.9	.5	.3	.3	Q	Q	1.5	2.1	16.16
Electricity	17.9	1.2	1.8	2.0	1.8	1.8	3.5	3.1	2.7	2.0	3.0	12.60
Built-In Electric Units	5.4	.5	.7	.7	.6	.6	1.0	.9	.6	.9	1.3	19.19
Central Warm-Air Furnace	6.9	.3	.6	.8	.7	.8	1.3	1.2	1.1	.5	.8	21.62
Heat Pump	4.5	.2	.3	.4	.3	.3	1.1	1.0	1.0	.3	.4	24.11
Other	1.1	.2	.3	.1	.2	Q	Q	Q	Q	.3	.5	30.29
Fuel Oil	10.9	.5	1.4	1.5	1.1	1.1	2.2	1.6	1.6	.9	1.7	12.16
Steam or Hot-Water System	6.3	.2	.9	.7	.6	.6	1.3	1.0	1.1	.5	1.0	16.19
Central Warm-Air Furnace	4.0	.2	.4	.7	.4	.4	.9	.6	.5	.3	.6	18.81
Other	.5	Q	.1	.1	Q	Q	Q	Q	Q	Q	.2	38.88
Wood	5.1	.4	.7	.7	.4	.7	.9	.8	.5	.9	1.3	19.61
Heating Stove	4.1	.3	.6	.6	.3	.6	.7	.6	.4	.7	1.1	21.04
Other	1.0	Q	Q	Q	Q	Q	.2	.2	Q	.2	.2	33.98
LPG	4.2	.6	.6	1.0	.4	.4	.6	.3	.2	1.0	1.3	21.95
Central Warm-Air Furnace	2.4	.2	.3	.5	.3	.3	.4	.2	.2	.4	.6	26.42
Room Heater	.9	.4	.1	Q	Q	Q	Q	Q	NC	.4	.5	36.25
Other	.8	Q	Q	Q	Q	Q	Q	Q	Q	.1	.2	38.91
Kerosene	1.3	.2	.3	.3	Q	.2	Q	Q	Q	.4	.5	27.47
Other	.5	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	74.97
None	.7	Q	.1	.1	.1	Q	.2	Q	Q	Q	Q	36.79
Use Secondary Heating Fuel (more than one may be used)												
Yes	37.4	1.8	3.3	4.2	3.0	3.4	6.8	7.1	7.8	3.7	5.6	7.19
Wood	19.2	.4	.7	1.4	1.1	1.6	3.5	4.6	5.9	.8	1.3	10.67
Electricity	12.4	.9	1.7	1.7	1.3	1.0	2.0	1.9	1.9	1.8	2.6	10.65
Natural Gas	2.9	.2	.5	.4	.2	.5	.4	.3	.5	.4	.7	23.11
Fuel Oil/Kerosene	5.9	.3	.5	.9	.6	.6	1.3	.9	.7	.7	1.0	17.91
Fuel Oil	1.1	Q	Q	.2	Q	Q	.3	.1	.1	Q	Q	40.87
Kerosene	4.9	.3	.4	.7	.5	.5	1.1	.8	.6	.6	.9	18.04
LPG	1.0	Q	Q	Q	Q	Q	.3	.1	Q	.2	.3	32.24
Other	.5	Q	Q	Q	Q	Q	Q	.2	Q	Q	Q	30.24
No	53.2	4.4	8.2	8.4	6.0	5.4	9.4	6.3	5.1	8.1	12.7	5.07

See footnotes at end of table.

Table 15. U.S. Household Fuel Use by Family Income, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	1987 Family Income								Below 100 Percent of Poverty Line	Below 125 Percent of Poverty Line	RSE Row Factors
		Less than $5,000	$5,000 to $9,999	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 or More			
RSE Column Factors:	0.486	1.523	1.113	1.027	1.082	1.136	0.862	0.968	1.092	1.121	0.942	
Use Secondary Heating Equipment (more than one may be used)												
Yes	37.4	1.8	3.3	4.2	3.0	3.4	6.8	7.1	7.8	3.7	5.6	7.19
Fireplace	15.1	.3	.5	.7	.8	1.1	2.6	3.7	5.4	.4	.7	13.10
Portable Electric Heater	8.2	.7	1.3	1.3	.9	.8	1.3	1.1	.9	1.5	2.0	12.57
Wood or Coal Heating Stove	4.8	.2	.3	.7	.4	.4	1.0	1.1	.8	.3	.6	18.25
Built-In Electric Units	3.6	Q	.4	.4	.3	.3	.6	.7	.8	.3	.5	21.84
Portable Kerosene Heater	4.8	.3	.4	.7	.5	.5	1.0	.8	.6	.7	.9	19.30
Central Warm-Air Furnace	2.5	Q	.2	.2	.3	.5	.4	.3	.4	.2	.3	27.34
Oil or Gas Room Heater	1.7	.2	.2	.3	Q	Q	.4	.3	.2	.3	.4	24.22
Cooking Stove	1.3	.2	.3	.3	.2	.1	.2	Q	Q	.4	.6	25.40
Heat Pump, Steam or Hot-Water System, Pipeless Furnace, or Other	1.9	Q	.2	Q	Q	.2	.4	.5	.2	Q	.2	30.56
No	53.2	4.4	8.2	8.4	6.0	5.4	9.4	6.3	5.1	8.1	12.7	5.07
Fuel Combinations												
Use Natural Gas for Main Heat	50.0	3.2	6.5	7.0	5.0	4.4	8.6	7.4	7.8	6.4	10.1	5.95
Use Natural Gas to Heat Water and Have A/C	28.5	1.2	2.9	3.6	2.7	2.7	5.3	4.8	5.4	2.2	4.1	8.84
and Lack A/C	16.3	1.7	2.9	2.5	1.7	1.3	2.4	2.0	1.8	3.4	4.8	9.21
Use Electricity to Heat Water and Have A/C	3.3	.2	.4	.5	.5	.3	.6	.5	.4	.4	.7	22.18
and Lack A/C	1.6	.1	.3	.4	.2	Q	.2	Q	.2	.3	.5	23.84
Other	.2	Q	NC	Q	NC	Q	Q	Q	Q	Q	Q	52.00
Use Electricity for Main Heat	17.9	1.2	1.8	2.0	1.8	1.8	3.5	3.1	2.7	2.0	3.0	12.63
Use Electricity to Heat Water and Have A/C	12.4	.6	1.0	1.3	1.4	1.2	2.7	2.4	1.8	1.1	1.6	14.71
and Lack A/C	3.0	.2	.5	.4	.4	.3	.4	.5	.2	.5	.7	24.70
Other	2.5	.3	.3	.3	Q	.2	.4	.3	.7	.5	.7	31.64
Use Fuel Oil for Main Heat	10.9	.5	1.4	1.5	1.1	1.1	2.2	1.6	1.6	.9	1.7	12.16
Use Fuel Oil to Heat Water and Have A/C	2.6	Q	.2	.3	.1	.3	.5	.5	.7	Q	.2	26.48
and Lack A/C	2.5	.2	.5	.3	.3	.2	.4	.3	.2	.4	.7	21.70
Use Electricity to Heat Water and Have A/C	2.0	Q	.3	.2	.2	.1	.3	.3	.3	.1	.3	27.09
and Lack A/C	2.1	Q	.2	.5	.2	.3	.5	.2	Q	.2	.4	24.17
Other	1.7	Q	.1	.1	.2	.2	.5	.2	.3	.1	.2	23.55
Use Wood for Main Heat	5.1	.4	.7	.7	.4	.7	.9	.8	.5	.9	1.3	19.61
Use LPG for Main Heat	4.2	.6	.6	1.0	.4	.4	.6	.3	.2	1.0	1.3	21.95
Use Kerosene for Main Heat	1.3	.2	.3	.3	Q	.2	Q	Q	Q	.4	.5	27.47
Use Coal for Main Heat	.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	84.44
No Heating Fuel/Other Fuel	.8	Q	.1	.1	.1	Q	.2	Q	Q	Q	Q	35.74
Water-Heating Fuel												
Natural Gas	49.3	3.3	6.2	6.6	4.7	4.5	8.6	7.3	8.1	6.3	9.8	5.95
Electricity	32.0	2.1	3.9	4.8	3.5	3.4	6.0	4.7	3.5	4.0	6.3	8.08
Fuel Oil or Kerosene	5.3	.3	.7	.6	.5	.5	1.0	.8	.9	.5	.9	17.64
LPG	3.0	.4	.5	.5	.3	.3	.5	.3	.2	.8	1.1	25.29
Wood	.2	Q	Q	Q	NC	Q	Q	Q	NC	Q	Q	63.23
Solar	.6	Q	Q	NC	Q	Q	Q	Q	.3	Q	Q	34.90
Other/None	.3	Q	Q	Q	Q	Q	Q	Q	NC	Q	Q	64.89
Main Cooking Fuel												
Electricity	52.6	2.7	5.3	6.2	5.2	5.5	10.3	8.9	8.4	4.9	8.2	6.06
Natural Gas	32.6	2.6	4.9	5.4	3.3	2.9	5.2	4.1	4.2	5.4	7.9	7.30
LPG	5.0	.7	1.2	1.0	.4	.4	.7	.4	.3	1.3	1.9	20.46
Other/None	.4	Q	Q	Q	Q	Q	Q	NC	NC	.2	.2	40.07

See footnotes at end of table.

Table 15. U.S. Household Fuel Use by Family Income, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	1987 Family Income								Below 100 Percent of Poverty Line	Below 125 Percent of Poverty Line	RSE Row Factors
		Less than $5,000	$5,000 to $9,999	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 or More			
RSE Column Factors:	0.486	1.523	1.113	1.027	1.082	1.136	0.862	0.968	1.092	1.121	0.942	
Clothes-Drying Fuel												
With Clothes Dryer	59.6	1.8	5.0	6.7	5.3	6.2	11.7	11.4	11.6	4.1	7.4	5.33
Electricity	45.9	1.6	4.1	5.3	4.2	4.8	9.0	8.7	8.3	3.3	6.1	6.43
Natural Gas	12.9	.2	.8	1.3	1.1	1.3	2.5	2.5	3.3	.7	1.2	12.08
LPG	.8	Q	Q	Q	Q	Q	.3	Q	Q	Q	Q	39.97
Without Clothes Dryer	31.0	4.4	6.5	5.9	3.7	2.6	4.5	2.0	1.3	7.7	10.8	7.57
Air Conditioning												
Yes	57.6	2.9	5.9	7.2	5.6	5.6	11.0	9.7	9.8	5.3	8.9	5.67
Central Unit	30.7	.9	2.3	2.7	2.5	2.8	6.4	6.1	7.1	1.8	3.0	8.51
Electric	30.1	.9	2.1	2.7	2.3	2.7	6.3	6.0	7.0	1.7	2.9	8.47
Individual Room Units[1]	26.9	2.0	3.6	4.5	3.1	2.8	4.6	3.5	2.7	3.6	5.9	7.51
One Unit	18.4	1.7	2.8	3.5	2.2	1.9	2.9	2.0	1.4	3.0	4.7	9.24
Two or More Units	8.6	.3	.9	1.0	.9	.9	1.7	1.5	1.3	.6	1.2	13.49
No	32.9	3.3	5.6	5.4	3.4	3.2	5.2	3.7	3.1	6.4	9.4	6.83
Number of Rooms That Can Be Air Conditioned												
All	40.8	1.7	4.0	4.6	3.9	3.9	8.2	6.9	7.5	3.3	5.6	6.74
Some	16.8	1.1	1.9	2.6	1.7	1.6	2.8	2.7	2.3	2.1	3.3	9.49
None	32.9	3.3	5.6	5.4	3.4	3.2	5.2	3.7	3.1	6.4	9.4	6.83
Wood Burned in Past 12 Months												
Yes	22.5	.7	1.4	2.1	1.5	2.1	4.0	4.9	5.8	1.7	2.6	9.56
One-Third Cord or Less	8.6	.2	.2	.5	.5	.6	1.5	2.0	3.1	.3	.5	17.56
More than One-Third Cord	13.8	.6	1.2	1.6	1.0	1.5	2.5	2.9	2.6	1.4	2.1	11.98
No	68.1	5.4	10.1	10.5	7.5	6.7	12.2	8.5	7.1	10.1	15.7	4.44
Household Owns or Has Regular Use of a Vehicle												
Yes	79.4	3.1	7.5	11.1	8.2	8.2	15.5	13.2	12.7	7.0	11.6	4.54
No	11.1	3.1	4.0	1.5	.8	.6	.7	Q	Q	4.8	6.7	9.31
Total Single-Family Units and Mobile Homes	65.6	3.2	7.3	8.7	5.8	6.4	11.9	11.0	11.3	6.9	11.2	4.91
Availability of Natural Gas in the Neighborhood (single-family units and mobile homes)												
Uses Any Natural Gas	38.8	1.5	4.3	5.0	3.4	3.6	6.9	6.7	7.5	3.8	6.3	6.76
Does Not Use Natural Gas	26.7	1.7	3.1	3.7	2.5	2.8	5.0	4.3	3.7	3.2	5.0	9.68
Gas Available	5.8	.3	.5	.8	.6	.6	1.1	.9	1.0	.5	.8	17.47
(percent)	21.6	18.0	14.9	20.8	26.0	20.5	22.0	21.5	27.2	15.7	15.4	16.16
Gas Not Available	21.0	1.4	2.6	2.9	1.8	2.3	3.9	3.4	2.7	2.7	4.2	10.93
(percent)	78.4	82.0	85.1	79.2	74.0	79.5	78.0	78.5	72.8	84.3	84.6	4.05

See footnotes at end of table.

Table 15. U.S. Household Fuel Use by Family Income, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	1987 Family Income								Below 100 Percent of Poverty Line	Below 125 Percent of Poverty Line	RSE Row Factors
		Less than $5,000	$5,000 to $9,999	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 or More			
RSE Column Factors:	0.486	1.523	1.113	1.027	1.082	1.136	0.862	0.968	1.092	1.121	0.942	
Total Households in 2-or-More-Unit Buildings	25.0	3.0	4.2	3.9	3.2	2.3	4.3	2.4	1.7	4.9	7.0	9.47
Central Main Heating System for the Building (2-or-more-unit buildings)												
Yes	10.2	1.2	1.9	1.6	1.3	1.1	1.8	.7	.7	1.8	2.9	13.56
No/No Main Heating System	14.8	1.7	2.3	2.3	1.9	1.3	2.5	1.7	.9	3.1	4.1	12.77
Central Water-Heating System for the Building (2-or-more-unit buildings)												
Yes	13.6	1.7	2.2	2.1	1.7	1.4	2.3	1.0	1.1	2.5	3.7	12.49
No/No Water-Heating Fuel												
No Hot Running Water	11.3	1.2	1.9	1.9	1.5	.9	2.0	1.3	.5	2.4	3.3	14.26
Central Air Conditioning System for the Building (2-or-more-unit buildings)												
Yes	1.0	Q	.2	Q	Q	Q	Q	Q	Q	Q	.2	45.12
No	14.4	1.2	1.8	2.5	1.9	1.4	2.9	1.7	1.1	1.9	2.9	12.88
No Air Conditioning	9.6	1.7	2.2	1.4	1.1	.8	1.3	.6	.4	2.9	3.9	13.38

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 16. U.S. Household Fuel Use by Family Income, November 1987

(Percent of Households)

Household Characteristics	Total	1987 Family Income								Below 100 Percent of Poverty Line	Below 125 Percent of Poverty Line	RSE Row Factors
		Less than $5,000	$5,000 to $9,999	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 or More			
RSE Column Factors:	0.533	1.466	1.117	1.027	1.094	1.092	0.887	0.970	1.052	1.097	0.940	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Fuels Used for Any Use (more than one fuel often used)												
Electricity	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	100.0	100.0	100.0	NE
Natural Gas	63.3	61.7	64.2	63.6	62.7	60.1	61.2	61.8	69.9	63.0	63.3	4.12
Wood	27.1	13.3	12.9	17.3	17.6	26.1	27.7	40.1	49.2	15.0	14.7	8.02
Fuel Oil/Kerosene	19.2	16.4	18.7	20.8	18.9	20.8	21.3	17.9	17.3	16.8	17.7	9.52
Fuel Oil	13.5	8.6	13.3	13.9	13.8	13.9	15.2	13.1	13.7	8.8	10.7	11.78
Kerosene	6.8	8.3	6.4	8.3	6.3	7.7	7.6	6.1	4.5	8.7	7.9	16.06
LPG (excludes outdoor grill)	8.5	14.9	12.2	10.6	8.0	9.0	8.1	4.8	4.3	14.0	13.5	16.47
Coal	.9	2.1	Q	Q	Q	Q	1.0	1.5	Q	1.4	1.1	38.21
Solar Collectors	1.3	Q	Q	Q	1.7	Q	1.8	1.2	3.1	Q	Q	33.09
Main Heating Fuel and Equipment												
Natural Gas	55.2	52.5	56.9	55.1	55.7	50.7	53.0	55.5	60.2	54.5	55.3	4.98
Central Warm-Air Furnace	35.0	21.9	29.2	29.3	32.0	30.4	37.1	42.4	46.6	22.8	24.8	7.45
Steam or Hot-Water System	10.2	10.3	10.1	10.7	10.9	11.1	9.8	8.5	10.9	9.2	10.4	13.27
Floor, Wall, or Pipeless Furnace	5.6	8.4	7.9	7.9	7.7	5.7	4.4	3.9	1.9	9.8	8.8	17.08
Room Heater/Other	4.4	12.0	9.7	7.2	5.0	3.5	1.7	Q	Q	12.7	11.3	16.42
Electricity	19.8	18.8	15.9	15.9	19.8	20.4	21.8	23.3	21.2	16.9	16.5	11.53
Built-In Electric Units	6.0	7.3	6.2	5.2	7.2	6.8	5.9	6.4	4.4	7.2	7.0	18.27
Central Warm-Air Furnace	7.6	5.2	4.9	6.7	7.4	9.6	8.2	9.1	8.5	4.5	4.5	21.18
Heat Pump	5.0	3.6	2.2	2.9	3.2	3.2	6.9	7.5	7.8	2.5	2.3	23.73
Other	1.2	2.8	2.5	1.0	2.0	Q	Q	Q	Q	2.7	2.6	29.90
Fuel Oil	12.0	7.3	12.1	11.8	12.1	12.4	13.5	11.9	12.2	7.6	9.5	11.84
Steam or Hot-Water System	7.0	3.8	7.4	5.6	6.6	7.1	8.0	7.2	8.4	4.3	5.2	15.94
Central Warm-Air Furnace	4.4	2.9	3.5	5.2	4.9	5.1	5.3	4.3	3.6	2.7	3.4	18.65
Other	.5	Q	1.1	1.1	Q	Q	Q	Q	Q	Q	.9	38.02
Wood	5.6	5.9	6.3	5.5	4.5	8.1	5.8	5.8	3.7	7.5	7.0	19.01
Heating Stove	4.5	4.8	5.6	4.9	3.3	7.1	4.5	4.2	2.7	6.1	5.9	20.48
Other	1.1	Q	Q	Q	Q	Q	1.3	1.6	Q	1.4	1.1	32.89
LPG	4.6	10.1	4.9	7.6	4.8	5.1	3.5	2.4	1.9	8.1	7.0	21.25
Central Warm-Air Furnace	2.7	2.6	2.5	4.2	3.1	3.3	2.6	1.7	1.9	3.5	3.1	25.87
Room Heater	1.0	6.0	1.0	Q	Q	Q	Q	Q	NC	3.5	2.6	35.42
Other	.9	Q	Q	Q	Q	Q	Q	Q	Q	1.2	1.3	38.10
Kerosene	1.5	3.5	3.0	2.2	Q	2.3	Q	Q	Q	3.4	2.9	26.78
Other	.5	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	68.34
None	.8	Q	.9	1.1	1.4	Q	1.1	Q	Q	Q	Q	35.38
Use Secondary Heating Fuel (more than one may be used)												
Yes	41.3	29.0	28.7	33.3	33.6	38.3	41.8	53.1	60.7	31.5	30.6	5.66
Wood	21.2	6.3	6.2	11.4	12.7	17.8	21.8	34.2	45.3	6.8	7.1	9.93
Electricity	13.7	14.0	15.1	13.9	13.9	12.0	12.2	14.2	14.5	15.7	14.2	9.74
Natural Gas	3.2	3.0	4.2	2.9	2.3	5.3	2.3	2.5	3.6	3.1	3.9	22.80
Fuel Oil/Kerosene	6.5	5.6	4.4	7.1	7.0	6.3	8.3	6.6	5.4	6.0	5.7	17.28
Fuel Oil	1.3	Q	Q	1.6	Q	Q	1.7	1.0	1.1	Q	Q	40.04
Kerosene	5.4	4.8	3.6	5.7	5.4	5.5	6.8	5.9	4.4	5.4	4.9	17.48
LPG	1.1	Q	Q	Q	Q	Q	1.7	.9	Q	1.7	1.5	30.98
Other	.6	Q	Q	Q	Q	Q	Q	1.2	Q	Q	Q	28.56
No	58.7	71.0	71.3	66.7	66.4	61.7	58.2	46.9	39.3	68.5	69.4	3.47

See footnotes at end of table.

Table 16. U.S. Household Fuel Use by Family Income, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	1987 Family Income								Below 100 Percent of Poverty Line	Below 125 Percent of Poverty Line	RSE Row Factors
		Less than $5,000	$5,000 to $9,999	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 or More			
RSE Column Factors:	0.533	1.466	1.117	1.027	1.094	1.092	0.887	0.970	1.052	1.097	0.940	
Use Secondary Heating Equipment (more than one may be used)												
Yes	41.3	29.0	28.7	33.3	33.6	38.3	41.8	53.1	60.7	31.5	30.6	5.65
Fireplace	16.6	4.1	4.1	5.3	9.3	12.7	15.9	27.9	41.9	3.6	3.9	12.52
Portable Electric Heater	9.1	11.9	11.3	10.0	9.7	8.9	8.0	7.9	7.3	12.5	11.1	11.83
Wood or Coal Heating Stove	5.3	2.5	2.4	5.6	4.4	4.7	6.1	7.9	6.3	2.9	3.1	17.73
Built-In Electric Units	4.0	Q	3.1	3.2	3.1	3.2	3.9	5.2	6.5	2.4	2.7	21.55
Portable Kerosene Heater	5.3	5.2	3.6	5.8	5.1	5.4	6.5	5.7	4.4	5.7	5.0	18.75
Central Warm-Air Furnace	2.7	Q	1.9	1.8	2.9	5.3	2.7	2.6	3.1	1.7	1.9	27.00
Oil or Gas Room Heater	1.9	2.8	2.0	2.3	Q	Q	2.4	2.4	1.2	2.6	2.3	23.66
Cooking Stove	1.5	3.0	2.4	2.3	1.8	1.5	1.2	Q	Q	3.5	3.3	25.09
Heat Pump, Steam or Hot-Water System, Pipeless Furnace, or Other	2.0	Q	1.5	Q	Q	2.7	2.3	3.6	1.8	Q	1.4	29.97
No	58.7	71.0	71.3	66.7	66.4	61.7	58.2	46.9	39.3	68.5	69.4	3.47
Fuel Combinations												
Use Natural Gas for Main Heat	55.2	52.5	56.9	55.1	55.7	50.7	53.0	55.5	60.2	54.5	55.3	4.98
Use Natural Gas to Heat Water and Have A/C	31.5	19.5	25.2	28.5	29.4	30.3	32.9	36.2	41.5	19.1	22.6	8.04
and Lack A/C	18.0	27.2	25.5	19.5	18.8	15.1	15.1	14.6	13.9	29.0	26.2	8.76
Use Electricity to Heat Water and Have A/C	3.7	3.2	3.7	4.2	5.2	3.1	3.7	3.7	2.8	3.8	3.7	22.11
and Lack A/C	1.8	1.7	2.5	2.9	2.3	Q	1.2	Q	1.5	2.2	2.5	23.81
Other	.3	Q	NC	Q	NC	Q	Q	Q	Q	Q	Q	47.40
Use Electricity for Main Heat	19.8	18.8	15.9	15.9	19.8	20.4	21.8	23.3	21.2	16.9	16.5	11.53
Use Electricity to Heat Water and Have A/C	13.7	9.6	8.9	10.1	15.3	13.7	16.9	17.8	14.1	9.1	8.9	13.97
and Lack A/C	3.3	4.0	4.4	3.3	3.9	3.9	2.6	3.6	1.8	3.9	3.9	23.94
Other	2.8	5.2	2.6	2.4	Q	2.8	2.3	1.9	5.3	3.9	3.7	31.63
Use Fuel Oil for Main Heat	12.0	7.3	12.1	11.8	12.1	12.4	13.5	11.9	12.2	7.6	9.5	11.84
Use Fuel Oil to Heat Water and Have A/C	2.9	Q	1.5	2.5	1.3	3.1	3.3	3.9	5.1	Q	1.0	26.25
and Lack A/C	2.8	3.2	4.8	2.3	3.8	2.6	2.4	2.2	1.5	3.1	3.6	21.71
Use Electricity to Heat Water and Have A/C	2.2	Q	2.8	1.9	2.1	1.6	2.1	2.4	2.6	1.0	1.7	26.70
and Lack A/C	2.3	Q	2.0	4.0	2.3	3.2	2.9	1.7	Q	2.0	2.4	23.83
Other	1.8	Q	1.0	1.1	2.5	1.9	2.8	1.6	2.2	.9	.9	23.78
Use Wood for Main Heat	5.6	5.9	6.3	5.5	4.5	8.1	5.8	5.8	3.7	7.5	7.0	19.01
Use LPG for Main Heat	4.6	10.1	4.9	7.6	4.8	5.1	3.5	2.4	1.9	8.1	7.0	21.25
Use Kerosene for Main Heat	1.5	3.5	3.0	2.2	Q	2.3	Q	Q	Q	3.4	2.9	26.78
Use Coal for Main Heat	.5	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	76.98
No Heating Fuel/Other Fuel	.9	Q	.9	1.2	1.6	Q	1.2	Q	Q	Q	Q	34.40
Water-Heating Fuel												
Natural Gas	54.4	53.2	54.4	52.3	51.9	51.4	53.0	54.6	62.5	53.6	54.0	4.89
Electricity	35.3	34.1	34.3	37.8	38.8	38.6	37.0	35.4	27.5	34.1	34.4	6.73
Fuel Oil or Kerosene	5.8	4.2	6.3	5.0	5.3	5.7	5.9	6.3	6.8	4.0	4.8	17.41
LPG	3.3	6.3	4.6	4.1	3.5	3.3	3.1	2.4	1.2	6.9	5.9	24.30
Wood	.2	Q	Q	Q	NC	Q	Q	Q	NC	Q	Q	57.64
Solar	.6	Q	Q	NC	Q	Q	Q	Q	2.0	Q	Q	34.20
Other/None	.3	Q	Q	Q	Q	Q	Q	Q	NC	Q	Q	59.16
Main Cooking Fuel												
Electricity	58.1	44.1	46.5	48.9	58.2	62.9	63.4	66.3	65.3	41.9	44.8	4.50
Natural Gas	36.0	42.1	42.9	42.5	37.0	32.6	32.0	31.0	32.6	45.5	43.5	6.41
LPG	5.5	11.4	10.1	8.0	4.6	4.3	4.4	2.7	2.1	11.1	10.6	19.70
Other/None	.4	Q	Q	Q	Q	Q	Q	NC	NC	1.5	1.0	39.22

See footnotes at end of table.

Table 16. U.S. Household Fuel Use by Family Income, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	1987 Family Income								Below 100 Percent of Poverty Line	Below 125 Percent of Poverty Line	RSE Row Factors
		Less than $5,000	$5,000 to $9,999	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 or More			
RSE Column Factors:	0.533	1.466	1.117	1.027	1.094	1.092	0.887	0.970	1.052	1.097	0.940	
Clothes-Drying Fuel												
With Clothes Dryer	65.8	28.5	43.4	53.1	58.6	70.8	72.3	85.0	89.7	34.5	40.6	3.67
Electricity	50.7	25.2	35.7	41.8	46.3	54.7	55.5	65.3	64.5	27.9	33.7	4.94
Natural Gas	14.3	2.6	7.3	10.3	11.9	14.3	15.4	19.0	25.2	6.3	6.6	12.16
LPG	.9	Q	Q	Q	Q	Q	1.6	Q	Q	Q	Q	37.75
Without Clothes Dryer	34.2	71.5	56.6	46.9	41.4	29.2	27.7	15.0	10.3	65.5	59.4	5.60
Air Conditioning												
Yes	63.6	46.6	51.4	57.0	62.1	63.9	67.7	72.4	75.8	45.4	48.7	3.75
Central Unit	33.9	14.3	19.6	21.6	27.3	31.5	39.3	45.9	54.8	15.0	16.4	7.09
Electric	33.2	14.3	18.6	21.1	25.7	30.7	39.1	45.1	54.2	14.8	15.9	7.07
Individual Room Units[1]	29.8	32.3	31.7	35.5	34.8	32.4	28.4	26.5	21.0	30.4	32.3	6.32
One Unit	20.3	27.8	24.0	27.3	24.8	21.9	17.7	15.2	10.9	25.2	25.9	7.84
Two or More Units	9.4	4.6	7.8	8.1	9.9	10.4	10.7	11.3	10.1	5.2	6.4	13.48
No	36.4	53.4	48.6	43.0	37.9	36.1	32.3	27.6	24.2	54.6	51.3	5.61
Number of Rooms That Can Be Air Conditioned												
All	45.1	28.2	34.9	36.5	43.0	45.1	50.6	51.9	58.0	27.8	30.7	5.32
Some	18.6	18.4	16.5	20.6	19.0	18.8	17.1	20.5	17.8	17.6	17.9	8.39
None	36.4	53.4	48.6	43.0	37.9	36.1	32.3	27.6	24.2	54.6	51.3	5.61
Wood Burned in Past 12 Months												
Yes	24.8	12.0	11.9	16.9	16.7	23.5	24.5	36.6	44.8	14.1	14.0	8.54
One-Third Cord or Less	9.5	3.1	1.8	4.0	5.7	6.6	9.1	14.9	24.3	2.5	2.7	16.89
More than One-Third Cord	15.3	8.9	10.2	12.9	11.0	16.8	15.4	21.7	20.4	11.6	11.3	11.21
No	75.2	88.0	88.1	83.1	83.3	76.5	75.5	63.4	55.2	85.9	86.0	2.19
Household Owns or Has Regular Use of a Vehicle												
Yes	87.7	49.7	65.2	87.8	90.8	93.4	96.0	98.5	98.4	59.2	63.4	2.06
No	12.3	50.3	34.8	12.2	9.2	6.6	4.0	Q	Q	40.8	36.6	7.65
Total Single-Family Units and Mobile Homes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Availability of Natural Gas in the Neighborhood (single-family units and mobile homes)												
Uses Any Natural Gas	59.2	48.3	58.1	57.7	57.8	55.6	58.0	60.9	66.8	54.4	55.8	5.49
Does Not Use Natural Gas	40.8	51.7	41.9	42.3	42.2	44.4	42.0	39.1	33.2	45.6	44.2	7.44
Gas Available	8.8	9.3	6.2	8.8	10.9	9.1	9.2	8.4	9.0	7.2	6.8	16.55
Gas Not Available	32.0	42.4	35.6	33.5	31.2	35.3	32.8	30.7	24.2	38.5	37.4	9.02

See footnotes at end of table.

Table 16. U.S. Household Fuel Use by Family Income, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	1987 Family Income								Below 100 Percent of Poverty Line	Below 125 Percent of Poverty Line	RSE Row Factors
		Less than $5,000	$5,000 to $9,999	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 or More			
RSE Column Factors:	0.533	1.466	1.117	1.027	1.094	1.092	0.887	0.970	1.052	1.097	0.940	
Total Households in 2-or-More-Unit Buildings	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Central Main Heating System for the Building (2-or-more-unit buildings)												
Yes	40.8	41.1	44.9	40.6	39.9	45.7	41.0	28.2	43.3	36.7	41.3	11.30
No/No Main Heating System	59.2	58.9	55.1	59.4	60.1	54.3	59.0	71.8	56.7	63.3	58.7	7.60
Central Water-Heating System for the Building (2-or-more-unit buildings)												
Yes	54.6	58.6	53.7	52.4	52.1	60.5	53.8	44.1	68.6	50.5	53.3	8.84
No/No Water-Heating Fuel												
No Hot Running Water	45.4	41.4	46.3	47.6	47.9	39.5	46.2	55.9	31.4	49.5	46.7	10.73
Central Air Conditioning System for the Building (2-or-more-unit buildings)												
Yes	3.9	Q	4.2	Q	Q	Q	Q	Q	Q	Q	3.2	44.04
No	57.8	38.9	42.3	62.3	61.0	59.5	67.3	73.1	65.0	38.4	41.4	7.90
No Air Conditioning	38.3	56.6	53.5	35.2	33.8	35.4	30.0	26.3	26.6	58.9	55.4	10.61

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

NE RSE row factor not estimated because RSE's for all statistics in this row are between 0.0 and 1.0 percent.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 17. U.S. Household Fuel Use by Housing Structure and Status of Unit, November 1987

(Million Households)

Household Characteristics	Total	Housing Structure by Status of Unit												RSE Row Factors
		Single-Family			Building of 2 to 4 Units			Building of 5 or More Units			Mobile Home			
		Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:	0.350	0.379	0.387	0.858	0.905	1.569	1.019	1.090	3.270	1.134	1.234	1.369	2.300	
Total Households	90.5	60.5	51.6	8.9	10.1	2.0	8.1	14.9	1.0	13.9	5.1	4.3	0.9	6.83
Fuels Used for Any Use (more than one fuel often used)														
Electricity	90.5	60.4	51.6	8.9	10.1	2.0	8.1	14.9	1.0	13.9	5.1	4.3	.9	6.83
Natural Gas	57.3	37.1	31.5	5.6	8.0	1.7	6.3	10.5	.6	9.8	1.7	1.4	.3	9.33
Wood	24.6	21.8	19.9	1.9	1.0	.4	.6	.9	Q	.8	.8	.7	Q	16.00
Fuel Oil/Kerosene	17.4	12.0	10.5	1.6	1.7	.5	1.2	2.5	.2	2.3	1.2	1.0	.2	14.43
Fuel Oil	12.2	8.1	7.2	.8	1.5	.4	1.0	2.3	.2	2.2	.4	.3	.1	16.08
Kerosene	6.2	4.9	4.0	.9	.2	Q	.2	Q	Q	Q	.9	.8	.1	22.54
LPG (excludes outdoor grill)	7.7	5.7	4.7	1.0	Q	Q	Q	Q	NC	Q	1.9	1.5	.4	19.84
Coal	.9	.8	.8	Q	Q	Q	NC	Q	NC	Q	Q	Q	NC	68.36
Solar Collectors	1.2	.8	.8	Q	Q	Q	Q	Q	NC	Q	NC	NC	NC	45.60
Main Heating Fuel														
Natural Gas	50.0	34.3	29.0	5.3	6.7	1.2	5.4	7.3	.3	7.0	1.7	1.4	.3	10.46
Electricity	17.9	9.9	8.6	1.3	1.5	Q	1.4	5.5	.5	5.0	1.0	.9	Q	17.69
Fuel Oil	10.9	7.1	6.4	.7	1.4	.4	1.0	2.0	.2	1.9	.4	.3	.1	16.59
Wood	5.1	4.6	3.8	.7	.2	Q	Q	Q	NC	Q	.3	.3	Q	26.75
LPG	4.2	2.9	2.4	.5	NC	NC	NC	NC	NC	NC	1.2	1.0	.3	24.15
Kerosene	1.3	.8	.6	.2	Q	NC	Q	Q	NC	Q	.5	Q	Q	49.30
Other	.5	.4	.4	Q	Q	Q	NC	NC	NC	NC	Q	Q	Q	100.00
None	.7	.6	.4	.2	.1	Q	Q	Q	NC	Q	NC	NC	NC	45.64
Use Secondary Heating Fuel (more than one may be used)														
Yes	37.4	31.0	27.6	3.3	2.0	.6	1.4	2.7	Q	2.4	1.8	1.5	.2	10.53
Wood	19.2	17.0	15.9	1.0	.8	.3	.5	.9	Q	.8	.5	.4	Q	18.15
Electricity	12.4	9.7	8.3	1.3	.8	.2	.6	1.0	Q	1.0	.9	.7	.2	14.82
Natural Gas	2.9	2.2	2.0	.3	.2	Q	.2	.4	Q	.2	Q	Q	NC	29.86
Fuel Oil/Kerosene	5.9	4.8	4.0	.8	.2	Q	.1	.4	Q	.4	.4	.4	Q	27.37
Fuel Oil	1.1	.8	.6	Q	Q	Q	Q	Q	NC	Q	Q	Q	NC	67.19
Kerosene	4.9	4.2	3.4	.8	.2	Q	Q	Q	Q	Q	.4	.4	Q	22.29
LPG	1.0	.8	.7	Q	NC	NC	NC	Q	NC	Q	Q	Q	Q	52.77
Other	.5	.5	.5	NC	NC	NC	NC	Q	NC	Q	NC	NC	NC	46.92
No	53.2	29.5	24.0	5.5	8.1	1.4	6.7	12.2	.7	11.6	3.3	2.7	.6	7.97
Fuel Combinations														
Use Natural Gas for Main Heat	50.0	34.3	29.0	5.3	6.7	1.2	5.4	7.3	.3	7.0	1.7	1.4	.3	10.46
Use Natural Gas to Heat Water and Have A/C	28.5	19.8	17.4	2.4	3.1	.8	2.4	4.9	Q	4.7	.6	.5	.1	14.00
and Lack A/C	16.3	10.5	8.3	2.2	3.1	.4	2.7	2.1	Q	2.0	.5	.5	.1	13.53
Use Electricity to Heat Water and Have A/C	3.3	2.6	2.2	.4	.2	Q	.2	.2	NC	.2	.3	.3	Q	33.09
and Lack A/C	1.6	1.2	1.0	.2	.2	Q	.1	Q	NC	Q	.2	.1	Q	35.58
Other	.2	.2	.1	Q	Q	NC	Q	Q	NC	Q	NC	NC	NC	84.92
Use Electricity for Main Heat	17.9	9.9	8.6	1.3	1.5	Q	1.4	5.5	.5	5.0	1.0	.9	Q	17.69
Use Electricity to Heat Water and Have A/C	12.4	7.9	7.0	.8	.7	Q	.6	3.1	.2	2.8	.7	.7	Q	22.04
and Lack A/C	3.0	1.3	1.0	.3	.6	Q	.6	.8	Q	.8	.3	.2	Q	30.12
Other	2.5	.7	.6	Q	.2	Q	.1	1.7	Q	1.4	Q	Q	Q	41.27
Use Fuel Oil for Main Heat	10.9	7.1	6.4	.7	1.4	.4	1.0	2.0	.2	1.9	.4	.3	.1	16.59
Use Fuel Oil to Heat Water and Have A/C	2.6	1.4	1.4	Q	.2	.1	.1	1.0	.1	.8	NC	NC	NC	30.62
and Lack A/C	2.5	1.1	1.1	Q	.4	Q	.3	.9	NC	.9	NC	NC	NC	22.83
Use Electricity to Heat Water and Have A/C	2.0	1.7	1.5	.3	Q	NC	Q	Q	NC	Q	.2	Q	Q	35.27
and Lack A/C	2.1	1.7	1.5	.2	.2	NC	.2	Q	NC	Q	.2	Q	Q	35.40
Other	1.7	1.0	.9	.1	.5	.2	.3	.1	Q	Q	Q	Q	NC	27.72
Use Wood for Main Heat	5.1	4.6	3.8	.7	.2	Q	Q	Q	NC	Q	.3	.3	Q	26.75
Use LPG for Main Heat	4.2	2.9	2.4	.5	NC	NC	NC	NC	NC	NC	1.2	1.0	.3	24.15
Use Kerosene for Main Heat	1.3	.8	.6	.2	Q	NC	Q	Q	NC	Q	.5	Q	Q	49.30

See footnotes at end of table.

Table 17. U.S. Household Fuel Use by Housing Structure and Status of Unit, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Housing Structure by Status of Unit												RSE Row Factors
		Single-Family			Building of 2 to 4 Units			Building of 5 or More Units			Mobile Home			
		Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:	0.350	0.379	0.387	0.858	0.905	1.569	1.019	1.090	3.270	1.134	1.234	1.369	2.300	
Fuel Combinations														
Use Coal for Main Heat	0.4	0.4	0.3	Q	Q	Q	NC	NC	NC	NC	Q	Q	NC	110.90
No Heating Fuel/Other Fuel	.8	.6	.4	0.2	0.1	Q	Q	Q	NC	Q	Q	NC	Q	44.82
Water-Heating Fuel														
Natural Gas	49.3	32.2	27.3	4.9	7.1	1.4	5.7	8.7	0.6	8.2	1.2	1.0	0.2	10.00
Electricity	32.0	22.2	18.9	3.3	2.2	.3	1.9	4.2	.2	4.0	3.4	2.8	.6	13.34
Fuel Oil or Kerosene	5.3	2.7	2.6	.1	.7	.2	.5	1.9	.1	1.7	NC	NC	NC	21.65
LPG	3.0	2.5	2.0	.5	Q	Q	NC	Q	NC	Q	.5	.4	Q	31.38
Other/None	1.0	.8	.7	Q	Q	Q	Q	Q	NC	Q	Q	Q	NC	47.12
Main Cooking Fuel														
Electricity	52.6	37.4	32.9	4.5	3.8	.7	3.1	9.3	.6	8.7	2.1	1.9	.2	10.04
Natural Gas	32.6	19.4	15.8	3.6	6.2	1.3	4.9	5.5	Q	5.2	1.5	1.2	.2	10.45
Other/None	5.4	3.7	2.9	.8	Q	Q	Q	Q	NC	Q	1.6	1.1	.4	22.33
Clothes-Drying Fuel														
With Clothes Dryer	59.6	50.3	45.1	5.2	3.7	1.3	2.5	2.4	.5	1.9	3.1	2.9	.2	9.38
Electricity	45.9	38.2	34.1	4.1	2.9	.8	2.1	2.0	.3	1.7	2.8	2.6	.2	10.61
Natural Gas	12.9	11.4	10.4	1.0	.9	.5	.4	.4	Q	.1	.3	.3	Q	19.58
LPG	.8	.8	.7	Q	NC	NC	NC	NC	NC	NC	Q	Q	NC	64.43
Without Clothes Dryer	31.0	10.1	6.5	3.7	6.3	.7	5.6	12.5	.5	12.0	2.0	1.3	.6	9.29
Air Conditioning														
Yes	57.6	39.1	34.4	4.6	4.8	1.2	3.6	10.6	.8	9.7	3.2	2.7	.5	9.31
Central Unit	30.7	22.7	20.8	1.9	1.6	.3	1.3	5.1	.4	4.6	1.3	1.2	Q	14.90
Electric	30.1	22.5	20.6	1.9	1.5	.3	1.2	4.8	.4	4.4	1.2	1.1	Q	15.19
Individual Room Units[1]	26.9	16.3	13.6	2.7	3.2	.9	2.3	5.5	.4	5.1	1.9	1.5	.3	11.01
One Unit	18.4	10.0	8.0	2.0	2.4	.5	1.9	4.5	.3	4.2	1.5	1.2	.3	11.70
Two or More Units	8.6	6.3	5.6	.7	.9	.4	.5	.9	Q	.8	.4	.4	Q	19.44
No	32.9	21.4	17.2	4.3	5.2	.8	4.4	4.3	.1	4.2	1.9	1.5	.4	9.60
Number of Rooms That Can Be Air Conditioned														
All	40.8	27.7	24.9	2.8	2.8	.7	2.1	8.2	.7	7.5	2.2	1.9	.3	11.49
Some	16.8	11.4	9.6	1.8	2.1	.6	1.5	2.4	.2	2.2	1.0	.8	.2	12.93
None	32.9	21.4	17.2	4.3	5.2	.8	4.4	4.3	.1	4.2	1.9	1.5	.4	9.60
Wood Burned in Past 12 Months														
Yes	22.5	20.2	18.4	1.8	.9	.4	.5	.6	Q	.5	.8	.7	Q	16.24
One-Third Cord or Less	8.6	7.6	7.0	.5	.4	Q	.2	.5	Q	.4	.2	Q	Q	24.40
More than One-Third Cord	13.8	12.6	11.4	1.2	.5	.2	.3	Q	NC	Q	.6	.6	Q	17.48
No	68.1	40.3	33.1	7.1	9.1	1.6	7.6	14.3	.9	13.5	4.3	3.5	.8	7.25
Household Owns or Has Regular Use of a Vehicle														
Yes	79.4	56.6	49.2	7.4	7.3	1.6	5.7	10.8	.9	9.8	4.7	4.0	.8	7.57
No	11.1	3.8	2.4	1.5	2.7	.4	2.3	4.1	Q	4.1	.4	.3	.1	13.13
Availability of Natural Gas in the Neighborhood														
Uses Any Natural Gas	57.3	37.1	31.5	5.6	8.0	1.7	6.3	10.5	.6	9.8	1.7	1.4	.3	9.33
Does Not Use Natural Gas	33.2	23.3	20.1	3.3	2.1	.3	1.8	4.4	.3	4.1	3.4	2.8	.6	13.36
Gas Available	8.7	5.2	4.4	.8	.9	Q	.8	2.0	Q	2.0	.5	.5	Q	20.94
(percent)	26.0	22.4	22.0	24.6	42.2	Q	44.9	45.3	Q	47.9	16.2	17.3	Q	17.23
Gas Not Available	24.6	18.1	15.6	2.5	1.2	.2	1.0	2.4	.3	2.1	2.8	2.3	.5	15.69
(percent)	74.0	77.6	78.0	75.4	57.8	72.9	55.1	54.7	87.1	52.1	83.8	82.7	89.4	6.72

See footnotes at end of table.

Table 17. U.S. Household Fuel Use by Housing Structure and Status of Unit, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Housing Structure by Status of Unit												RSE Row Factors
		Single-Family			Building of 2 to 4 Units			Building of 5 or More Units			*Mobile Home*			
		Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:	0.350	0.379	0.387	0.858	0.905	1.569	1.019	1.090	3.270	1.134	1.234	1.369	2.300	
Total Households in 2-or-More-Unit Buildings	25.0	--	--	--	10.1	2.0	8.1	14.9	1.0	13.9	--	--	--	7.57
Central Main Heating System for the Building (2-or-more-unit buildings)														
Yes	10.2	--	--	--	3.2	.7	2.5	7.0	.3	6.7	--	--	--	10.31
No/No Main Heating System	14.8	--	--	--	6.8	1.3	5.6	7.9	.7	7.3	--	--	--	10.58
Central Water-Heating System for the Building (2-or-more-unit buildings)														
Yes	13.6	--	--	--	3.5	.8	2.6	10.2	.6	9.5	--	--	--	10.50
No/No Water-Heating Fuel														
No Hot Running Water	11.3	--	--	--	6.6	1.2	5.4	4.7	Q	4.4	--	--	--	12.61
Central Air Conditioning System for the Building (2-or-more-unit buildings)														
Yes	1.0	--	--	--	Q	Q	Q	.9	Q	.8	--	--	--	36.57
No	14.4	--	--	--	4.7	1.2	3.5	9.7	.8	8.9	--	--	--	11.31
No Air Conditioning	9.6	--	--	--	5.2	.8	4.4	4.3	.1	4.2	--	--	--	9.16

NC No cases in sample.
-- Data not applicable.
Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.
1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 18. U.S. Household Fuel Use by Housing Structure and Status of Unit, November 1987

(Percent of Households)

Household Characteristics	Total	Housing Structure by Status of Unit												RSE Row Factors
		Single-Family			Building of 2 to 4 Units			Building of 5 or More Units			Mobile Home			
		Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:	0.397	0.422	0.427	0.876	0.883	1.445	1.000	1.110	3.147	1.145	1.132	1.229	2.248	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Fuels Used for Any Use (more than one fuel often used)														
Electricity	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	NE
Natural Gas	63.3	61.4	61.1	63.2	79.4	84.5	78.2	70.3	65.7	70.6	33.7	34.1	32.1	6.52
Wood	27.1	36.1	38.7	20.9	10.2	21.3	7.5	6.3	Q	6.0	15.8	17.6	Q	15.31
Fuel Oil/Kerosene	19.2	19.9	20.3	17.7	16.7	25.3	14.6	16.5	Q	16.4	24.1	24.3	22.9	13.75
Fuel Oil	13.5	13.3	14.0	9.5	14.7	22.2	12.9	15.6	Q	15.6	7.3	6.2	12.6	16.23
Kerosene	6.8	8.1	7.8	10.0	2.3	Q	2.0	Q	Q	Q	18.2	19.3	13.0	20.74
LPG (excludes outdoor grill)	8.5	9.4	9.1	11.1	Q	Q	Q	Q	NC	Q	37.0	35.0	46.8	17.08
Coal	.9	1.3	1.5	Q	Q	Q	NC	Q	NC	Q	Q	Q	NC	61.27
Solar Collectors	1.3	1.4	1.6	Q	Q	Q	Q	1.9	NC	2.1	NC	NC	NC	41.65
Main Heating Fuel														
Natural Gas	55.2	56.7	56.2	59.6	66.4	62.9	67.3	49.2	35.0	50.2	32.7	32.8	32.1	8.12
Electricity	19.8	16.4	16.8	14.1	14.9	Q	17.1	36.9	48.7	36.1	20.3	21.4	Q	15.13
Fuel Oil	12.0	11.7	12.4	7.6	14.0	21.3	12.2	13.5	Q	13.3	6.9	5.9	11.7	16.80
Wood	5.6	7.5	7.4	8.4	2.1	Q	Q	Q	NC	Q	5.9	6.7	Q	26.15
LPG	4.6	4.8	4.7	5.7	NC	NC	NC	NC	NC	NC	24.4	23.4	29.2	22.05
Kerosene	1.5	1.3	1.2	1.8	Q	NC	Q	Q	NC	Q	9.2	9.3	Q	44.82
Other	.5	.7	.7	Q	Q	Q	NC	NC	NC	NC	Q	Q	Q	89.54
None	.8	.9	.7	2.3	1.5	Q	Q	Q	NC	Q	NC	NC	NC	42.72
Use Secondary Heating Fuel (more than one may be used)														
Yes	41.3	51.2	53.5	37.7	19.6	29.5	17.1	18.0	31.2	17.1	34.5	35.8	28.2	9.29
Wood	21.2	28.1	30.9	11.6	8.3	15.7	6.4	6.3	Q	6.0	9.1	10.0	Q	17.31
Electricity	13.7	16.0	16.2	15.0	8.0	10.5	7.4	6.9	Q	6.9	17.6	17.3	19.1	14.05
Natural Gas	3.2	3.7	3.8	3.2	2.4	Q	2.1	2.5	Q	1.6	Q	Q	NC	29.01
Fuel Oil/Kerosene	6.5	8.0	7.7	9.5	2.0	Q	1.5	2.8	Q	2.9	8.4	9.2	Q	26.04
Fuel Oil	1.3	1.3	1.2	Q	Q	Q	Q	Q	NC	Q	Q	Q	NC	60.33
Kerosene	5.4	6.9	6.6	8.6	1.5	Q	Q	Q	Q	Q	8.3	9.1	Q	20.77
LPG	1.1	1.3	1.4	Q	NC	NC	NC	Q	NC	Q	Q	Q	Q	46.92
Other	.6	.8	.9	NC	NC	NC	NC	Q	NC	Q	NC	NC	NC	41.89
No	58.7	48.8	46.5	62.3	80.4	70.5	82.9	82.0	68.8	82.9	65.5	64.2	71.8	4.12
Fuel Combinations														
Use Natural Gas for Main Heat	55.2	56.7	56.2	59.6	66.4	62.9	67.3	49.2	35.0	50.2	32.7	32.8	32.1	8.12
Use Natural Gas to Heat Water and Have A/C	31.5	32.8	33.7	27.4	31.3	39.6	29.2	32.9	Q	33.5	12.6	12.5	13.5	12.13
Use Natural Gas to Heat Water and Lack A/C	18.0	17.4	16.1	24.9	31.2	20.4	33.9	14.0	Q	14.2	10.5	10.7	9.6	13.41
Use Electricity to Heat Water and Have A/C	3.7	4.3	4.2	4.8	1.9	Q	2.2	1.3	NC	1.4	6.6	7.1	Q	31.55
Use Electricity to Heat Water and Lack A/C	1.8	1.9	1.9	2.1	1.8	Q	1.8	Q	NC	Q	2.9	2.6	Q	34.33
Other	.3	.3	.3	Q	Q	NC	Q	Q	NC	Q	NC	NC	NC	75.34
Use Electricity for Main Heat	19.8	16.4	16.8	14.1	14.9	Q	17.1	36.9	48.7	36.1	20.3	21.4	Q	15.13
Use Electricity to Heat Water and Have A/C	13.7	13.0	13.6	9.4	7.3	Q	8.1	20.6	24.5	20.3	14.5	15.8	Q	20.43
Use Electricity to Heat Water and Lack A/C	3.3	2.2	2.0	3.4	5.9	Q	7.2	5.2	Q	5.5	5.4	5.3	Q	29.14
Other	2.8	1.1	1.1	Q	1.7	Q	1.8	11.1	Q	10.3	Q	Q	Q	39.39
Use Fuel Oil for Main Heat	12.0	11.7	12.4	7.6	14.0	21.3	12.2	13.5	Q	13.3	6.9	5.9	11.7	16.80
Use Fuel Oil to Heat Water and Have A/C	2.9	2.4	2.7	Q	2.2	6.1	1.3	6.4	Q	5.8	NC	NC	NC	33.67
Use Fuel Oil to Heat Water and Lack A/C	2.8	1.9	2.2	Q	4.4	Q	4.2	6.1	NC	6.5	NC	NC	NC	22.30
Use Electricity to Heat Water and Have A/C	2.2	2.9	2.9	3.0	Q	NC	Q	Q	NC	Q	3.4	Q	Q	33.22
Use Electricity to Heat Water and Lack A/C	2.3	2.9	2.9	2.7	1.8	NC	2.2	Q	NC	Q	3.3	Q	Q	34.74
Other	1.8	1.7	1.7	1.3	5.4	10.4	4.2	.7	Q	Q	Q	Q	NC	27.10
Use Wood for Main Heat	5.6	7.5	7.4	8.4	2.1	Q	Q	Q	NC	Q	5.9	6.7	Q	26.15
Use LPG for Main Heat	4.6	4.8	4.7	5.7	NC	NC	NC	NC	NC	NC	24.4	23.4	29.2	22.05
Use Kerosene for Main Heat	1.5	1.3	1.2	1.8	Q	NC	Q	Q	NC	Q	9.2	9.3	Q	44.82

See footnotes at end of table.

Table 18. U.S. Household Fuel Use by Housing Structure and Status of Unit, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Housing Structure by Status of Unit												RSE Row Factors
		Single-Family			Building of 2 to 4 Units			Building of 5 or More Units			Mobile Home			
		Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:	0.397	0.422	0.427	0.876	0.883	1.445	1.000	1.110	3.147	1.145	1.132	1.229	2.248	
Fuel Combinations														
Use Coal for Main Heat	0.5	0.6	0.7	Q	Q	Q	NC	NC	NC	NC	Q	Q	NC	99.22
No Heating Fuel/Other Fuel	.9	1.0	.7	2.5	1.5	Q	Q	Q	NC	Q	Q	NC	Q	42.13
Water-Heating Fuel														
Natural Gas	54.4	53.3	53.0	54.9	70.9	73.0	70.3	58.6	59.2	58.5	23.3	23.3	23.1	7.55
Electricity	35.3	36.7	36.7	36.9	21.6	13.6	23.6	28.4	25.6	28.6	66.2	66.3	66.0	10.24
Fuel Oil or Kerosene	5.8	4.5	5.1	1.1	6.8	10.9	5.8	12.5	Q	12.3	NC	NC	NC	22.44
LPG	3.3	4.2	3.8	6.2	Q	Q	NC	Q	NC	Q	9.0	8.9	Q	29.50
Other/None	1.1	1.4	1.4	Q	Q	Q	Q	Q	NC	Q	Q	Q	NC	42.17
Main Cooking Fuel														
Electricity	58.1	61.9	63.8	50.9	37.3	33.1	38.4	62.4	61.7	62.5	40.7	44.5	22.0	7.56
Natural Gas	36.0	32.0	30.6	40.4	61.9	66.2	60.9	37.2	38.3	37.1	28.8	28.8	29.0	9.24
Other/None	5.9	6.1	5.6	8.7	Q	Q	Q	Q	NC	Q	30.4	26.7	49.1	19.52
Clothes-Drying Fuel														
With Clothes Dryer	65.8	83.2	87.5	58.5	37.3	63.4	30.8	16.0	52.5	13.5	61.2	68.3	26.1	7.07
Electricity	50.7	63.2	66.1	46.4	28.5	40.3	25.6	13.6	29.8	12.5	54.8	60.9	24.5	7.87
Natural Gas	14.3	18.8	20.1	11.6	8.8	23.1	5.2	2.5	22.8	1.0	5.5	6.3	Q	18.09
LPG	.9	1.3	1.4	Q	NC	NC	NC	NC	NC	NC	Q	Q	NC	57.81
Without Clothes Dryer	34.2	16.8	12.5	41.5	62.7	36.6	69.2	84.0	47.5	86.5	38.8	31.7	73.9	6.13
Air Conditioning														
Yes	63.6	64.6	66.7	52.1	48.1	61.2	44.9	70.8	84.7	69.8	62.0	63.7	54.0	5.20
Central Unit	33.9	37.6	40.3	21.7	15.9	15.8	15.9	34.1	44.6	33.4	25.3	27.4	Q	12.17
Electric	33.2	37.2	39.9	21.2	15.3	15.8	15.2	32.2	44.6	31.3	24.3	26.3	Q	12.42
Individual Room Units[1]	29.8	27.0	26.4	30.4	32.3	45.4	29.0	36.7	40.1	36.5	36.8	36.2	39.6	8.80
One Unit	20.3	16.6	15.6	22.1	23.6	25.9	23.1	30.4	28.7	30.5	28.8	27.5	34.9	10.23
Two or More Units	9.4	10.5	10.8	8.3	8.6	19.4	6.0	6.3	Q	6.0	8.0	8.7	Q	18.09
No	36.4	35.4	33.3	47.9	51.9	38.8	55.1	29.2	15.3	30.2	38.0	36.3	46.0	8.75
Number of Rooms That Can Be Air Conditioned														
All	45.1	45.8	48.2	31.5	27.7	32.9	26.4	54.8	67.8	53.9	43.0	45.3	31.7	7.98
Some	18.6	18.8	18.5	20.6	20.4	28.3	18.5	16.0	16.9	16.0	19.0	18.4	22.4	11.42
None	36.4	35.4	33.3	47.9	51.9	38.8	55.1	29.2	15.3	30.2	38.0	36.3	46.0	8.75
Wood Burned in Past 12 Months														
Yes	24.8	33.4	35.7	19.9	9.0	20.5	6.2	3.9	Q	3.4	15.3	17.2	Q	15.59
One-Third Cord or Less	9.5	12.5	13.7	6.1	3.9	Q	2.4	3.1	Q	2.6	3.4	Q	Q	23.80
More than One-Third Cord	15.3	20.9	22.1	13.7	5.1	10.3	3.8	Q	NC	Q	11.8	13.2	Q	16.94
No	75.2	66.6	64.3	80.1	91.0	79.5	93.8	96.1	89.6	96.6	84.7	82.8	94.4	2.41
Household Owns or Has Regular Use of a Vehicle														
Yes	87.7	93.6	95.4	83.6	72.8	79.0	71.3	72.2	93.6	70.7	92.3	93.3	87.6	2.25
No	12.3	6.4	4.6	16.4	27.2	21.0	28.7	27.8	Q	29.3	7.7	6.7	12.4	12.49
Availability of Natural Gas in the Neighborhood														
Uses Any Natural Gas	63.3	61.4	61.1	63.2	79.4	84.5	78.2	70.3	65.7	70.6	33.7	34.1	32.1	6.52
Does Not Use Natural Gas	36.7	38.6	38.9	36.8	20.6	15.5	21.8	29.7	34.3	29.4	66.3	65.9	67.9	10.85
Gas Available	9.6	8.6	8.6	9.1	8.7	Q	9.8	13.4	Q	14.1	10.7	11.4	Q	19.66
Gas Not Available	27.1	30.0	30.3	27.8	11.9	11.3	12.0	16.2	29.9	15.3	55.5	54.5	60.7	13.57
Total Households in 2-or-More-Unit Buildings	100.0	--	--	--	100.0	100.0	100.0	100.0	100.0	100.0	--	--	--	0.00

See footnotes at end of table.

Table 18. U.S. Household Fuel Use by Housing Structure and Status of Unit, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Housing Structure by Status of Unit												RSE Row Factors
		Single-Family			Building of 2 to 4 Units			Building of 5 or More Units			Mobile Home			
		Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:	0.397	0.422	0.427	0.876	0.883	1.445	1.000	1.110	3.147	1.145	1.132	1.229	2.248	
Central Main Heating System for the Building (2-or-more-unit buildings)														
Yes	40.8	--	--	--	32.1	36.2	31.1	46.7	31.4	47.8	--	--	--	9.62
No/No Main Heating System	59.2	--	--	--	67.9	63.8	68.9	53.3	68.6	52.2	--	--	--	5.85
Central Water-Heating System for the Building (2-or-more-unit buildings)														
Yes	54.6	--	--	--	34.4	41.7	32.6	68.2	63.9	68.5	--	--	--	8.52
No/No Water-Heating Fuel														
No Hot Running Water	45.4	--	--	--	65.6	58.3	67.4	31.8	36.1	31.5	--	--	--	9.27
Central Air Conditioning System for the Building (2-or-more-unit buildings)														
Yes	3.9	--	--	--	Q	Q	Q	5.9	Q	6.1	--	--	--	34.66
No	57.8	--	--	--	47.2	60.4	44.0	65.0	81.8	63.8	--	--	--	5.68
No Air Conditioning	38.3	--	--	--	51.9	38.8	55.1	29.2	15.3	30.2	--	--	--	9.10

NC No cases in sample.
-- Data not applicable.
Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.
1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."
NE RSE row factor not estimated because RSE's for all statistics in this row are between 0.0 and 1.0 percent.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 19. U.S. Household Fuel Use by Average Square Footage, November 1987

Household Characteristics	Total Households (millions)	Average Number of Square Feet per Housing Unit		Average Number of Heated Square Feet per Housing Unit			Average Number of Heated Square Feet per Household Member	RSE Row Factors
		Heated and Unheated	Heated	Single-Family	Multi-Family	Mobile Home		
RSE Column Factors:	1.495	0.764	0.738	0.709	1.406	1.419	0.839	
Total Households	90.5	1,732	1,491	1,787	907	845	575	1.65
Fuels Used for Any Use (more than one fuel often used)								
Electricity	90.5	1,732	1,491	1,787	907	845	575	1.65
Natural Gas	57.3	1,734	1,519	1,844	923	903	586	2.16
Wood	24.6	2,296	1,930	2,035	1,146	1,012	664	3.27
Fuel Oil/Kerosene	17.4	1,915	1,606	1,925	929	755	606	3.24
Fuel Oil	12.2	2,022	1,674	2,078	916	672	645	3.70
Kerosene	6.2	1,772	1,517	1,684	1,137	783	543	4.84
LPG (excludes outdoor grill)	7.7	1,600	1,319	1,504	Q	755	473	5.00
Coal	.9	2,134	1,755	1,790	Q	Q	530	12.41
Solar Collectors	1.2	1,975	1,447	1,763	589	NC	541	12.77
Main Heating Fuel and Equipment								
Natural Gas	50.0	1,778	1,558	1,845	935	900	597	2.07
Central Warm-Air Furnace	31.6	2,006	1,742	1,962	1,016	918	647	2.44
Steam or Hot-Water System	9.2	1,621	1,456	2,185	955	Q	608	4.78
Floor, Wall, or Pipeless Furnace	5.1	1,145	1,034	1,198	702	Q	402	4.25
Room Heater/Other	4.0	1,138	1,004	1,118	783	Q	401	5.08
Electricity	17.9	1,502	1,313	1,682	851	906	551	3.71
Built-In Electric Units	5.4	1,336	1,163	1,590	783	Q	509	5.66
Central Warm-Air Furnace	6.9	1,385	1,246	1,680	923	995	531	5.92
Heat Pump	4.5	1,988	1,684	1,839	844	Q	692	6.70
Other	1.1	1,039	931	1,126	676	614	325	10.99
Fuel Oil	10.9	2,032	1,690	2,111	925	673	648	3.79
Steam or Hot-Water System	6.3	1,965	1,619	2,309	916	NC	641	5.10
Central Warm-Air Furnace	4.0	2,163	1,825	2,001	1,004	677	661	5.06
Other	.5	1,802	1,515	1,541	Q	Q	634	18.71
Wood	5.1	1,822	1,507	1,558	1,241	940	506	6.39
Heating Stove	4.1	1,699	1,388	1,436	Q	910	465	5.96
Other	1.0	2,344	2,015	2,092	Q	Q	677	11.12
LPG	4.2	1,513	1,311	1,540	NC	774	497	6.22
Central Warm-Air Furnace	2.4	1,605	1,394	1,770	NC	812	481	8.18
Room Heater	.9	1,197	1,042	1,081	NC	Q	485	11.85
Other	.8	1,596	1,364	1,593	NC	599	573	17.76
Kerosene	1.3	1,102	989	1,151	Q	744	409	7.29
Other	.5	2,106	1,803	1,855	Q	Q	536	23.27
None	.7	1,328	--	--	--	--	--	18.74
Use Secondary Heating Fuel (more than one may be used)								
Yes	37.4	2,083	1,769	1,929	1,044	870	638	2.50
Wood	19.2	2,430	2,048	2,169	1,137	1,081	710	3.34
Electricity	12.4	1,821	1,572	1,753	982	830	589	3.25
Natural Gas	2.9	1,716	1,534	1,623	1,235	Q	581	8.84
Fuel Oil/Kerosene	5.9	1,938	1,638	1,793	1,001	846	578	5.80
Fuel Oil	1.1	1,943	1,558	1,904	847	Q	620	16.54
Kerosene	4.9	1,952	1,663	1,774	1,213	849	574	5.44
LPG	1.0	1,603	1,319	1,473	Q	Q	468	12.17
Other	.5	2,588	2,162	2,218	Q	NC	639	8.17
No	53.2	1,485	1,297	1,639	876	832	525	1.89

See footnotes at end of table.

Table 19. U.S. Household Fuel Use by Average Square Footage, November 1987 (Continued)

Household Characteristics	Total Households (millions)	Average Number of Square Feet per Housing Unit		Average Number of Heated Square Feet per Housing Unit			Average Number of Heated Square Feet per Household Member	RSE Row Factors
		Heated and Unheated	Heated	Single-Family	Multi-Family	Mobile Home		
RSE Column Factors:	1.495	0.764	0.738	0.709	1.406	1.419	0.839	
Use Secondary Heating Equipment (more than one may be used)								
Yes	37.4	2,083	1,769	1,929	1,044	870	638	2.50
Fireplace	15.1	2,493	2,108	2,245	1,170	1,251	745	4.26
Portable Electric Heater	8.2	1,777	1,548	1,740	1,012	772	582	4.13
Wood or Coal Heating Stove	4.8	2,274	1,908	1,966	1,824	924	646	5.11
Built-In Electric Units	3.6	1,969	1,711	1,866	1,047	Q	623	5.48
Portable Kerosene Heater	4.8	1,920	1,638	1,750	1,213	827	573	5.66
Central Warm-Air Furnace	2.5	2,065	1,720	1,889	859	998	626	8.04
Oil or Gas Room Heater	1.7	1,773	1,467	1,491	Q	Q	596	7.36
Cooking Stove	1.3	1,260	1,065	1,251	785	Q	376	9.10
Heat Pump, Steam or Hot-Water System, Pipeless Furnace, or Other	1.9	2,032	1,719	2,001	818	Q	613	11.12
No	53.2	1,485	1,297	1,639	876	832	525	1.89
Fuel Combinations								
Use Natural Gas for Main Heat	50.0	1,778	1,558	1,845	935	900	597	2.07
Use Natural Gas to Heat Water and Have A/C	28.5	1,889	1,665	1,972	971	907	651	2.92
and Lack A/C	16.3	1,602	1,398	1,680	873	965	517	3.67
Use Electricity to Heat Water and Have A/C	3.3	1,713	1,478	1,620	1,068	862	562	5.94
and Lack A/C	1.6	1,736	1,474	1,688	985	731	574	8.68
Other	.2	1,619	1,385	1,759	Q	NC	626	21.05
Use Electricity for Main Heat	17.9	1,502	1,313	1,682	851	906	551	3.71
Use Electricity to Heat Water and Have A/C	12.4	1,633	1,427	1,745	872	902	573	3.57
and Lack A/C	3.0	1,269	1,058	1,353	789	951	493	7.52
Other	2.5	1,136	1,057	1,616	851	Q	499	15.63
Use Fuel Oil for Main Heat	10.9	2,032	1,690	2,111	925	673	648	3.79
Use Fuel Oil to Heat Water and Have A/C	2.6	2,099	1,726	2,426	875	NC	673	8.68
and Lack A/C	2.5	1,693	1,362	1,999	821	NC	585	6.37
Use Electricity to Heat Water and Have A/C	2.0	2,211	1,881	2,036	Q	638	718	7.25
and Lack A/C	2.1	2,128	1,803	1,996	1,034	708	643	7.31
Other	1.7	2,098	1,758	2,118	1,219	Q	622	8.56
Use Wood for Main Heat	5.1	1,822	1,507	1,558	1,241	940	506	6.39
Use LPG for Main Heat	4.2	1,513	1,311	1,540	NC	774	497	6.22
Use Kerosene for Main Heat	1.3	1,102	989	1,151	Q	744	409	7.29
Use Coal for Main Heat	.4	1,941	1,636	1,682	Q	Q	475	23.64
No Heating Fuel/Other Fuel	.8	1,473	Q	Q	NC	Q	Q	17.37
Water-Heating Fuel								
Natural Gas	49.3	1,759	1,543	1,868	928	934	592	2.36
Electricity	32.0	1,659	1,420	1,666	877	832	552	2.48
Fuel Oil or Kerosene	5.3	1,916	1,557	2,224	844	NC	634	6.38
LPG	3.0	1,674	1,350	1,448	Q	728	473	6.96
Wood	.2	2,337	1,920	2,013	Q	NC	1,010	23.12
Solar	.6	2,106	1,347	1,487	Q	NC	468	18.09
Other/None	.3	1,287	948	1,119	Q	Q	373	32.62

See footnotes at end of table.

Table 19. U.S. Household Fuel Use by Average Square Footage, November 1987 (Continued)

Household Characteristics	Total Households (millions)	Average Number of Square Feet per Housing Unit		Average Number of Heated Square Feet per Housing Unit			Average Number of Heated Square Feet per Household Member	RSE Row Factors
		Heated and Unheated	Heated	Single-Family	Multi-Family	Mobile Home		
RSE Column Factors:	1.495	0.764	0.738	0.709	1.406	1.419	0.839	
Main Cooking Fuel								
Electricity	52.6	1,843	1,568	1,851	863	896	619	1.98
Natural Gas	32.6	1,605	1,426	1,752	954	907	532	2.83
LPG	5.0	1,431	1,153	1,341	Q	708	420	5.60
Other/None	.4	1,213	1,037	1,168	Q	Q	691	25.40
Clothes-Drying Fuel								
With Clothes Dryer	59.6	2,104	1,787	1,905	1,244	956	641	1.61
Electricity	45.9	2,063	1,746	1,877	1,181	942	634	1.81
Natural Gas	12.9	2,257	1,950	2,022	1,493	1,080	670	3.71
LPG	.8	2,034	1,620	1,650	NC	Q	554	11.54
Without Clothes Dryer	31.0	1,017	922	1,202	797	670	415	2.37
Air Conditioning								
Yes	57.6	1,804	1,571	1,878	941	853	611	1.87
Central Unit	30.7	2,029	1,751	2,027	961	976	670	2.74
Electric	30.1	2,037	1,757	2,022	967	969	677	2.75
Individual Room Units[1]	26.9	1,548	1,367	1,671	925	768	542	2.26
One Unit	18.4	1,394	1,234	1,572	849	744	514	2.41
Two or More Units	8.6	1,879	1,651	1,828	1,214	857	592	4.06
No	32.9	1,606	1,352	1,622	853	832	513	2.76
Number of Rooms That Can Be Air Conditioned								
All	40.8	1,803	1,573	1,867	916	886	625	2.30
Some	16.8	1,807	1,568	1,856	1,002	777	579	2.66
None	32.9	1,606	1,352	1,622	853	832	513	2.76
Wood Burned in Past 12 Months								
Yes	22.5	2,311	1,936	2,024	1,220	999	658	3.27
One-Third Cord or Less	8.6	2,529	2,124	2,247	1,239	1,125	750	4.74
More than One-Third Cord	13.8	2,175	1,819	1,891	1,194	963	605	3.86
No	68.1	1,541	1,345	1,668	887	817	542	1.67
Household Owns or Has Regular Use of a Vehicle								
Yes	79.4	1,826	1,565	1,818	956	859	587	1.70
No	11.1	1,059	968	1,334	779	675	465	3.43
Total Single-Family Units and Mobile Homes	65.6	2,032	1,714	1,787	--	845	615	1.57
Availability of Natural Gas in the Neighborhood (single-family units *and mobile homes*)								
Uses Any Natural Gas	38.8	2,100	1,802	1,844	--	903	639	2.26
Does Not Use Any Natural Gas	26.7	1,933	1,585	1,697	--	816	580	2.90
Gas Available	5.8	2,024	1,729	1,820	--	863	665	4.67
Gas Not Available	21.0	1,908	1,545	1,661	--	806	558	3.52

See footnotes at end of table.

Table 19. U.S. Household Fuel Use by Average Square Footage, November 1987 (Continued)

Household Characteristics	Total Households (millions)	Average Number of Square Feet per Housing Unit		Average Number of Heated Square Feet per Housing Unit			Average Number of Heated Square Feet per Household Member	RSE Row Factors
		Heated and Unheated	Heated	Single-Family	Multi-Family	Mobile Home		
RSE Column Factors:	1.495	0.764	0.738	0.709	1.406	1.419	0.839	
Total Households in 2-or-More-Unit Buildings	25.0	943	907	--	907	--	435	2.77
Central Main Heating System for the Building (2-or-more-unit buildings)								
Yes	10.2	902	886	--	886	--	449	3.30
No/No Main Heating System	14.8	972	921	--	921	--	426	4.03
Central Water-Heating System for the Building (2-or-more-unit buildings)								
Yes	13.6	874	857	--	857	--	442	3.83
No/No Water-Heating Fuel								
No Hot Running Water	11.3	1,026	967	--	967	--	427	3.85
Central Air Conditioning System for the Building (2-or-more-unit buildings)								
Yes	1.0	832	825	--	825	--	382	11.04
No	14.4	980	949	--	949	--	469	3.40
No Air Conditioning	9.6	899	853	--	853	--	392	3.99

NC No cases in sample.
-- Data not applicable.
Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.
1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 20. U.S. Household Fuel Use by Total Square Footage, November 1987

Household Characteristics	Total Households		Total Square Footage				RSE Row Factors
			Total Heated and Unheated		Total Heated		
	(millions)	(percent)	(billions)	(percent)	(billions)	(percent)	
RSE Column Factors:	0.976	0.962	1.038	0.993	1.042	0.992	
Total Households	90.5	100.0	156.8	100.0	135.0	100.0	1.11
Fuels Used for Any Use (more than one fuel often used)							
Electricity	90.5	100.0	156.8	100.0	135.0	100.0	1.11
Natural Gas	57.3	63.3	99.4	63.4	87.1	64.5	2.90
Wood	24.6	27.1	56.4	36.0	47.4	35.1	2.95
Fuel Oil/Kerosene	17.4	19.2	33.3	21.2	27.9	20.7	5.63
Fuel Oil	12.2	13.5	24.8	15.8	20.5	15.2	7.05
Kerosene	6.2	6.8	10.9	7.0	9.4	6.9	7.56
LPG *(excludes outdoor grill)*	7.7	8.5	12.3	7.8	10.1	7.5	9.72
Coal	.9	.9	1.8	1.2	1.5	1.1	24.81
Solar Collectors	1.2	1.3	2.3	1.5	1.7	1.2	16.24
Main Heating Fuel and Equipment							
Natural Gas	50.0	55.2	88.9	56.7	77.9	57.7	3.42
Central Warm-Air Furnace	31.6	35.0	63.5	40.5	55.1	40.8	4.40
Steam or Hot-Water System	9.2	10.2	15.0	9.5	13.4	10.0	7.62
Floor, Wall, or Pipeless Furnace	5.1	5.6	5.8	3.7	5.3	3.9	7.94
Room Heater/Other	4.0	4.4	4.5	2.9	4.0	3.0	10.22
Electricity	17.9	19.8	26.9	17.2	23.5	17.4	7.02
Built-In Electric Units	5.4	6.0	7.3	4.6	6.3	4.7	9.72
Central Warm-Air Furnace	6.9	7.6	9.5	6.1	8.6	6.3	12.18
Heat Pump	4.5	5.0	9.0	5.8	7.7	5.7	10.62
Other	1.1	1.2	1.1	.7	1.0	.7	18.93
Fuel Oil	10.9	12.0	22.0	14.1	18.3	13.6	6.56
Steam or Hot-Water System	6.3	7.0	12.5	8.0	10.3	7.6	7.87
Central Warm-Air Furnace	4.0	4.4	8.7	5.5	7.3	5.4	10.61
Other	.5	.5	.9	.6	.7	.5	24.50
Wood	5.1	5.6	9.3	5.9	7.7	5.7	11.44
Heating Stove	4.1	4.5	7.0	4.5	5.7	4.2	11.37
Other	1.0	1.1	2.3	1.4	1.9	1.4	18.51
LPG	4.2	4.6	6.3	4.0	5.5	4.0	13.12
Central Warm-Air Furnace	2.4	2.7	3.9	2.5	3.4	2.5	14.75
Room Heater	.9	1.0	1.1	.7	1.0	.7	26.35
Other	.8	.9	1.3	.8	1.1	.8	28.67
Kerosene	1.3	1.5	1.5	.9	1.3	1.0	19.20
Other	.5	.5	1.0	.6	.9	.6	32.11
None	.7	.8	1.0	.6	--	--	22.09
Use Secondary Heating Fuel (more than one may be used)							
Yes	37.4	41.3	77.9	49.6	66.1	49.0	2.23
Wood	19.2	21.2	46.7	29.8	39.3	29.1	3.38
Electricity	12.4	13.7	22.6	14.4	19.5	14.4	4.28
Natural Gas	2.9	3.2	4.9	3.1	4.4	3.3	10.63
Fuel Oil/Kerosene	5.9	6.5	11.4	7.3	9.6	7.1	8.96
Fuel Oil	1.1	1.3	2.2	1.4	1.8	1.3	25.97
Kerosene	4.9	5.4	9.5	6.1	8.1	6.0	7.89
LPG	1.0	1.1	1.6	1.0	1.3	1.0	17.78
Other	.5	.6	1.3	.8	1.1	.8	18.50
No	53.2	58.7	79.0	50.4	68.9	51.0	1.94

See footnotes at end of table.

Table 20. U.S. Household Fuel Use by Total Square Footage, November 1987 (Continued)

Household Characteristics	Total Households		Total Square Footage				RSE Row Factors
			Total Heated and Unheated		Total Heated		
	(millions)	(percent)	(billions)	(percent)	(billions)	(percent)	
RSE Column Factors:	0.976	0.962	1.038	0.993	1.042	0.992	
Use Secondary Heating Equipment (more than one may be used)							
Yes	37.4	41.3	77.9	49.6	66.1	49.0	2.23
Firepiace	15.1	16.6	37.6	23.9	31.8	23.5	4.45
Portable Electric Heater	8.2	9.1	14.6	9.3	12.8	9.4	5.76
Wood or Coal Heating Stove	4.8	5.3	10.9	6.9	9.1	6.8	7.80
Built-In Electric Units	3.6	4.0	7.0	4.5	6.1	4.5	7.89
Portable Kerosene Heater	4.8	5.3	9.2	5.9	7.8	5.8	8.28
Central Warm-Air Furnace	2.5	2.7	5.1	3.2	4.2	3.1	13.44
Oil or Gas Room Heater	1.7	1.9	3.1	2.0	2.5	1.9	12.17
Cooking Stove	1.3	1.5	1.7	1.1	1.4	1.1	16.18
Heat Pump, Steam or Hot-Water System, Pipeless Furnace, or Other	1.9	2.0	3.8	2.4	3.2	2.4	14.03
No	53.2	58.7	79.0	50.4	68.9	51.0	1.94
Fuel Combinations							
Use Natural Gas for Main Heat	50.0	55.2	88.9	56.7	77.9	57.7	3.42
Use Natural Gas to Heat Water							
and Have A/C	28.5	31.5	53.9	34.4	47.5	35.2	4.38
and Lack A/C	16.3	18.0	26.1	16.6	22.8	16.9	6.04
Use Electricity to Heat Water							
and Have A/C	3.3	3.7	5.7	3.7	4.9	3.7	9.64
and Lack A/C	1.6	1.8	2.8	1.8	2.3	1.7	10.75
Other	.2	.3	.4	.3	.3	.3	29.77
Use Electricity for Main Heat	17.9	19.8	26.9	17.2	23.5	17.4	7.02
Use Electricity to Heat Water							
and Have A/C	12.4	13.7	20.2	12.9	17.7	13.1	7.75
and Lack A/C	3.0	3.3	3.8	2.4	3.2	2.3	12.55
Other	2.5	2.8	2.9	1.8	2.7	2.0	20.60
Use Fuel Oil for Main Heat	10.9	12.0	22.0	14.1	18.3	13.6	6.55
Use Fuel Oil to Heat Water							
and Have A/C	2.6	2.9	5.5	3.5	4.5	3.3	18.15
and Lack A/C	2.5	2.8	4.2	2.7	3.4	2.5	11.55
Use Electricity to Heat Water							
and Have A/C	2.0	2.2	4.4	2.8	3.7	2.7	15.77
and Lack A/C	2.1	2.3	4.5	2.9	3.8	2.8	13.92
Other	1.7	1.8	3.5	2.2	2.9	2.2	11.45
Use Wood for Main Heat	5.1	5.6	9.3	5.9	7.7	5.7	11.44
Use LPG for Main Heat	4.2	4.6	6.3	4.0	5.5	4.0	13.12
Use Kerosene for Main Heat	1.3	1.5	1.5	.9	1.3	1.0	19.20
Use Coal for Main Heat	.4	.5	.8	.5	.7	.5	37.22
No Heating Fuel/Other Fuel	.8	.9	1.2	.7	Q	Q	20.82
Water-Heating Fuel							
Natural Gas	49.3	54.4	86.6	55.2	76.0	56.3	3.34
Electricity	32.0	35.3	53.0	33.8	45.4	33.6	4.34
Fuel Oil or Kerosene	5.3	5.8	10.1	6.4	8.2	6.1	10.85
LPG	3.0	3.3	5.0	3.2	4.1	3.0	15.08
Wood	.2	.2	.4	.2	.3	.2	33.00
Solar	.6	.6	1.2	.8	.8	.6	22.96
Other/None	.3	.3	.4	.2	.3	.2	35.90
Main Cooking Fuel							
Electricity	52.6	58.1	96.9	61.8	82.4	61.0	2.32
Natural Gas	32.6	36.0	52.3	33.4	46.5	34.4	4.18
LPG	5.0	5.5	7.2	4.6	5.8	4.3	11.65
Other/None	.4	.4	.4	.3	.4	.3	28.64

See footnotes at end of table.

Table 20. U.S. Household Fuel Use by Total Square Footage, November 1987 (Continued)

Household Characteristics	Total Households		Total Square Footage				RSE Row Factors
			Total Heated and Unheated		Total Heated		
	(millions)	(percent)	(billions)	(percent)	(billions)	(percent)	
RSE Column Factors:	0.976	0.962	1.038	0.993	1.042	0.992	
Clothes-Drying Fuel							
With Clothes Dryer	59.6	65.8	125.4	79.9	106.5	78.9	1.52
Electricity	45.9	50.7	94.8	60.4	80.2	59.4	2.12
Natural Gas	12.9	14.3	29.2	18.6	25.2	18.7	5.55
LPG	.8	.9	1.7	1.1	1.4	1.0	22.13
Without Clothes Dryer	31.0	34.2	31.5	20.1	28.5	21.1	3.31
Air Conditioning							
Yes	57.6	63.6	104.0	66.3	90.5	67.0	2.06
Central Unit	30.7	33.9	62.3	39.7	53.7	39.8	3.06
Electric	30.1	33.2	61.2	39.0	52.8	39.1	3.13
Individual Room Units[1]	26.9	29.8	41.7	26.6	36.8	27.3	3.33
One Unit	18.4	20.3	25.6	16.3	22.7	16.8	4.21
Two or More Units	8.6	9.4	16.1	10.2	14.1	10.5	5.23
No	32.9	36.4	52.9	33.7	44.5	33.0	3.86
Number of Rooms That Can Be Air Conditioned							
All	40.8	45.1	73.6	46.9	64.2	47.5	2.73
Some	16.8	18.6	30.4	19.4	26.3	19.5	3.76
None	32.9	36.4	52.9	33.7	44.5	33.0	3.86
Wood Burned in Past 12 Months							
Yes	22.5	24.8	51.9	33.1	43.5	32.2	3.07
One-Third Cord or Less	8.6	9.5	21.8	13.9	18.3	13.6	5.50
More than One-Third Cord	13.8	15.3	30.1	19.2	25.2	18.6	5.21
No	68.1	75.2	104.9	66.9	91.6	67.8	1.40
Household Owns or Has Regular Use of a Vehicle							
Yes	79.4	87.7	145.0	92.5	124.3	92.0	1.23
No	11.1	12.3	11.8	7.5	10.8	8.0	4.51
Total Single-Family Units and Mobile Homes	65.6	100.0	133.3	100.0	112.4	100.0	1.80
Availability of Natural Gas in the Neighborhood (single-family units and mobile homes)							
Uses Any Natural Gas	38.8	59.2	81.6	61.2	70.0	62.3	3.67
Does Not Use Any Natural Gas	26.7	40.8	51.7	38.8	42.4	37.7	5.10
Gas Available	5.8	8.8	11.7	8.8	10.0	8.9	8.94
Gas Not Available	21.0	32.0	40.0	30.0	32.4	28.8	6.03

See footnotes at end of table.

Table 20. U.S. Household Fuel Use by Total Square Footage, November 1987 (Continued)

Household Characteristics	Total Households		Total Square Footage				RSE Row Factors
			Total Heated and Unheated		Total Heated		
	(millions)	(percent)	(billions)	(percent)	(billions)	(percent)	
RSE Column Factors:	0.976	0.962	1.038	0.993	1.042	0.992	
Total Households in 2-or-More-Unit Buildings	25.0	100.0	23.5	100.0	22.6	100.0	4.78
Central Main Heating System for the Building (2-or-more-unit buildings)							
Yes	10.2	40.8	9.2	39.1	9.0	39.9	6.89
No/No Main Heating System	14.8	59.2	14.3	60.9	13.6	60.1	5.28
Central Water-Heating System for the Building (2-or-more-unit buildings)							
Yes	13.6	54.6	11.9	50.6	11.7	51.6	7.56
No/No Water-Heating Fuel							
No Hot Running Water	11.3	45.4	11.6	49.4	11.0	48.4	7.44
Central Air Conditioning System for the Building (2-or-more-unit buildings)							
Yes	1.0	3.9	.8	3.4	.8	3.5	30.01
No	14.4	57.8	14.1	60.1	13.7	60.5	5.14
No Air Conditioning	9.6	38.3	8.6	36.5	8.2	36.0	5.80

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 21. U.S. Household Fuel Use by Main Heating Fuel, November 1987

(Million Households)

Household Characteristics	Total	Main Heating Fuel						RSE Row Factors
		Natural Gas	Electricity	Fuel Oil or Kerosene	Wood	Liquefied Petroleum Gas	Other/None	
RSE Column Factors:	0.399	0.536	1.041	0.879	1.299	1.602	2.458	
Total Households	90.5	50.0	17.9	12.2	5.1	4.2	1.2	7.18
Fuels Used for Any Use (more than one fuel often used)								
Electricity	90.5	50.0	17.9	12.2	5.1	4.2	1.2	7.18
Natural Gas	57.3	50.0	2.6	3.8	.8	NC	Q	9.97
Wood	24.6	10.2	5.1	2.9	5.1	1.1	.3	10.58
Fuel Oil/Kerosene	17.4	2.1	1.2	12.2	1.3	.5	.2	14.67
Fuel Oil	12.2	.4	Q	10.9	.8	Q	Q	21.71
Kerosene	6.2	1.7	1.2	2.1	.7	.4	Q	16.70
LPG (excludes outdoor grill)	7.7	Q	.6	1.3	1.3	4.2	.2	13.22
Coal	.9	.1	Q	.1	Q	NC	.4	39.33
Solar Collectors	1.2	.6	.3	Q	Q	NC	Q	37.74
Main Heating Equipment								
Central Warm-Air Furnace	46.1	31.6	6.9	4.5	.6	2.4	Q	10.03
Forced Air	45.0	30.8	6.9	4.3	.5	2.4	Q	10.02
Gravity	1.1	.9	Q	.1	Q	Q	NC	36.78
Steam or Hot-Water System	16.0	9.2	Q	6.3	Q	Q	Q	11.20
Heat Pump	4.5	--	4.5	--	--	--	--	18.20
Built-In Electric Units	5.4	--	5.4	--	--	--	--	15.11
Floor, Wall, or Pipeless Furnace	6.1	5.1	Q	.3	NC	.6	Q	20.80
Oil or Gas Room Heater	5.4	3.9	--	.5	--	.9	NC	19.94
Wood or Coal Heating Stove	4.4	--	--	--	4.1	--	.3	15.59
Fireplace	.3	NC	NC	NC	.3	NC	NC	35.88
Portable Electric Heater	.8	--	.8	--	--	--	--	29.41
Portable Kerosene Heater	.5	--	--	.5	--	--	--	38.50
Cooking Stove	.2	Q	Q	NC	Q	Q	NC	99.40
Other/None	.8	--	--	--	--	--	.8	19.63
Use Secondary Heating Fuel (more than one may be used)								
Yes	37.4	18.3	7.4	5.0	4.2	2.3	.3	8.53
Wood	19.2	10.1	5.0	2.7	Q	1.0	.2	10.62
Electricity	12.4	6.7	1.0	1.7	1.9	1.1	Q	12.07
Natural Gas	2.9	1.4	.5	.3	.6	NC	Q	23.26
Fuel Oil/Kerosene	5.9	2.0	1.2	.9	1.3	.4	Q	18.38
Fuel Oil	1.1	Q	Q	Q	.8	NC	Q	36.00
Kerosene	4.9	1.7	1.2	.9	.7	.4	Q	17.24
LPG	1.0	Q	.2	Q	.6	Q	Q	31.82
Other	.5	.3	Q	.2	Q	NC	NC	37.85
No	53.2	31.7	10.5	7.2	.9	1.9	.9	7.95
Use Secondary Heating Equipment (more than one may be used)								
Yes	37.4	18.3	7.4	5.0	4.2	2.3	.3	8.53
Fireplace	15.1	8.8	4.2	1.5	Q	.5	Q	13.27
Portable Electric Heater	8.2	4.8	.8	1.2	.6	.9	Q	14.56
Wood or Coal Heating Stove	4.8	1.8	1.1	1.2	Q	.6	Q	16.38
Built-In Electric Units	3.6	1.8	.4	.4	.7	.2	Q	21.13
Portable Kerosene Heater	4.8	1.6	1.1	1.0	.6	.3	Q	17.96
Central Warm-Air Furnace	2.5	Q	.3	.2	1.8	NC	Q	26.14
Oil or Gas Room Heater	1.7	1.0	.2	Q	.3	Q	Q	28.82
Cooking Stove	1.3	.7	Q	.2	Q	Q	Q	34.46
Heat Pump, Steam or Hot-Water System, Pipeless Furnace, or Other	1.9	.7	.2	Q	.6	Q	Q	34.14
No	53.2	31.7	10.5	7.2	.9	1.9	.9	7.95

See footnotes at end of table.

Table 21. U.S. Household Fuel Use by Main Heating Fuel, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Main Heating Fuel						RSE Row Factors
		Natural Gas	Electricity	Fuel Oil or Kerosene	Wood	Liquefied Petroleum Gas	Other/None	
RSE Column Factors:	0.399	0.536	1.041	0.879	1.299	1.602	2.458	
Water-Heating Fuel								
Natural Gas	49.3	44.8	2.2	1.5	0.6	NC	Q	10.8
Electricity	32.0	4.9	15.4	5.1	3.6	2.2	0.7	9.85
Fuel Oil or Kerosene	5.3	Q	NC	5.2	Q	NC	Q	17.02
LPG	3.0	Q	Q	.4	.6	1.9	.1	17.92
Wood	.2	NC	NC	NC	.1	NC	Q	44.22
Solar	.6	.2	.2	Q	Q	NC	Q	46.93
Other/None	.3	Q	NC	Q	Q	Q	Q	79.07
Main Cooking Fuel								
Electricity	52.6	21.9	17.0	7.4	3.6	1.7	.8	7.92
Natural Gas	32.6	28.0	.6	3.5	.4	NC	Q	13.21
LPG	5.0	Q	.3	1.2	1.0	2.4	.2	14.36
Other/None	.4	Q	NC	Q	Q	Q	Q	66.26
Clothes-Drying Fuel								
With Clothes Dryer	59.6	33.6	11.7	7.5	3.7	2.6	.6	7.54
Electricity	45.9	21.8	11.5	6.7	3.2	2.1	.5	8.26
Natural Gas	12.9	11.9	Q	.6	.3	NC	Q	15.66
LPG	.8	NC	Q	Q	.2	.5	Q	31.71
Without Clothes Dryer	31.0	16.4	6.2	4.7	1.4	1.6	.6	9.41
Air Conditioning								
Yes	57.6	32.0	14.4	6.3	2.0	2.5	.3	8.55
Central Unit	30.7	16.7	10.7	1.4	.8	1.1	Q	11.53
Electric	30.1	16.1	10.7	1.4	.8	1.0	Q	11.53
Individual Room Units[1]	26.9	15.3	3.8	4.9	1.2	1.4	.3	10.12
One Unit	18.4	10.6	2.8	2.9	.9	1.1	Q	11.87
Two or More Units	8.6	4.8	.9	2.0	.3	.3	.2	14.73
No	32.9	17.9	3.5	5.8	3.1	1.7	.9	10.11
Number of Rooms That Can Be Air Conditioned								
All	40.8	22.0	13.0	2.7	1.3	1.6	.2	10.34
Some	16.8	10.1	1.4	3.7	.6	.9	Q	11.35
None	32.9	17.9	3.5	5.8	3.1	1.7	.9	10.11
Wood Burned in Past 12 Months								
Yes	22.5	9.0	4.3	2.7	5.0	1.0	.3	10.60
One-Third Cord or Less	8.6	4.8	2.1	1.1	Q	.3	.2	15.77
More than One-Third Cord	13.8	4.2	2.2	1.7	4.9	.7	Q	12.14
No	68.1	40.9	13.6	9.4	Q	3.1	.9	6.16
Household Owns or Has Regular Use of a Vehicle								
Yes	79.4	43.6	16.4	9.7	4.7	3.9	1.1	7.06
No	11.1	6.3	1.5	2.5	.3	.3	.1	15.12

See footnotes at end of table.

Table 21. U.S. Household Fuel Use by Main Heating Fuel, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Main Heating Fuel						RSE Row Factors
		Natural Gas	Electricity	Fuel Oil or Kerosene	Wood	Liquefied Petroleum Gas	Other/None	
RSE Column Factors:	0.399	0.536	1.041	0.879	1.299	1.602	2.458	
Total Single-Family Units and Mobile Homes	65.6	36.0	10.9	8.7	4.9	4.2	1.0	7.36
Availability of Natural Gas in the Neighborhood (single-family units and mobile homes)								
Uses Any Natural Gas	38.8	36.0	.8	1.3	.7	NC	Q	12.32
Does Not Use Natural Gas	26.7	--	10.2	7.4	4.1	4.2	.9	9.20
Gas Available	5.8	--	2.6	2.0	.6	.5	Q	16.65
(percent)	21.6	--	25.3	27.1	14.8	13.2	Q	14.82
Gas Not Available	21.0	--	7.6	5.4	3.5	3.6	.9	10.24
(percent)	78.4	--	74.7	72.9	85.2	86.8	93.7	3.08
Total Households in 2-or-More-Unit Buildings	25.0	14.0	7.0	3.5	.2	NC	.2	14.16
Central Main Heating System for the Building (2-or-more-unit buildings)								
Yes	10.2	6.8	.3	3.0	Q	NC	NC	21.39
No/No Main Heating System	14.8	7.2	6.7	.5	Q	NC	.2	15.58
Central Water-Heating System for the Building (2-or-more-unit buildings)								
Yes	13.6	8.1	2.6	2.8	Q	NC	Q	19.40
No/No Water-Heating Fuel								
No Hot Running Water	11.3	5.9	4.4	.7	Q	NC	Q	18.97
Central Air Conditioning System for the Building (2-or-more-unit buildings)								
Yes	1.0	.7	Q	Q	NC	NC	NC	68.69
No	14.4	7.7	5.1	1.5	Q	NC	Q	16.75
No Air Conditioning	9.6	5.5	1.8	1.9	.2	NC	.1	16.59

NC No cases in sample.
-- Data not applicable.
Q *Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.*
1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 22. U.S. Household Fuel Use by Main Heating Fuel, November 1987

(Percent of Households)

Household Characteristics	Total	Main Heating Fuel						RSE Row Factors
		Natural Gas	Electricity	Fuel Oil or Kerosene	Wood	Liquefied Petroleum Gas	Other/None	
RSE Column Factors:	0.495	0.575	1.009	0.905	1.101	1.481	2.359	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Fuels Used for Any Use (more than one fuel often used)								
Electricity	100.0	100.0	100.0	100.0	99.6	100.0	100.0	NE
Natural Gas	63.3	100.0	14.5	31.3	15.1	NC	12.5	12.03
Wood	27.1	20.3	28.2	23.6	100.0	26.9	24.4	8.52
Fuel Oil/Kerosene	19.2	4.2	6.7	100.0	25.7	11.1	12.4	14.84
Fuel Oil	13.5	.9	Q	89.7	14.9	Q	Q	15.33
Kerosene	6.8	3.4	6.5	17.5	13.4	9.7	Q	15.16
LPG (excludes outdoor grill)	8.5	Q	3.6	10.6	26.4	100.0	14.4	14.43
Coal	.9	.3	Q	1.2	Q	NC	34.3	33.94
Solar Collectors	1.3	1.2	1.9	Q	Q	NC	Q	34.75
Main Heating Equipment								
Central Warm-Air Furnace	50.9	63.3	38.3	36.6	11.2	58.6	Q	7.39
Forced Air	49.7	61.5	38.2	35.5	10.6	58.4	Q	7.38
Gravity	1.2	1.8	Q	1.1	Q	Q	NC	32.90
Steam or Hot-Water System	17.6	18.5	Q	52.2	Q	Q	Q	8.69
Heat Pump	5.0	--	25.3	--	--	--	--	15.23
Built-In Electric Units	6.0	--	30.3	--	--	--	--	12.56
Floor, Wall, or Pipeless Furnace	6.8	10.2	Q	2.6	NC	14.3	Q	19.05
Oil or Gas Room Heater	5.9	7.8	--	4.5	--	22.0	NC	17.45
Wood or Coal Heating Stove	4.9	--	--	--	81.0	--	24.4	9.14
Fireplace	.3	NC	NC	NC	5.4	NC	NC	33.85
Portable Electric Heater	.9	--	4.5	--	--	--	--	26.50
Portable Kerosene Heater	.5	--	--	4.0	--	--	--	34.82
Cooking Stove	.3	Q	Q	NC	Q	Q	NC	79.98
Other/None	.9	--	--	--	--	--	62.1	16.69
Use Secondary Heating Fuel (more than one may be used)								
Yes	41.3	36.5	41.4	40.9	81.9	54.0	25.6	5.31
Wood	21.2	20.3	28.1	22.5	Q	24.6	14.0	8.44
Electricity	13.7	13.4	5.6	13.8	37.1	26.1	Q	10.08
Natural Gas	3.2	2.8	2.7	2.7	12.3	NC	Q	23.26
Fuel Oil/Kerosene	6.5	3.9	6.7	7.6	25.7	8.4	Q	16.84
Fuel Oil	1.3	Q	Q	Q	14.9	NC	Q	31.56
Kerosene	5.4	3.3	6.5	7.5	13.4	8.4	Q	15.93
LPG	1.1	Q	.9	Q	11.4	Q	Q	30.09
Other	.6	.5	Q	1.3	Q	NC	NC	33.87
No	58.7	63.5	58.6	59.1	18.1	46.0	74.4	4.59
Use Secondary Heating Equipment (more than one may be used)								
Yes	41.3	36.5	41.4	40.9	81.9	54.0	25.6	5.31
Fireplace	16.6	17.6	23.3	11.9	Q	11.0	Q	11.37
Portable Electric Heater	9.1	9.7	4.3	9.9	11.0	20.4	Q	13.17
Wood or Coal Heating Stove	5.3	3.6	6.4	10.1	Q	13.5	Q	14.80
Built-In Electric Units	4.0	3.6	2.5	3.3	13.9	4.4	Q	20.13
Portable Kerosene Heater	5.3	3.2	6.3	8.2	12.0	8.2	Q	16.58
Central Warm-Air Furnace	2.7	Q	1.5	2.0	35.0	NC	Q	22.45
Oil or Gas Room Heater	1.9	2.0	1.0	Q	6.7	Q	Q	28.21
Cooking Stove	1.5	1.5	Q	1.7	Q	Q	Q	31.35
Heat Pump, Steam or Hot-Water System, Pipeless Furnace, or Other	2.0	1.5	1.3	Q	10.9	Q	Q	32.44
No	58.7	63.5	58.6	59.1	18.1	46.0	74.4	4.59

See footnotes at end of table.

Table 22. U.S. Household Fuel Use by Main Heating Fuel, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Main Heating Fuel						RSE Row Factors
		Natural Gas	Electricity	Fuel Oil or Kerosene	Wood	Liquefied Petroleum Gas	Other/None	
RSE Column Factors:	0.495	0.575	1.009	0.905	1.101	1.481	2.359	
Water-Heating Fuel								
Natural Gas	54.4	89.6	12.5	12.1	11.7	NC	Q	8.28
Electricity	35.3	9.9	85.8	42.1	71.0	53.7	56.3	6.41
Fuel Oil or Kerosene	5.8	Q	NC	42.3	Q	NC	Q	12.69
LPG	3.3	Q	Q	3.0	11.2	44.6	7.1	17.01
Wood	.2	NC	NC	NC	2.6	NC	Q	43.56
Solar	.6	.4	1.1	Q	Q	NC	Q	43.25
Other/None	.3	Q	NC	Q	Q	Q	Q	63.62
Main Cooking Fuel								
Electricity	58.1	43.9	94.9	61.0	71.4	42.0	66.7	5.09
Natural Gas	36.0	56.0	3.3	28.9	7.9	NC	Q	11.46
LPG	5.5	Q	1.9	9.5	18.9	57.2	12.6	12.70
Other/None	.4	Q	NC	Q	Q	Q	Q	53.31
Clothes-Drying Fuel								
With Clothes Dryer	65.8	67.2	65.3	61.3	73.0	61.5	46.6	3.98
Electricity	50.7	43.6	64.3	55.4	63.5	50.6	42.7	5.07
Natural Gas	14.3	23.8	Q	5.2	5.6	NC	Q	14.32
LPG	.9	NC	Q	Q	3.9	11.0	Q	29.45
Without Clothes Dryer	34.2	32.8	34.7	38.7	27.0	38.5	53.4	6.84
Air Conditioning								
Yes	63.6	64.1	80.5	52.1	38.5	60.1	28.6	5.71
Central Unit	33.9	33.4	59.6	11.6	15.3	25.6	Q	9.44
Electric	33.2	32.2	59.6	11.6	15.3	24.5	Q	9.49
Individual Room Units[1]	29.8	30.7	20.9	40.5	23.1	34.4	24.5	8.44
One Unit	20.3	21.1	15.8	23.9	17.8	27.0	Q	10.17
Two or More Units	9.4	9.6	5.1	16.6	5.3	7.5	19.8	14.43
No	36.4	35.9	19.5	47.9	61.5	39.9	71.4	7.24
Number of Rooms That Can Be Air Conditioned								
All	45.1	43.9	72.6	22.1	25.9	39.3	16.7	7.90
Some	18.6	20.2	8.0	30.0	12.5	20.8	Q	9.66
None	36.4	35.9	19.5	47.9	61.5	39.9	71.4	7.24
Wood Burned in Past 12 Months								
Yes	24.8	18.1	24.2	22.5	99.0	24.8	23.2	8.72
One-Third Cord or Less	9.5	9.7	11.7	8.8	Q	7.7	13.5	13.61
More than One-Third Cord	15.3	8.4	12.5	13.6	96.8	17.1	Q	8.02
No	75.2	81.9	75.8	77.5	Q	75.2	76.8	2.82
Household Owns or Has Regular Use of a Vehicle								
Yes	87.7	87.3	91.5	79.5	93.2	92.8	89.6	1.63
No	12.3	12.7	8.5	20.5	6.8	7.2	10.4	13.03

See footnotes at end of table.

Table 22. U.S. Household Fuel Use by Main Heating Fuel, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Main Heating Fuel						RSE Row Factors
		Natural Gas	Electricity	Fuel Oil or Kerosene	Wood	Liquefied Petroleum Gas	Other/None	
RSE Column Factors:	0.495	0.575	1.009	0.905	1.101	1.481	2.359	
Total Single-Family Units and Mobile Homes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Availability of Natural Gas in the Neighborhood (single-family units and mobile homes)								
Uses Any Natural Gas	59.2	100.0	7.1	15.1	15.2	NC	Q	12.97
Does Not Use Natural Gas	40.8	--	92.9	84.9	84.8	100.0	94.3	2.70
Gas Available	8.8	--	23.5	23.0	12.5	13.2	Q	14.92
Gas Not Available	32.0	--	69.4	61.9	72.3	86.8	88.4	4.43
Total Households in 2-or-More-Unit Buildings	100.0	100.0	100.0	100.0	100.0	NC	100.0	0.00
Central Main Heating System for the Building (2-or-more-unit buildings)								
Yes	40.8	48.3	4.9	85.3	Q	NC	NC	12.39
No/No Main Heating System	59.2	51.7	95.1	14.7	Q	NC	100.0	8.23
Central Water-Heating System for the Building (2-or-more-unit buildings)								
Yes	54.6	58.0	36.6	79.3	Q	NC	Q	11.59
No/No Water-Heating Fuel								
No Hot Running Water	45.4	42.0	63.4	20.7	Q	NC	64.1	15.55
Central Air Conditioning System for the Building (2-or-more-unit buildings)								
Yes	3.9	5.2	Q	Q	NC	NC	NC	58.69
No	57.8	55.2	73.0	42.4	Q	NC	Q	8.49
No Air Conditioning	38.3	39.6	25.3	54.3	91.8	NC	63.5	10.61

NC No cases in sample.
-- Data not applicable.
Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.
1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."
NE RSE row factor not estimated because RSE's for all statistics in this row are between 0.0 and 1.0 percent.
Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 23. U.S. Household Fuel Use by Climate Zone and Census Regions, November 1987

(Million Households)

Household Characteristics	Total	Climate Zone												RSE Row Factors
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Census Regions							
							Northeast		Midwest	South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.417	1.504	0.877	1.026	1.105	1.166	1.010	1.143	0.781	1.054	1.276	1.240	0.914	
Total Households	90.5	8.5	25.9	21.9	17.8	16.3	10.6	8.4	22.3	16.7	14.2	6.7	11.7	5.53
Fuels Used for Any Use (more than one fuel often used)														
Electricity	90.5	8.5	25.9	21.9	17.8	16.3	10.6	8.4	22.3	16.7	14.2	6.6	11.7	5.53
Natural Gas	57.3	4.2	19.1	13.1	12.2	8.8	5.7	6.0	17.1	7.7	7.5	3.4	10.0	8.05
Wood	24.6	3.1	7.0	5.7	5.3	3.6	3.1	.7	5.5	5.3	3.1	3.4	3.3	10.81
Fuel Oil/Kerosene	17.4	2.8	5.0	7.0	1.8	.7	4.8	4.4	3.1	4.0	.6	.4	.2	16.50
Fuel Oil	12.2	2.5	3.7	5.5	.4	Q	4.2	3.9	1.9	1.7	Q	Q	Q	15.19
Kerosene	6.2	.6	1.5	1.9	1.5	.6	.8	.6	1.4	2.6	.5	Q	Q	19.86
LPG (excludes outdoor grill)	7.7	1.7	1.4	1.4	1.6	1.6	1.0	Q	2.3	1.9	1.4	.5	.5	22.16
Coal	.9	Q	.3	Q	Q	NC	.2	Q	Q	Q	NC	Q	Q	45.27
Solar Collectors	1.2	Q	.2	Q	.4	.4	Q	Q	Q	Q	Q	.2	.6	31.88
Main Heating Fuel and Equipment														
Natural Gas	50.0	3.9	17.7	10.2	10.6	7.6	4.7	3.4	16.6	7.1	6.5	3.2	8.6	9.14
Central Warm-Air Furnace	31.6	2.8	11.8	6.3	5.9	4.9	2.4	1.1	12.1	4.5	4.0	2.5	5.1	12.54
Steam or Hot-Water System	9.2	.7	5.0	3.1	.3	.2	2.1	2.3	3.3	.7	Q	.5	Q	19.77
Floor, Wall, or Pipeless Furnace	5.1	.2	.4	.6	3.1	.9	Q	NC	.5	1.1	.7	.1	2.5	22.50
Room Heater/Other	4.0	.2	.6	.2	1.3	1.6	.2	Q	.6	.8	1.6	Q	.7	21.60
Electricity	17.9	.6	2.6	4.2	4.0	6.4	1.0	1.1	1.4	4.8	5.8	1.9	1.9	16.91
Built-In Electric Units	5.4	.5	1.5	1.7	1.1	.7	.7	.5	.7	1.2	.6	1.4	.4	22.34
Central Warm-Air Furnace	6.9	Q	.5	1.2	1.5	3.6	Q	Q	.4	1.6	3.5	.4	.7	26.22
Heat Pump	4.5	Q	.5	1.2	1.2	1.7	Q	.4	.2	1.8	1.2	Q	.6	26.56
Other	1.1	Q	Q	Q	.3	.4	Q	Q	Q	Q	.4	Q	.2	28.41
Fuel Oil	10.9	1.9	3.4	5.0	.4	Q	3.9	3.8	1.5	1.3	Q	Q	Q	14.85
Steam or Hot-Water System	6.3	.6	2.3	3.4	Q	NC	2.7	3.1	Q	.3	NC	Q	NC	16.61
Central Warm-Air Furnace	4.0	1.2	1.0	1.5	.2	Q	1.1	.7	1.2	.8	Q	Q	NC	18.60
Other	.5	.1	Q	Q	Q	Q	Q	NC	.2	.2	Q	NC	Q	40.60
Wood	5.1	1.1	1.2	1.2	1.3	.3	Q	Q	1.3	1.6	.3	.8	.4	23.41
Heating Stove	4.1	.8	1.0	1.0	1.1	.2	Q	Q	.9	1.5	.2	.8	.3	24.08
Other	1.0	.4	.2	.2	Q	Q	Q	Q	.5	Q	Q	Q	Q	36.11
LPG	4.2	.8	.5	.8	1.0	1.1	Q	NC	1.3	1.1	1.0	.3	.3	26.71
Central Warm-Air Furnace	2.4	.6	.4	.6	.5	.4	Q	NC	1.1	.6	.4	Q	Q	28.37
Room Heater	.9	Q	Q	Q	.3	.5	Q	NC	Q	.3	.5	NC	NC	33.70
Other	.8	Q	Q	.2	.3	Q	NC	NC	.2	.2	Q	Q	Q	44.93
Kerosene	1.3	.1	Q	.2	.4	.2	Q	Q	Q	.6	.2	NC	Q	29.82
Other	.5	Q	.1	Q	Q	NC	Q	Q	Q	Q	NC	Q	Q	69.20
None	.7	NC	NC	NC	Q	.6	NC	NC	NC	Q	.2	NC	.5	27.77
Use Secondary Heating Fuel (more than one may be used)														
Yes	37.4	3.8	10.0	8.8	8.2	6.5	4.1	2.0	8.6	7.9	5.9	3.8	5.1	8.32
Wood	19.2	1.9	5.8	4.4	4.0	3.2	2.5	.7	4.1	3.5	2.8	2.6	2.9	11.25
Electricity	12.4	1.1	2.9	2.8	3.1	2.5	1.0	.6	2.5	2.5	2.3	1.3	2.1	10.77
Natural Gas	2.9	.1	.6	.4	.7	1.0	.1	.3	.6	.3	.9	.1	.6	22.67
Fuel Oil/Kerosene	5.9	.9	1.4	2.1	1.1	.4	.7	.6	1.6	2.4	.3	.1	Q	22.58
Fuel Oil	1.1	.5	.2	.4	NC	NC	Q	Q	.4	Q	NC	Q	NC	37.51
Kerosene	4.9	.4	1.2	1.7	1.1	.4	.4	.6	1.3	2.1	.3	Q	Q	20.97
LPG	1.0	Q	.2	.2	.3	.1	Q	NC	.5	.3	Q	Q	Q	34.48
Other	.5	Q	.4	Q	Q	NC	.2	Q	Q	Q	NC	.1	Q	25.51
No	53.2	4.7	16.0	13.1	9.6	9.8	6.5	6.4	13.7	8.9	8.2	2.9	6.6	6.46

See footnotes at end of table.

Table 23. U.S. Household Fuel Use by Climate Zone and Census Regions, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Climate Zone												RSE Row Factors
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Census Regions							
							Northeast		Midwest	South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.417	1.504	0.877	1.026	1.105	1.166	1.010	1.143	0.781	1.054	1.276	1.240	0.914	
Use Secondary Heating Equipment (more than one may be used)														
Yes	37.4	3.8	10.0	8.8	8.2	6.5	4.1	2.0	8.6	7.9	5.9	3.8	5.1	8.32
Fireplace	15.1	1.0	4.3	3.1	3.5	3.1	1.6	.5	3.1	2.6	2.7	1.8	2.8	13.55
Portable Electric Heater	8.2	.7	2.1	1.8	1.9	1.8	.7	.5	2.0	1.3	1.7	.7	1.4	12.82
Wood or Coal Heating Stove	4.8	.8	1.6	1.5	.7	.2	1.0	.3	1.0	1.1	.2	.9	.4	19.43
Built-In Electric Units	3.6	.4	.7	.9	1.0	.5	.3	.2	.5	.9	.5	.6	.6	18.87
Portable Kerosene Heater	4.8	Q	1.2	1.7	1.1	.4	.4	.6	1.3	2.0	.4	Q	Q	21.09
Central Warm-Air Furnace	2.5	.7	.7	.6	.3	.2	Q	Q	1.0	.6	Q	.3	.1	28.03
Oil or Gas Room Heater	1.7	.2	.3	.3	.4	.5	.1	Q	.4	.4	.5	Q	Q	25.99
Cooking Stove	1.3	Q	.3	.2	.2	.5	.1	Q	.3	.2	.5	Q	Q	32.55
Heat Pump, Steam or Hot-Water System, Pipeless Furnace, or Other	1.9	.2	.4	.5	.4	.3	.2	Q	.3	.5	.3	.1	.3	31.73
No	53.2	4.7	16.0	13.1	9.6	9.8	6.5	6.4	13.7	8.9	8.2	2.9	6.6	6.46
Fuel Combinations														
Use Natural Gas for Main Heat	50.0	3.9	17.7	10.2	10.6	7.6	4.7	3.4	16.6	7.1	6.5	3.2	8.6	9.14
Use Natural Gas to Heat Water														
and Have A/C	28.5	1.6	10.0	7.2	4.3	5.4	2.0	2.2	10.7	4.5	4.9	.7	3.4	12.39
and Lack A/C	16.3	1.5	6.4	2.3	4.8	1.3	2.4	1.0	4.1	1.1	.8	1.9	4.9	14.87
Use Electricity to Heat Water														
and Have A/C	3.3	.4	.7	.5	1.0	.7	.1	Q	1.1	1.2	.7	Q	Q	23.18
and Lack A/C	1.6	.4	.6	Q	.3	Q	Q	Q	.6	.2	Q	.4	.1	22.44
Other	.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	60.53
Use Electricity for Main Heat	17.9	.6	2.6	4.2	4.0	6.4	1.0	1.1	1.4	4.8	5.8	1.9	1.9	16.91
Use Electricity to Heat Water														
and Have A/C	12.4	.2	1.5	3.1	2.6	5.0	.6	1.0	1.1	4.0	4.5	.5	.7	19.70
and Lack A/C	3.0	.3	1.0	1.1	.3	.3	.3	Q	.3	.5	.2	1.4	.2	28.46
Other	2.5	Q	Q	Q	1.1	1.2	Q	Q	Q	Q	1.0	Q	1.0	30.18
Use Fuel Oil for Main Heat	10.9	1.9	3.4	5.0	.4	Q	3.9	3.8	1.5	1.3	Q	Q	Q	14.85
Use Fuel Oil to Heat Water														
and Have A/C	2.6	.1	1.0	1.5	Q	NC	1.1	1.5	Q	Q	NC	NC	NC	25.41
and Lack A/C	2.5	.4	.8	1.3	Q	NC	1.2	1.3	Q	Q	NC	NC	NC	19.41
Use Electricity to Heat Water														
and Have A/C	2.0	.4	.4	.7	.3	Q	.2	.3	.6	.7	Q	Q	NC	22.55
and Lack A/C	2.1	.9	.5	.6	Q	NC	.7	Q	.7	.3	NC	Q	Q	25.28
Other	1.7	.1	.6	.9	Q	NC	.6	.7	.2	Q	NC	Q	NC	19.37
Use Wood for Main Heat	5.1	1.1	1.2	1.2	1.3	.3	Q	Q	1.3	1.6	.3	.8	.4	23.41
Use LPG for Main Heat	4.2	.8	.5	.8	1.0	1.1	Q	NC	1.3	1.1	1.0	.3	.3	26.71
Use Kerosene for Main Heat	1.3	.1	Q	.2	.4	.2	Q	Q	Q	.6	.2	NC	Q	29.82
Use Coal for Main Heat	.4	Q	Q	Q	Q	NC	Q	Q	Q	Q	NC	Q	Q	98.30
No Heating Fuel/Other Fuel	.8	Q	Q	NC	Q	.6	NC	NC	Q	Q	.2	Q	.5	27.56
Water-Heating Fuel														
Natural Gas	49.3	3.2	17.2	10.5	10.6	7.8	5.0	4.1	15.3	6.0	6.6	2.8	9.6	8.72
Electricity	32.0	4.1	6.1	7.9	6.3	7.5	2.9	1.6	5.8	9.8	6.9	3.5	1.4	12.07
Fuel Oil or Kerosene	5.3	.5	1.9	2.8	Q	Q	2.4	2.7	Q	Q	NC	NC	Q	17.05
LPG	3.0	.7	.5	.5	.7	.6	.3	NC	1.1	.7	.5	Q	.3	29.98
Wood	.2	Q	Q	Q	NC	Q	Q	Q	Q	Q	Q	Q	Q	73.60
Solar	.6	Q	Q	Q	Q	.3	Q	NC	Q	NC	Q	Q	.3	36.67
Other/None	.3	Q	NC	Q	Q	Q	Q	Q	Q	Q	Q	NC	NC	75.54

See footnotes at end of table.

Table 23. U.S. Household Fuel Use by Climate Zone and Census Regions, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Climate Zone												RSE Row Factors
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Census Regions							
							Northeast		Midwest	South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.417	1.504	0.877	1.026	1.105	1.166	1.010	1.143	0.781	1.054	1.276	1.240	0.914	
Main Cooking Fuel														
Electricity	52.6	5.9	14.1	11.8	10.2	10.5	6.2	3.0	12.1	11.5	9.1	5.3	5.3	8.06
Natural Gas	32.6	1.4	10.9	9.2	6.7	4.5	3.6	5.3	8.9	4.0	3.8	1.0	6.0	10.29
LPG	5.0	1.1	.8	.8	.9	1.2	.8	Q	1.3	1.1	1.1	.3	.4	26.18
Other/None	.4	Q	Q	Q	Q	Q	Q	NC	Q	.2	Q	NC	Q	48.21
Clothes-Drying Fuel														
With Clothes Dryer	59.6	6.3	17.8	14.6	10.9	10.1	7.0	4.3	16.2	11.4	8.8	5.1	6.9	6.37
Electricity	45.9	5.3	12.5	11.7	7.9	8.5	5.2	2.9	11.4	10.4	7.5	4.6	3.9	7.91
Natural Gas	12.9	.8	5.1	2.8	2.8	1.4	1.7	1.4	4.3	.9	1.1	.4	3.0	13.82
LPG	.8	Q	.3	Q	Q	Q	Q	NC	.5	Q	Q	Q	Q	43.60
Without Clothes Dryer	31.0	2.2	8.1	7.3	7.0	6.3	3.6	4.1	6.1	5.4	5.4	1.6	4.7	9.21
Air Conditioning														
Yes	57.6	3.3	15.2	14.9	10.7	13.6	4.8	5.5	15.1	13.0	12.4	1.6	5.2	7.91
Central Unit	30.7	1.3	6.3	7.1	6.0	9.9	1.5	1.5	7.2	7.2	9.0	.8	3.6	11.06
Electric	30.1	1.3	6.0	7.1	5.9	9.8	1.4	1.5	7.1	7.2	8.8	.6	3.5	10.60
Individual Room Units[1]	26.9	2.1	8.9	7.7	4.7	3.7	3.4	4.0	7.9	5.8	3.4	.8	1.6	9.89
One Unit	18.4	1.7	6.6	4.7	3.4	2.0	2.2	2.0	6.3	4.0	1.8	.7	1.3	10.87
Two or More Units	8.6	.4	2.2	3.1	1.2	1.7	1.2	2.0	1.6	1.8	1.6	Q	.3	13.50
No	32.9	5.2	10.8	7.0	7.2	2.7	5.8	2.9	7.2	3.7	1.8	5.1	6.5	9.88
Number of Rooms That Can Be Air Conditioned														
All	40.8	2.0	8.6	9.8	8.3	12.1	2.2	2.7	9.7	9.9	11.0	1.2	4.2	10.09
Some	16.8	1.3	6.5	5.1	2.4	1.5	2.7	2.9	5.4	3.1	1.4	.4	1.0	11.10
None	32.9	5.2	10.8	7.0	7.2	2.7	5.8	2.9	7.2	3.7	1.8	5.1	6.5	9.88
Wood Burned in Past 12 Months														
Yes	22.5	2.9	6.6	5.0	4.8	3.1	3.0	.7	5.2	4.8	2.7	3.0	3.1	10.89
One-Third Cord or Less	8.6	.8	2.6	1.7	2.1	1.4	1.1	.2	1.9	1.5	1.3	1.0	1.6	15.65
More than One-Third Cord	13.8	2.1	4.0	3.3	2.8	1.7	2.0	.4	3.2	3.3	1.4	1.9	1.5	15.54
No	68.1	5.6	19.4	16.9	13.0	13.2	7.6	7.7	17.1	11.9	11.5	3.7	8.6	5.36
Household Owns or Has Regular Use of a Vehicle														
Yes	79.4	7.8	22.8	18.0	15.6	15.2	9.3	5.9	19.9	14.5	13.1	6.2	10.6	5.83
No	11.1	.8	3.1	3.9	2.2	1.1	1.3	2.5	2.4	2.2	1.1	.5	1.0	11.88

See footnotes at end of table.

Table 23. U.S. Household Fuel Use by Climate Zone and Census Regions, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Climate Zone												RSE Row Factors
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Census Regions							
							Northeast		Midwest	South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.417	1.504	0.877	1.026	1.105	1.166	1.010	1.143	0.781	1.054	1.276	1.240	0.914	
Total Single-Family Units and Mobile Homes	65.6	7.0	18.1	15.5	12.6	12.4	7.4	4.4	16.8	13.9	10.6	4.8	7.7	6.73
Availability of Natural Gas in the Neighborhood (single-family units and mobile homes)														
Uses Any Natural Gas	38.8	3.2	12.3	8.5	7.8	7.0	3.4	2.9	12.0	5.7	5.9	2.5	6.4	10.77
Does Not Use Natural Gas	26.7	3.8	5.7	7.0	4.8	5.4	4.0	1.5	4.8	8.1	4.7	2.3	1.3	12.76
Gas Available	5.8	.5	1.4	1.4	.8	1.6	.7	.6	1.1	1.0	1.5	.7	.2	19.74
(percent)	21.6	14.2	24.9	20.5	16.7	29.1	17.8	38.2	23.1	12.8	32.1	29.0	13.2	18.05
Gas Not Available	21.0	3.3	4.3	5.5	4.0	3.8	3.3	.9	3.7	7.1	3.2	1.6	1.1	14.41
(percent)	78.4	85.8	75.1	79.5	83.3	70.9	82.2	61.8	76.9	87.2	67.9	71.0	86.8	4.99
Total Households in 2-or-More-Unit Buildings	25.0	1.5	7.9	6.4	5.2	3.9	3.2	4.0	5.4	2.9	3.6	1.9	4.0	11.23
Central Main Heating System for the Building (2-or-more-unit buildings)														
Yes	10.2	.8	4.3	4.1	.4	.5	1.7	3.2	3.1	1.0	.5	.5	.2	17.48
No/No Main Heating System	14.8	.7	3.6	2.2	4.9	3.4	1.5	.8	2.3	1.9	3.1	1.4	3.8	15.20
Central Water-Heating System for the Building (2-or-more-unit buildings)														
Yes	13.6	.8	4.8	4.3	2.4	1.3	1.8	3.3	3.4	1.2	1.1	.6	2.2	18.46
No/No Water-Heating Fuel														
No Hot Running Water	11.3	.7	3.1	2.0	2.8	2.6	1.4	.7	2.1	1.6	2.5	1.2	1.8	19.13
Central Air Conditioning System for the Building (2-or-more-unit buildings)														
Yes	1.0	Q	Q	.4	NC	Q	NC	Q	Q	.3	Q	Q	Q	45.65
No	14.4	.6	4.5	3.3	2.7	3.3	1.4	2.2	3.9	1.9	3.0	.3	1.8	16.13
No Air Conditioning	9.6	.9	3.1	2.7	2.5	.4	1.9	1.7	1.5	.7	.3	1.3	2.1	13.63

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 24. U.S. Household Fuel Use by Climate Zone and Census Regions, November 1987

(Percent of Households)

Household Characteristics	Total	Climate Zone												RSE Row Factors
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Census Regions							
							Northeast		Midwest	South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.461	1.270	0.815	0.937	0.977	1.068	1.158	1.309	0.862	1.060	1.195	1.315	0.965	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Fuels Used for Any Use (more than one fuel often used)														
Electricity	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	100.0	NE
Natural Gas	63.3	48.7	73.5	59.9	68.4	53.7	53.3	71.3	76.9	45.8	52.7	51.2	85.5	6.30
Wood	27.1	35.9	26.9	26.0	29.5	22.0	29.6	8.9	24.8	31.6	22.2	51.0	28.5	8.60
Fuel Oil/Kerosene	19.2	33.2	19.1	32.2	10.4	4.4	44.7	51.7	13.8	23.8	4.6	6.5	1.3	15.12
Fuel Oil	13.5	29.0	14.3	25.1	2.5	Q	39.4	46.5	8.8	10.4	Q	4.7	Q	15.04
Kerosene	6.8	7.2	5.9	8.8	8.6	3.6	7.4	6.7	6.3	15.6	3.9	Q	Q	19.32
LPG (excludes outdoor grill)	8.5	19.8	5.3	6.4	9.0	9.9	9.2	Q	10.2	11.5	10.1	7.0	4.3	21.58
Coal	.9	Q	1.3	1.5	Q	NC	2.3	Q	Q	Q	NC	Q	Q	45.16
Solar Collectors	1.3	Q	.8	Q	2.3	2.5	Q	Q	Q	Q	Q	2.4	5.3	32.41
Main Heating Fuel and Equipment														
Natural Gas	55.2	45.7	68.4	46.6	59.2	46.3	44.4	40.2	74.4	42.1	45.7	48.3	73.5	7.82
Central Warm-Air Furnace	35.0	33.0	45.5	28.7	33.0	29.9	22.5	13.0	54.5	26.8	28.1	37.2	43.7	11.06
Steam or Hot-Water System	10.2	8.0	19.2	14.1	1.7	1.1	19.5	26.9	14.9	4.0	Q	7.6	Q	21.06
Floor, Wall, or Pipeless Furnace	5.6	1.9	1.6	2.7	17.2	5.4	Q	NC	2.2	6.7	5.3	2.0	21.5	22.48
Room Heater/Other	4.4	2.8	2.2	1.1	7.4	9.9	1.5	Q	2.8	4.6	11.0	Q	6.3	21.40
Electricity	19.8	7.2	10.1	19.3	22.6	39.3	9.1	13.4	6.5	28.7	40.8	29.1	16.2	15.53
Built-In Electric Units	6.0	5.5	5.8	7.7	6.0	4.4	6.6	5.6	2.9	7.1	4.6	20.3	3.5	21.05
Central Warm-Air Furnace	7.6	Q	2.1	5.6	8.2	21.9	Q	Q	2.0	9.6	24.8	5.8	5.8	25.88
Heat Pump	5.0	Q	1.8	5.3	6.8	10.3	Q	4.4	1.0	10.5	8.7	Q	4.9	26.34
Other	1.2	Q	Q	Q	1.7	2.7	Q	Q	Q	Q	2.7	Q	1.9	29.17
Fuel Oil	12.0	22.5	13.2	22.9	2.1	Q	36.3	45.3	6.6	7.8	Q	Q	Q	13.34
Steam or Hot-Water System	7.0	7.0	8.8	15.7	Q	NC	25.7	37.2	Q	1.8	NC	Q	NC	15.94
Central Warm-Air Furnace	4.4	14.0	4.0	6.8	1.3	Q	9.9	8.1	5.2	4.7	Q	Q	NC	17.01
Other	.5	1.6	Q	Q	Q	Q	Q	NC	.7	1.3	Q	NC	Q	38.96
Wood	5.6	13.3	4.6	5.3	7.0	2.1	Q	Q	5.9	9.6	2.1	12.7	3.4	22.76
Heating Stove	4.5	9.1	4.0	4.4	6.3	1.3	Q	Q	3.8	9.0	1.5	11.9	2.4	23.50
Other	1.1	4.2	.6	.8	Q	Q	Q	Q	2.1	Q	Q	Q	Q	34.90
LPG	4.6	9.4	2.0	3.6	5.4	6.6	Q	NC	6.0	6.5	7.4	4.6	2.4	26.58
Central Warm-Air Furnace	2.7	7.3	1.5	2.6	2.5	2.4	Q	NC	5.0	3.7	2.5	Q	Q	28.83
Room Heater	1.0	Q	Q	Q	1.4	3.1	Q	NC	Q	1.8	3.6	NC	NC	34.42
Other	.9	Q	Q	.7	1.5	Q	NC	NC	.7	1.0	Q	Q	Q	44.52
Kerosene	1.5	1.4	Q	1.1	2.5	1.4	Q	Q	Q	3.8	1.6	NC	Q	31.40
Other	.5	Q	.5	Q	Q	NC	Q	Q	Q	Q	NC	Q	Q	68.37
None	.8	NC	NC	NC	Q	3.6	NC	NC	NC	Q	1.7	NC	4.1	28.56
Use Secondary Heating Fuel (more than one may be used)														
Yes	41.3	44.6	38.4	40.3	46.1	40.1	38.8	23.5	38.5	47.1	41.9	56.8	43.7	5.98
Wood	21.2	21.9	22.2	20.2	22.2	19.6	23.9	8.5	18.5	21.2	19.8	38.3	25.1	9.08
Electricity	13.7	12.6	11.3	12.9	17.4	15.2	9.8	7.7	11.3	14.8	16.4	19.6	17.9	9.40
Natural Gas	3.2	1.7	2.4	1.9	4.0	5.9	1.4	3.0	2.8	1.5	6.4	2.1	4.8	21.85
Fuel Oil/Kerosene	6.5	10.2	5.5	9.6	6.3	2.2	6.8	7.3	7.3	14.1	2.2	2.1	Q	21.75
Fuel Oil	1.3	5.8	.9	1.9	NC	NC	Q	Q	1.6	Q	NC	Q	NC	36.26
Kerosene	5.4	5.1	4.8	7.8	6.3	2.2	4.1	6.6	5.8	12.2	2.2	Q	Q	20.19
LPG	1.1	Q	.7	.7	1.6	.9	Q	NC	2.0	1.7	Q	Q	Q	35.32
Other	.6	Q	1.4	Q	Q	NC	1.9	Q	Q	Q	NC	2.0	Q	24.69
No	58.7	55.4	61.6	59.7	53.9	59.9	61.2	76.5	61.5	52.9	58.1	43.2	56.3	4.23

See footnotes at end of table.

Table 24. U.S. Household Fuel Use by Climate Zone and Census Regions, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Climate Zone					Census Regions							RSE Row Factors
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Northeast		Midwest	South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.461	1.270	0.815	0.937	0.977	1.088	1.158	1.309	0.862	1.060	1.195	1.315	0.965	
Use Secondary Heating Equipment (more than one may be used)														
Yes	41.3	44.6	38.4	40.3	46.1	40.1	38.8	23.5	38.5	47.1	41.9	56.8	43.7	5.98
Fireplace	16.6	11.8	16.6	14.1	19.8	19.1	15.5	5.4	13.8	15.3	19.1	26.9	24.3	11.94
Portable Electric Heater	9.1	8.0	8.0	8.0	10.6	11.1	6.7	5.8	8.9	7.9	11.8	10.1	11.9	11.81
Wood or Coal Heating Stove	5.3	9.4	6.2	6.7	4.0	1.3	9.1	3.4	4.7	6.3	1.2	13.1	3.3	17.78
Built-In Electric Units	4.0	4.4	2.8	4.3	5.6	3.3	3.2	2.2	2.1	5.3	3.6	8.4	5.4	18.25
Portable Kerosene Heater	5.3	4.6	4.7	7.6	6.3	2.4	3.6	6.6	5.7	12.0	Q	Q	Q	19.80
Central Warm-Air Furnace	2.7	7.8	2.6	2.9	1.9	1.0	Q	Q	4.4	3.4	Q	4.9	1.2	27.12
Oil or Gas Room Heater	1.9	2.6	1.0	1.3	2.4	3.3	.9	Q	2.0	2.5	3.9	Q	Q	25.66
Cooking Stove	1.5	Q	1.0	.9	1.2	3.1	.8	Q	1.3	.9	3.5	Q	Q	32.40
Heat Pump, Steam or Hot-Water System, Pipeless Furnace, or Other	2.0	1.8	1.6	2.3	2.4	2.1	2.1	Q	1.2	3.0	2.4	1.6	2.1	31.61
No	58.7	55.4	61.6	59.7	53.9	59.9	61.2	76.5	61.5	52.9	58.1	43.2	56.3	4.23
Fuel Combinations														
Use Natural Gas for Main Heat	55.2	45.7	68.4	46.6	59.2	46.3	44.4	40.2	74.4	42.1	45.7	48.3	73.5	7.82
Use Natural Gas to Heat Water and Have A/C	31.5	18.3	38.6	32.9	24.3	33.1	19.2	26.6	48.3	26.8	34.4	11.2	29.1	11.45
and Lack A/C	18.0	17.2	24.7	10.4	27.1	8.0	22.9	12.2	18.4	6.5	5.7	29.1	42.0	14.67
Use Electricity to Heat Water and Have A/C	3.7	4.9	2.8	2.3	5.3	4.4	1.1	Q	4.9	7.3	5.1	Q	Q	23.00
and Lack A/C	1.8	5.2	2.1	.9	1.8	Q	Q	Q	2.8	1.4	Q	6.5	1.1	24.55
Other	.3	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	54.74
Use Electricity for Main Heat	19.8	7.2	10.1	19.3	22.6	39.3	9.1	13.4	6.5	28.7	40.8	29.1	16.2	15.53
Use Electricity to Heat Water and Have A/C	13.7	2.9	5.9	14.1	14.5	30.4	5.7	11.8	4.9	24.1	32.0	7.1	5.8	18.72
and Lack A/C	3.3	3.7	3.9	4.9	1.8	1.6	3.3	Q	1.3	2.7	1.7	21.1	1.4	27.57
Other	2.8	Q	Q	Q	6.4	7.3	Q	Q	Q	Q	7.1	Q	9.0	30.04
Use Fuel Oil for Main Heat	12.0	22.5	13.2	22.9	2.1	Q	36.3	45.3	6.6	7.8	Q	Q	Q	13.34
Use Fuel Oil to Heat Water and Have A/C	2.9	1.2	4.0	6.7	Q	NC	10.6	17.2	Q	Q	NC	NC	NC	25.07
and Lack A/C	2.8	4.3	3.1	6.0	Q	NC	10.9	14.9	Q	Q	NC	NC	NC	18.73
Use Electricity to Heat Water and Have A/C	2.2	5.0	1.6	3.3	1.7	Q	2.3	3.0	2.7	4.3	Q	Q	NC	21.60
and Lack A/C	2.3	10.4	2.0	2.9	Q	NC	6.7	Q	3.0	2.0	NC	Q	Q	23.49
Other	1.8	1.6	2.5	4.0	Q	NC	5.6	8.6	.8	Q	NC	Q	NC	18.65
Use Wood for Main Heat	5.6	13.3	4.6	5.3	7.0	2.1	Q	Q	5.9	9.6	2.1	12.7	3.4	22.76
Use LPG for Main Heat	4.6	9.4	2.0	3.6	5.4	6.6	Q	NC	6.0	6.5	7.4	4.6	2.4	26.58
Use Kerosene for Main Heat	1.5	1.4	Q	1.1	2.5	1.4	Q	Q	Q	3.8	1.6	NC	Q	31.40
Use Coal for Main Heat	.5	Q	Q	Q	Q	NC	Q	Q	Q	Q	NC	Q	Q	88.89
No Heating Fuel/Other Fuel	.9	Q	Q	NC	Q	3.6	NC	NC	Q	Q	1.7	Q	4.2	28.24
Water-Heating Fuel														
Natural Gas	54.4	37.3	66.4	47.9	59.3	47.7	46.7	48.1	68.6	36.1	46.3	41.9	82.3	7.27
Electricity	35.3	47.6	23.7	36.0	35.6	46.2	27.4	19.1	26.0	58.3	49.0	52.9	12.3	9.87
Fuel Oil or Kerosene	5.8	5.9	7.4	12.8	Q	Q	22.4	32.3	Q	Q	NC	NC	Q	16.45
LPG	3.3	7.8	2.0	2.3	3.9	3.7	2.5	NC	4.8	4.0	3.5	Q	2.2	30.23
Wood	.2	Q	Q	Q	NC	Q	Q	Q	Q	Q	Q	Q	Q	66.56
Solar	.6	Q	Q	Q	Q	2.0	Q	NC	Q	NC	Q	Q	2.9	35.88
Other/None	.3	Q	NC	Q	Q	Q	Q	Q	Q	Q	Q	NC	NC	68.31

See footnotes at end of table.

Table 24. U.S. Household Fuel Use by Climate Zone and Census Regions, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Climate Zone												RSE Row Factors
		Fewer than 2,000 CDD and --				More than 2,000 CDD and	Census Regions							
							Northeast		Midwest	South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD	Fewer than 4,000 HDD	5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.461	1.270	0.815	0.937	0.977	1.088	1.158	1.309	0.862	1.060	1.195	1.315	0.965	
Main Cooking Fuel														
Electricity	58.1	69.7	54.4	53.8	57.0	64.6	57.9	36.0	54.4	68.7	64.6	79.9	45.5	5.28
Natural Gas	36.0	16.6	42.0	41.9	37.3	27.3	34.3	62.6	39.8	23.8	27.1	15.6	51.2	9.26
LPG	5.5	13.4	3.3	3.8	5.3	7.6	7.4	Q	5.7	6.5	7.7	4.5	3.1	25.88
Other/None	.4	Q	Q	Q	Q	Q	Q	NC	Q	1.0	Q	NC	Q	45.86
Clothes-Drying Fuel														
With Clothes Dryer	65.8	73.9	68.6	66.6	60.8	61.6	65.8	50.9	72.6	67.9	61.8	76.5	59.4	3.72
Electricity	50.7	61.7	48.2	53.6	44.4	52.1	49.1	34.0	51.2	61.9	53.3	69.6	33.6	5.29
Natural Gas	14.3	9.2	19.7	12.6	15.8	8.9	16.1	16.9	19.5	5.6	8.0	6.1	25.3	13.83
LPG	.9	Q	1.0	Q	Q	Q	Q	NC	2.0	Q	Q	Q	Q	41.94
Without Clothes Dryer	34.2	26.1	31.4	33.4	39.2	38.4	34.2	49.1	27.4	32.1	38.2	23.5	40.6	7.17
Air Conditioning														
Yes	63.6	39.1	58.5	67.9	59.7	83.2	45.6	65.8	67.9	77.7	87.4	23.5	44.4	5.25
Central Unit	33.9	15.0	24.3	32.7	33.6	60.9	13.9	17.8	32.4	42.9	63.4	11.7	30.5	9.04
Electric	33.2	14.8	23.0	32.5	33.3	59.8	13.5	17.6	31.9	42.9	62.3	8.3	29.9	8.52
Individual Room Units[1]	29.8	24.1	34.1	35.3	26.1	22.4	31.6	47.9	35.5	34.9	23.9	11.8	13.9	8.46
One Unit	20.3	20.0	25.5	21.3	19.2	12.2	20.6	24.3	28.1	24.2	12.6	10.7	11.5	9.28
Two or More Units	9.4	4.2	8.6	14.0	6.9	10.2	11.1	23.7	7.3	10.7	11.3	Q	2.4	12.87
No	36.4	60.9	41.5	32.1	40.3	16.8	54.4	34.2	32.1	22.3	12.6	76.5	55.6	8.46
Number of Rooms That Can Be Air Conditioned														
All	45.1	23.5	33.3	44.7	46.4	74.1	20.5	31.8	43.5	59.4	77.4	17.6	35.9	7.51
Some	18.6	15.6	25.2	23.2	13.3	9.1	25.0	34.0	24.4	18.3	9.9	5.9	8.5	10.03
None	36.4	60.9	41.5	32.1	40.3	16.8	54.4	34.2	32.1	22.3	12.6	76.5	55.6	8.46
Wood Burned in Past 12 Months														
Yes	24.8	34.1	25.3	23.0	27.1	19.1	28.7	8.1	23.1	29.0	19.1	44.6	26.2	8.67
One-Third Cord or Less	9.5	9.8	10.0	7.8	11.5	8.7	10.2	2.9	8.6	9.1	8.9	15.4	13.4	14.13
More than One-Third Cord	15.3	24.3	15.4	15.1	15.6	10.4	18.5	5.2	14.5	19.8	10.2	29.2	12.8	13.69
No	75.2	65.9	74.7	77.0	72.9	80.9	71.3	91.9	76.9	71.0	80.9	55.4	73.8	2.81
Household Owns or Has Regular Use of a Vehicle														
Yes	87.7	90.9	88.0	82.3	87.7	93.0	87.3	69.9	89.2	86.7	92.4	92.4	91.2	1.59
No	12.3	9.1	12.0	17.7	12.3	7.0	12.7	30.1	10.8	13.3	7.6	7.6	8.8	10.38
Total Single-Family Units and Mobile Homes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Availability of Natural Gas in the Neighborhood (single-family units and mobile homes)														
Uses Any Natural Gas	59.2	45.5	68.3	55.1	61.8	56.3	45.7	66.0	71.3	41.3	55.5	53.0	83.4	7.67
Does Not Use Natural Gas	40.8	54.5	31.7	44.9	38.2	43.7	54.3	34.0	28.7	58.7	44.5	47.0	16.6	11.18
Gas Available	8.8	7.7	7.9	9.2	6.4	12.7	9.7	13.0	6.6	7.5	14.3	13.6	2.2	17.95
Gas Not Available	32.0	46.8	23.8	35.7	31.8	31.0	44.7	21.0	22.1	51.2	30.3	33.4	14.4	13.47

See footnotes at end of table.

Table 24. U.S. Household Fuel Use by Climate Zone and Census Regions, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Climate Zone												RSE Row Factors
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Census Regions							
							Northeast		Midwest	South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.461	1.270	0.815	0.937	0.977	1.088	1.158	1.309	0.862	1.060	1.195	1.315	0.965	
Total Households in 2-or-More-Unit Buildings	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Central Main Heating System for the Building (2-or-more-unit buildings)														
Yes	40.8	53.3	54.9	64.9	7.4	13.2	52.2	78.9	57.9	33.6	13.8	27.2	5.7	14.73
No/No Main Heating System	59.2	46.7	45.1	35.1	92.6	86.8	47.8	21.1	42.1	66.4	86.2	72.8	94.3	7.71
Central Water-Heating System for the Building (2-or-more-unit buildings)														
Yes	54.6	52.3	60.3	67.9	46.6	32.9	56.8	81.3	62.0	42.8	31.2	34.2	54.7	13.69
No/No Water-Heating Fuel														
No Hot Running Water	45.4	47.7	39.7	32.1	53.4	67.1	43.2	18.7	38.0	57.2	68.8	65.8	45.3	15.12
Central Air Conditioning System for the Building (2-or-more-unit buildings)														
Yes	3.9	Q	Q	6.1	NC	Q	NC	Q	Q	9.7	Q	Q	Q	45.31
No	57.8	39.4	56.8	51.9	52.3	84.1	42.0	55.9	71.5	64.7	84.0	14.7	45.7	8.25
No Air Conditioning	38.3	58.6	39.7	41.9	47.7	9.2	58.0	41.2	27.4	25.6	9.1	72.0	53.9	12.97

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

NE RSE row factor not estimated because RSE's for all statistics in this row are between 0.0 and 1.0 percent.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 25. U.S. Household Fuel Use by Year of Construction, November 1987

(Million Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.419	2.078	1.488	1.087	1.155	0.899	0.878	1.023	0.762	
Total Households	90.5	3.9	7.4	10.5	9.6	16.4	13.1	8.2	21.5	5.47
Fuels Used for Any Use (more than one fuel often used)										
Electricity	90.5	3.9	7.4	10.5	9.6	16.4	13.1	8.2	21.5	5.47
Natural Gas	57.3	1.2	3.0	4.7	5.8	11.9	9.1	6.0	15.7	7.68
Wood	24.6	1.2	3.0	4.2	2.5	4.2	3.1	1.8	4.4	8.76
Fuel Oil/Kerosene	17.4	.2	.6	1.7	1.4	2.7	2.8	2.0	6.1	11.82
Fuel Oil	12.2	Q	.2	.8	.6	1.9	2.2	1.5	4.9	15.06
Kerosene	6.2	Q	.4	.9	.9	.9	.7	.7	1.5	16.81
LPG (excludes outdoor grill)	7.7	.3	.8	1.0	1.0	1.0	1.0	.7	1.8	18.01
Coal	.9	Q	Q	Q	Q	Q	Q	.1	.3	43.51
Solar Collectors	1.2	Q	Q	.3	.1	.2	.2	Q	Q	36.43
Main Heating Fuel and Equipment										
Natural Gas	50.0	1.1	2.6	3.7	5.2	10.8	8.4	5.2	12.9	8.44
Central Warm-Air Furnace	31.6	1.0	1.9	3.3	3.6	7.3	5.4	2.6	6.5	9.80
Steam or Hot-Water System	9.2	Q	Q	.3	1.1	2.1	.9	1.0	3.2	22.32
Floor, Wall, or Pipeless Furnace	5.1	NC	Q	Q	.3	1.1	1.4	1.0	1.3	19.29
Room Heater/Other	4.0	Q	Q	Q	.2	.4	.7	.6	1.8	23.48
Electricity	17.9	2.1	3.4	4.6	2.4	2.5	1.1	.6	1.1	14.06
Built-In Electric Units	5.4	.2	.6	1.2	1.0	1.2	.4	.2	.6	23.42
Central Warm-Air Furnace	6.9	.7	1.8	2.3	.9	.6	.3	Q	Q	19.66
Heat Pump	4.5	1.2	.9	1.1	.4	.4	.2	Q	.1	23.29
Other	1.1	NC	Q	Q	Q	.3	.3	.1	.2	33.90
Fuel Oil	10.9	Q	.2	.7	.5	1.7	2.0	1.3	4.5	15.53
Steam or Hot-Water System	6.3	Q	.1	.3	.3	1.0	1.1	.7	2.8	20.12
Central Warm-Air Furnace	4.0	NC	Q	.3	.2	.6	.8	.5	1.5	20.88
Other	.5	Q	NC	Q	NC	Q	Q	Q	.2	46.74
Wood	5.1	.2	.7	.6	.5	.5	.6	.5	1.5	18.72
Heating Stove	4.1	.2	.5	.5	.5	.4	.4	.4	1.2	19.63
Other	1.0	Q	.1	Q	Q	Q	.2	Q	.3	34.82
LPG	4.2	.2	.4	.6	.6	.5	.6	.4	.8	22.97
Central Warm-Air Furnace	2.4	.2	.3	.5	.5	.3	.3	Q	.2	26.67
Room Heater	.9	Q	Q	Q	Q	Q	Q	Q	.4	54.17
Other	.8	NC	Q	Q	Q	Q	.2	Q	.2	55.63
Kerosene	1.3	Q	Q	.1	.3	.3	.2	Q	.2	37.91
Other	.5	Q	Q	Q	Q	Q	Q	Q	Q	86.91
None	.7	Q	Q	Q	Q	Q	.1	Q	.3	40.76
Use Secondary Heating Fuel (more than one may be used)										
Yes	37.4	1.4	3.4	5.5	3.4	6.9	5.5	3.2	8.1	7.09
Wood	19.2	1.0	2.4	3.6	1.9	3.7	2.5	1.3	2.8	10.01
Electricity	12.4	.4	.7	1.1	1.1	2.4	2.3	1.2	3.2	12.21
Natural Gas	2.9	Q	Q	.3	.1	.7	.4	.3	1.0	25.87
Fuel Oil/Kerosene	5.9	Q	.4	.9	.6	.8	.7	.8	1.6	18.48
Fuel Oil	1.1	NC	Q	Q	Q	.2	.2	Q	.4	45.83
Kerosene	4.9	Q	.3	.8	.6	.6	.5	.6	1.3	17.77
LPG	1.0	Q	Q	Q	Q	.1	.1	Q	.2	43.16
Other	.5	Q	Q	Q	Q	Q	Q	Q	.2	38.23
No	53.2	2.5	4.0	5.0	6.2	9.5	7.6	5.1	13.4	6.93

See footnotes at end of table.

Table 25. U.S. Household Fuel Use by Year of Construction, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.419	2.078	1.488	1.087	1.155	0.899	0.878	1.023	0.762	
Use Secondary Heating Equipment (more than one may be used)										
Yes	37.4	1.4	3.4	5.5	3.4	6.9	5.5	3.2	8.1	7.09
Fireplace	15.1	.8	2.0	2.9	1.6	3.1	1.8	1.0	1.9	12.32
Portable Electric Heater	8.2	Q	.4	.6	.6	1.7	1.5	.7	2.7	14.52
Wood or Coal Heating Stove	4.8	.2	.4	.8	.5	.7	.7	.3	1.1	16.66
Built-In Electric Units	3.6	Q	.2	.5	.3	.6	.8	.4	.6	20.59
Portable Kerosene Heater	4.8	Q	.3	.7	.6	.6	.5	.6	1.3	18.07
Central Warm-Air Furnace	2.5	Q	.2	.5	.4	.3	.2	Q	.6	27.00
Oil or Gas Room Heater	1.7	NC	Q	.1	Q	.4	.3	.2	.6	27.91
Cooking Stove	1.3	Q	Q	Q	Q	.3	.1	.2	.5	31.24
Heat Pump, Steam or Hot-Water System, Pipeless Furnace, or Other	1.9	Q	Q	.2	Q	.4	.4	.2	.3	33.15
No	53.2	2.5	4.0	5.0	6.2	9.5	7.6	5.1	13.4	6.93
Fuel Combinations										
Use Natural Gas for Main Heat	50.0	1.1	2.6	3.7	5.2	10.8	8.4	5.2	12.9	8.44
Use Natural Gas to Heat Water and Have A/C	28.5	.6	1.8	2.6	3.5	7.1	4.8	2.5	5.7	11.28
and Lack A/C	16.3	.4	.6	.8	1.3	2.6	2.7	2.0	5.9	12.89
Use Electricity to Heat Water and Have A/C	3.3	Q	.2	.3	.3	.8	.5	.5	.7	23.34
and Lack A/C	1.6	Q	Q	.1	.1	.2	.3	.2	.5	26.89
Other	.2	NC	Q	NC	NC	Q	Q	Q	Q	60.29
Use Electricity for Main Heat	17.9	2.1	3.4	4.6	2.4	2.5	1.1	.6	1.1	14.06
Use Electricity to Heat Water and Have A/C	12.4	1.9	2.5	2.9	1.6	1.6	.7	.5	.6	16.72
and Lack A/C	3.0	Q	.6	.8	.3	.5	.2	.1	.3	28.20
Other	2.5	Q	Q	.9	.5	.4	.2	Q	.2	33.20
Use Fuel Oil for Main Heat	10.9	Q	.2	.7	.5	1.7	2.0	1.3	4.5	15.53
Use Fuel Oil to Heat Water and Have A/C	2.6	Q	Q	.2	Q	.6	.6	.2	.7	31.74
and Lack A/C	2.5	NC	Q	Q	Q	.4	.4	.4	1.1	27.85
Use Electricity to Heat Water and Have A/C	2.0	NC	Q	.1	Q	.4	.4	.3	.6	28.34
and Lack A/C	2.1	NC	Q	.2	Q	.2	.4	.2	.9	27.14
Other	1.7	Q	NC	NC	Q	Q	.2	.3	1.2	24.24
Use Wood for Main Heat	5.1	.2	.7	.6	.5	.5	.6	.5	1.5	18.72
Use LPG for Main Heat	4.2	.2	.4	.6	.6	.5	.6	.4	.8	22.97
Use Kerosene for Main Heat	1.3	Q	Q	.1	.3	.3	.2	Q	.2	37.91
Use Coal for Main Heat	.4	NC	Q	Q	Q	Q	Q	Q	Q	97.90
No Heating Fuel/Other Fuel	.8	Q	Q	Q	Q	Q	.2	Q	.3	39.28
Water-Heating Fuel										
Natural Gas	49.3	1.1	2.6	4.2	5.3	10.1	7.9	4.8	13.2	8.44
Electricity	32.0	2.6	4.1	5.3	3.6	4.6	3.6	2.5	5.6	8.56
Fuel Oil or Kerosene	5.3	Q	Q	.3	.3	1.0	1.0	.6	1.9	22.43
LPG	3.0	Q	.4	.5	.3	.4	.3	.3	.7	27.61
Wood	.2	NC	Q	NC	Q	Q	Q	Q	Q	73.30
Solar	.6	Q	Q	.2	Q	Q	Q	Q	Q	38.32
Other/None	.3	NC	Q	Q	Q	Q	Q	Q	Q	75.23
Main Cooking Fuel										
Electricity	52.6	3.1	5.7	8.1	6.3	9.3	7.6	3.4	9.1	6.90
Natural Gas	32.6	.6	1.1	1.7	2.7	6.3	5.0	4.3	10.9	9.87
LPG	5.0	.2	.6	.7	.6	.8	.5	.4	1.3	22.33
Other/None	.4	Q	NC	Q	NC	Q	Q	Q	Q	63.04

See footnotes at end of table.

Table 25. U.S. Household Fuel Use by Year of Construction, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.419	2.078	1.488	1.087	1.155	0.899	0.878	1.023	0.762	
Clothes-Drying Fuel										
With Clothes Dryer	59.6	3.0	5.6	7.6	6.1	10.0	9.4	5.4	12.5	5.91
Electricity	45.9	2.7	5.0	6.5	4.7	7.5	6.8	4.1	8.6	6.71
Natural Gas	12.9	.2	.5	1.0	1.3	2.3	2.6	1.3	3.8	12.78
LPG	.8	Q	Q	Q	Q	Q	Q	Q	.2	47.38
Without Clothes Dryer	31.0	.9	1.8	2.9	3.6	6.4	3.7	2.8	8.9	9.97
Air Conditioning										
Yes	57.6	3.0	5.5	7.9	6.9	11.6	8.2	4.6	10.0	6.90
Central Unit	30.7	2.6	4.1	6.2	3.8	6.8	3.7	1.3	2.2	9.50
Electric	30.1	2.6	4.1	6.1	3.8	6.4	3.6	1.3	2.1	9.48
Individual Room Units[1]	26.9	.3	1.4	1.7	3.1	4.8	4.5	3.3	7.8	10.21
One Unit	18.4	.2	1.1	1.4	2.4	3.4	2.7	2.0	5.2	11.65
Two or More Units	8.6	Q	.2	.3	.7	1.5	1.8	1.3	2.6	14.99
No	32.9	.9	1.9	2.6	2.7	4.8	4.9	3.7	11.5	8.49
Number of Rooms That Can Be Air Conditioned										
All	40.8	2.9	4.8	7.0	5.4	8.8	5.2	2.4	4.5	8.25
Some	16.8	Q	.7	.9	1.6	2.8	3.0	2.2	5.5	10.99
None	32.9	.9	1.9	2.6	2.7	4.8	4.9	3.7	11.5	8.49
Wood Burned in Past 12 Months										
Yes	22.5	1.0	2.9	3.8	2.3	3.7	2.9	1.7	4.2	8.87
One-Third Cord or Less	8.6	.3	.9	1.7	1.1	1.6	1.1	.7	1.2	15.34
More than One-Third Cord	13.8	.7	2.0	2.1	1.2	2.1	1.8	1.0	2.9	*10.86*
No	68.1	2.9	4.5	6.7	7.3	12.7	10.2	6.5	17.3	6.09
Household Owns or Has Regular Use of a Vehicle										
Yes	79.4	3.7	7.1	9.8	8.8	14.1	11.9	7.0	17.0	5.53
No	11.1	.2	.3	.7	.8	2.3	1.2	1.3	4.4	15.61
Total Single-Family Units and Mobile Homes	65.6	3.1	5.1	7.7	6.5	10.9	11.0	6.3	14.8	5.82
Availability of Natural Gas in the Neighborhood (single-family units and mobile homes)										
Uses Any Natural Gas	38.8	.9	2.0	3.3	3.7	7.5	7.4	4.2	10.0	8.55
Does Not Use Natural Gas	26.7	2.2	3.2	4.5	2.9	3.4	3.6	2.1	4.9	9.73
Gas Available	5.8	Q	.9	.8	.7	.6	1.0	.5	1.1	18.70
(percent)	21.6	Q	28.0	17.2	24.2	18.4	28.1	25.3	22.8	16.78
Gas Not Available	21.0	2.1	2.3	3.7	2.2	2.8	2.6	1.5	3.8	11.02
(percent)	78.4	93.4	72.0	82.8	75.8	81.6	71.9	74.7	77.2	4.28

See footnotes at end of table.

Table 25. U.S. Household Fuel Use by Year of Construction, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.419	2.078	1.488	1.087	1.155	0.899	0.878	1.023	0.762	
Total Households in 2-or-More-Unit Buildings	25.0	0.7	2.2	2.8	3.1	5.5	2.0	1.9	6.7	13.26
Central Main Heating System for the Building (2-or-more-unit buildings)										
Yes	10.2	Q	Q	.6	1.4	2.7	.6	.9	3.4	18.44
No/No Main Heating System	14.8	.7	1.7	2.2	1.7	2.9	1.4	1.0	3.3	15.91
Central Water-Heating System for the Building (2-or-more-unit buildings)										
Yes	13.6	Q	.8	1.4	1.9	3.5	.9	1.0	4.0	19.32
No/No Water-Heating Fuel										
No Hot Running Water	11.3	Q	1.4	1.4	1.2	2.1	1.2	1.0	2.6	18.18
Central Air Conditioning System for the Building (2-or-more-unit buildings)										
Yes	1.0	NC	Q	Q	Q	.6	NC	NC	Q	59.70
No	14.4	.6	1.6	2.0	2.3	3.3	1.0	.9	2.6	18.31
No Air Conditioning	9.6	Q	.5	.6	.7	1.6	1.0	1.1	3.9	17.92

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 26. U.S. Household Fuel Use by Year of Construction, November 1987

(Percent of Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.465	1.905	1.508	1.073	1.152	0.899	0.881	1.023	0.748	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Fuels Used for Any Use (more than one fuel often used)										
Electricity	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	100.0	NE
Natural Gas	63.3	31.2	40.9	44.4	60.2	72.3	69.8	72.8	72.9	5.20
Wood	27.1	31.9	41.3	40.4	26.0	25.8	23.9	22.1	20.4	7.86
Fuel Oil/Kerosene	19.2	5.0	8.3	15.9	14.9	16.2	21.2	24.5	28.2	12.06
Fuel Oil	13.5	Q	3.2	7.7	6.7	11.5	17.1	18.4	22.8	14.99
Kerosene	6.8	Q	5.0	8.6	9.1	5.6	5.3	6.5	7.2	17.01
LPG (excludes outdoor grill)	8.5	8.7	11.3	9.6	10.1	6.3	7.5	8.4	8.6	17.77
Coal	.9	Q	Q	Q	Q	Q	Q	1.8	1.4	42.31
Solar Collectors	1.3	Q	Q	3.0	1.4	1.4	1.8	Q	Q	35.34
Main Heating Fuel and Equipment										
Natural Gas	55.2	29.3	35.7	35.7	53.8	66.1	64.0	63.1	60.0	6.29
Central Warm-Air Furnace	35.0	25.9	26.0	31.6	36.9	44.4	41.4	32.1	30.4	8.83
Steam or Hot-Water System	10.2	Q	Q	2.7	11.6	12.5	6.9	11.7	15.1	20.83
Floor, Wall, or Pipeless Furnace	5.6	NC	Q	Q	3.0	6.5	10.6	11.6	6.0	18.43
Room Heater/Other	4.4	Q	Q	Q	2.2	2.7	5.2	7.8	8.5	23.02
Electricity	19.8	55.7	45.7	44.3	25.1	15.2	8.6	7.6	5.1	12.20
Built-In Electric Units	6.0	5.6	8.4	11.0	10.7	7.3	3.0	2.1	3.0	23.84
Central Warm-Air Furnace	7.6	18.6	23.9	22.2	9.8	3.5	2.3	Q	Q	18.25
Heat Pump	5.0	31.5	12.9	10.6	4.0	2.5	1.4	Q	.7	22.01
Other	1.2	NC	Q	Q	Q	1.9	1.9	1.6	1.1	33.52
Fuel Oil	12.0	Q	2.5	6.4	5.7	10.1	15.3	15.8	20.8	15.36
Steam or Hot-Water System	7.0	Q	2.0	2.8	3.2	6.3	8.5	8.3	12.8	20.02
Central Warm-Air Furnace	4.4	NC	Q	3.3	2.5	3.7	6.1	6.2	7.0	20.75
Other	.5	Q	NC	Q	NC	Q	Q	Q	1.0	44.74
Wood	5.6	5.4	9.3	5.6	5.6	2.9	4.3	5.9	7.1	18.85
Heating Stove	4.5	4.4	7.4	4.3	4.9	2.6	3.1	5.2	5.6	19.53
Other	1.1	Q	1.8	Q	Q	Q	1.2	Q	1.5	35.09
LPG	4.6	5.3	5.8	5.5	6.5	3.3	4.5	4.5	3.9	22.90
Central Warm-Air Furnace	2.7	4.4	4.7	4.4	5.4	1.8	2.0	Q	1.1	26.65
Room Heater	1.0	Q	Q	Q	Q	Q	Q	Q	1.8	51.64
Other	.9	NC	Q	Q	Q	Q	1.7	Q	1.0	54.10
Kerosene	1.5	Q	Q	1.4	2.8	1.7	1.5	Q	1.1	37.01
Other	.5	Q	Q	Q	Q	Q	Q	Q	Q	78.32
None	.8	Q	Q	Q	Q	Q	1.1	Q	1.3	39.09
Use Secondary Heating Fuel *(more than one may be used)*										
Yes	41.3	35.3	46.4	52.6	35.8	42.2	41.9	38.6	37.5	5.86
Wood	21.2	26.3	32.0	34.2	20.1	22.5	19.2	15.3	13.2	9.09
Electricity	13.7	9.2	9.1	10.9	11.6	14.4	17.8	14.5	15.1	11.51
Natural Gas	3.2	Q	Q	2.7	1.4	4.4	3.2	3.3	4.6	25.38
Fuel Oil/Kerosene	6.5	Q	4.9	8.6	6.0	5.2	5.0	9.3	7.6	18.91
Fuel Oil	1.3	NC	Q	Q	Q	1.3	1.2	Q	1.7	45.29
Kerosene	5.4	Q	4.2	7.3	5.8	3.9	3.9	7.8	6.2	18.13
LPG	1.1	Q	Q	Q	Q	.7	.8	Q	1.1	42.12
Other	.6	Q	Q	Q	Q	Q	Q	Q	.8	37.03
No	58.7	64.7	53.6	47.4	64.2	57.8	58.1	61.4	62.5	4.10

See footnotes at end of table.

Table 26. U.S. Household Fuel Use by Year of Construction, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.465	1.905	1.508	1.073	1.152	0.899	0.881	1.023	0.748	
Use Secondary Heating Equipment (more than one may be used)										
Yes	41.3	35.3	46.4	52.6	35.8	42.2	41.9	38.6	37.5	5.86
Fireplace	16.6	21.9	27.2	27.3	16.4	19.2	13.7	11.5	8.8	11.44
Portable Electric Heater	9.1	Q	5.1	5.7	6.4	10.2	11.3	8.3	12.4	13.60
Wood or Coal Heating Stove	5.3	4.9	5.5	7.7	4.8	4.5	5.5	4.2	5.2	16.74
Built-In Electric Units	4.0	Q	2.1	4.8	3.3	3.6	6.2	5.0	2.7	20.62
Portable Kerosene Heater	5.3	Q	4.1	6.9	5.7	3.9	3.9	7.7	6.1	18.41
Central Warm-Air Furnace	2.7	Q	3.3	4.8	3.7	2.0	1.6	Q	2.9	26.51
Oil or Gas Room Heater	1.9	NC	Q	1.2	Q	2.5	2.1	2.0	2.7	27.59
Cooking Stove	1.5	Q	Q	Q	Q	1.7	1.1	2.9	2.3	30.30
Heat Pump, Steam or Hot-Water System, Pipeless Furnace, or Other	2.0	Q	Q	1.9	Q	2.7	3.0	3.0	1.5	32.51
No	58.7	64.7	53.6	47.4	64.2	57.8	58.1	61.4	62.5	4.10
Fuel Combinations										
Use Natural Gas for Main Heat	55.2	29.3	35.7	35.7	53.8	66.1	64.0	63.1	60.0	6.29
Use Natural Gas to Heat Water										
and Have A/C	31.5	16.0	23.8	24.3	36.2	43.4	37.0	30.4	26.3	9.58
and Lack A/C	18.0	11.0	8.1	7.6	13.0	16.0	20.7	23.8	27.5	12.19
Use Electricity to Heat Water										
and Have A/C	3.7	Q	3.1	2.6	3.1	4.7	3.5	6.1	3.5	22.57
and Lack A/C	1.8	Q	Q	1.1	1.5	1.5	2.4	2.1	2.4	26.51
Other	.3	NC	Q	NC	NC	Q	Q	Q	Q	54.33
Use Electricity for Main Heat	19.8	55.7	45.7	44.3	25.1	15.2	8.6	7.6	5.1	12.20
Use Electricity to Heat Water										
and Have A/C	13.7	50.5	33.7	28.1	16.2	10.0	5.4	6.1	2.8	15.04
and Lack A/C	3.3	Q	8.6	7.6	3.3	2.8	1.8	1.5	1.3	27.74
Other	2.8	Q	Q	8.5	5.6	2.5	1.4	Q	1.0	32.59
Use Fuel Oil for Main Heat	12.0	Q	2.5	6.4	5.7	10.1	15.3	15.8	20.8	15.36
Use Fuel Oil to Heat Water										
and Have A/C	2.9	Q	Q	2.1	Q	3.6	5.0	2.5	3.1	31.23
and Lack A/C	2.8	NC	Q	Q	Q	2.6	2.8	4.4	5.2	27.36
Use Electricity to Heat Water										
and Have A/C	2.2	NC	Q	1.2	Q	2.6	3.2	3.2	2.7	28.01
and Lack A/C	2.3	NC	Q	2.4	Q	1.2	3.1	2.2	4.3	26.73
Other	1.8	Q	NC	NC	Q	Q	1.2	3.6	5.5	23.71
Use Wood for Main Heat	5.6	5.4	9.3	5.6	5.6	2.9	4.3	5.9	7.1	18.85
Use LPG for Main Heat	4.6	5.3	5.8	5.5	6.5	3.3	4.5	4.5	3.9	22.90
Use Kerosene for Main Heat	1.5	Q	Q	1.4	2.8	1.7	1.5	Q	1.1	37.01
Use Coal for Main Heat	.5	NC	Q	Q	Q	Q	Q	Q	Q	88.22
No Heating Fuel/Other Fuel	.9	Q	Q	Q	Q	Q	1.3	Q	1.4	37.69
Water-Heating Fuel										
Natural Gas	54.4	28.6	35.3	40.0	55.3	61.9	60.7	57.8	61.4	6.12
Electricity	35.3	68.2	56.1	50.5	37.1	28.2	27.5	30.7	26.0	7.05
Fuel Oil or Kerosene	5.8	Q	Q	2.9	3.1	6.4	7.9	6.8	8.8	22.30
LPG	3.3	Q	6.0	4.5	3.5	2.5	2.5	3.2	3.2	27.08
Wood	.2	NC	Q	NC	Q	Q	Q	Q	Q	66.06
Solar	.6	Q	Q	1.8	Q	Q	Q	Q	Q	36.54
Other/None	.3	NC	Q	Q	Q	Q	Q	Q	Q	67.80
Main Cooking Fuel										
Electricity	58.1	79.9	77.5	77.2	65.4	56.7	58.0	41.3	42.4	4.20
Natural Gas	36.0	15.5	14.6	16.3	28.2	38.5	38.1	51.9	50.9	8.46
LPG	5.5	4.3	7.9	6.3	6.4	4.7	3.9	4.8	6.1	22.21
Other/None	.4	Q	NC	Q	NC	Q	Q	Q	Q	56.81

See footnotes at end of table.

Table 26. U.S. Household Fuel Use by Year of Construction, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.465	1.905	1.508	1.073	1.152	0.899	0.881	1.023	0.748	
Clothes-Drying Fuel										
With Clothes Dryer	65.8	77.2	75.7	72.6	63.0	60.8	72.0	66.1	58.4	3.79
Electricity	50.7	70.5	67.8	61.7	48.8	45.7	52.1	49.6	40.3	4.78
Natural Gas	14.3	6.2	6.2	9.1	13.5	14.2	19.6	15.9	17.6	12.12
LPG	.9	Q	Q	Q	Q	Q	Q	Q	.8	45.87
Without Clothes Dryer	34.2	22.8	24.3	27.4	37.0	39.2	28.0	33.9	41.6	8.15
Air Conditioning										
Yes	63.6	77.4	74.1	75.0	71.7	70.6	62.9	55.5	46.7	3.81
Central Unit	33.9	68.6	55.2	58.9	39.8	41.2	28.7	15.6	10.2	7.08
Electric	33.2	68.6	55.2	58.6	39.2	39.0	27.8	15.6	9.8	7.07
Individual Room Units[1]	29.8	8.9	18.9	16.1	32.0	29.4	34.2	39.9	36.5	8.74
One Unit	20.3	6.1	15.5	13.3	25.0	20.5	20.3	24.0	24.2	10.29
Two or More Units	9.4	Q	3.4	2.9	7.0	8.9	13.9	15.9	12.3	14.31
No	36.4	22.6	25.9	25.0	28.3	29.4	37.1	44.5	53.3	7.74
Number of Rooms That Can Be Air Conditioned										
All	45.1	74.0	64.7	66.5	55.6	53.7	39.7	28.9	20.9	5.40
Some	18.6	Q	9.4	8.5	16.1	16.9	23.2	26.6	25.8	9.45
None	36.4	22.6	25.9	25.0	28.3	29.4	37.1	44.5	53.3	7.74
Wood Burned in Past 12 Months										
Yes	24.8	25.1	38.8	36.3	24.0	22.8	22.1	20.9	19.4	8.29
One-Third Cord or Less	9.5	7.8	11.6	16.5	11.2	9.9	8.5	8.4	5.7	14.64
More than One-Third Cord	15.3	17.3	27.2	19.8	12.8	12.9	13.6	12.5	13.7	10.89
No	75.2	74.9	61.2	63.7	76.0	77.2	77.9	79.1	80.6	2.85
Household Owns or Has Regular Use of a Vehicle										
Yes	87.7	95.4	96.2	93.2	91.7	86.1	91.2	84.7	79.3	1.50
No	12.3	4.6	3.8	6.8	8.3	13.9	8.8	15.3	20.7	14.26
Total Single-Family Units and Mobile Homes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Availability of Natural Gas in the Neighborhood (single-family units and mobile homes)										
Uses Any Natural Gas	59.2	28.5	37.9	42.1	56.2	68.5	67.4	67.2	67.1	6.06
Does Not Use Natural Gas	40.8	71.5	62.1	57.9	43.8	31.5	32.6	32.8	32.9	7.43
Gas Available	8.8	Q	17.4	10.0	10.6	5.8	9.2	8.3	7.5	17.46
Gas Not Available	32.0	66.8	44.7	47.9	33.2	25.7	23.4	24.5	25.4	9.06

See footnotes at end of table.

Table 26. U.S. Household Fuel Use by Year of Construction, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.465	1.905	1.508	1.073	1.152	0.899	0.881	1.023	0.748	
Total Households in 2-or-More-Unit Buildings	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Central Main Heating System for the Building (2-or-more-unit buildings)										
Yes	40.8	Q	Q	21.2	44.2	48.3	31.3	48.7	50.7	15.00
No/No Main Heating System	59.2	91.5	74.8	78.8	55.8	51.7	68.7	51.3	49.3	9.67
Central Water-Heating System for the Building (2-or-more-unit buildings)										
Yes	54.6	Q	36.6	49.4	60.1	62.8	42.6	48.8	60.3	13.63
No/No Water-Heating Fuel										
No Hot Running Water	45.4	58.5	63.4	50.6	39.9	37.2	57.4	51.2	39.7	15.15
Central Air Conditioning System for the Building (2-or-more-unit buildings)										
Yes	3.9	NC	Q	Q	Q	10.2	NC	NC	Q	54.18
No	57.8	88.2	71.6	73.3	75.3	60.4	51.1	44.5	39.2	9.82
No Air Conditioning	38.3	Q	22.5	22.9	23.1	29.5	48.9	55.5	59.0	16.57

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

NE RSE row factor not estimated because RSE's for all statistics in this row are between 0.0 and 1.0 percent.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 27. U.S. Household Appliance Use by Census Region and Metropolitan Status, November 1987

(Million Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
						Metropolitan				
		Northeast	Midwest	South	West	Total	Central City	Outside Central City	Non-Metropolitan	
RSE Column Factors:	0.614	1.347	1.077	1.189	1.159	0.713	1.128	0.857	1.182	
Total Households	90.5	19.0	22.3	30.9	18.3	70.2	29.6	40.6	20.3	0.00
Type of Appliances Used										
Electric Appliances Used										
Television Set (color)	83.9	17.9	20.7	28.4	17.0	65.4	26.8	38.7	18.5	NE
Clothes Washer (automatic)	66.4	13.4	16.6	23.5	12.9	50.2	18.5	31.7	16.2	2.23
Range (stove-top or burners)	51.4	9.0	11.6	20.4	10.3	38.1	13.0	25.1	13.3	3.83
Furnace Fan	46.8	6.0	15.3	16.1	9.4	36.4	14.1	22.3	10.4	3.66
Electric Oven	51.2	9.3	11.5	20.1	10.4	37.9	12.9	25.1	13.3	3.76
Clothes Dryer	45.9	8.1	11.4	17.9	8.6	33.4	11.1	22.3	12.6	3.53
Television Set (b/w)	32.4	7.1	8.8	10.8	5.6	25.6	11.2	14.4	6.8	3.83
Dishwasher	39.0	7.4	7.6	14.0	10.0	32.8	10.8	22.0	6.2	3.96
Window or Ceiling Fan	41.8	7.8	10.3	17.9	5.8	31.6	12.4	19.1	10.3	3.59
Microwave Oven	55.0	9.8	14.9	18.7	11.7	42.4	15.2	27.2	12.6	2.22
Water Heater (for one household's use only)	30.5	4.0	5.6	16.1	4.8	19.4	6.3	13.0	11.1	6.99
Air Conditioner (room)[1]	27.9	7.6	8.1	9.7	2.5	21.1	9.3	11.7	6.8	5.70
Electric Blanket	27.2	4.4	6.8	10.4	5.6	19.7	7.0	12.8	7.4	4.33
Air Conditioner (central–for one household's use only)	29.4	2.8	7.1	15.6	4.0	24.5	8.1	16.4	4.9	5.59
Freezer (not frost-free)	20.8	3.1	6.8	7.5	3.4	13.2	4.1	9.1	7.7	5.00
Humidifier	13.2	2.8	7.2	2.3	1.0	9.9	3.2	6.7	3.3	6.87
Freezer (frost-free)	10.6	1.8	2.6	4.1	2.1	7.4	2.8	4.6	3.2	6.78
Portable Electric Heater	9.0	1.2	2.1	3.5	2.3	6.8	2.7	4.1	2.3	7.97
Waterbed Heater	12.5	1.3	4.0	3.7	3.6	9.6	3.5	6.1	3.0	7.41
Dehumidifier	9.0	2.9	4.7	1.3	.1	7.0	1.7	5.3	2.0	9.85
Whole-House Cooling Fan	8.6	1.5	2.4	3.6	1.1	6.7	1.7	4.9	1.9	11.74
Evaporative Cooler	3.0	Q	Q	Q	2.3	2.3	1.3	1.0	.7	16.64
Clothes Washer (wringer)	2.4	.6	1.0	.5	.3	1.5	.7	.7	.9	20.86
Swimming-Pool/Jacuzzi/Hot-Tub Heater	.6	.1	Q	.2	.2	.5	.2	.3	.1	29.99
Gas Appliances Used										
Water Heater (for one household's use only)	42.0	6.9	13.1	11.7	10.3	34.6	14.7	19.9	7.4	5.85
Range (stove-top or burners)	38.7	9.8	10.7	10.2	8.0	31.8	16.5	15.2	6.9	5.11
Gas Oven	37.1	9.4	10.3	9.9	7.4	30.6	15.9	14.6	6.5	5.39
Clothes Dryer	13.8	3.2	4.8	2.3	3.5	12.2	4.4	7.8	1.6	8.56
Outdoor LPG Gas Grill	15.4	4.2	4.4	4.2	2.6	11.9	3.1	8.8	3.5	5.99
Outdoor Piped-Gas Grill	3.0	.5	1.0	.9	.6	2.7	.9	1.8	.2	14.20
Outdoor Gas Light	1.3	.1	.4	.6	.1	1.1	.4	.7	.1	21.89
Swimming-Pool/Jacuzzi/Hot-Tub Heater	1.3	.2	Q	.2	.8	1.2	.4	.8	Q	18.81
Oil Appliances Used										
Portable Kerosene Heater	5.3	1.0	1.3	2.8	.2	3.1	1.3	1.9	2.1	13.25
Water Heater (for one household's use only)	2.5	2.4	Q	Q	Q	2.2	.4	1.9	.3	16.20
Number of Refrigerators Used										
1	78.1	16.4	18.1	27.6	16.0	60.7	26.8	33.9	17.3	1.08
2 or More	12.3	2.6	4.1	3.2	2.3	9.3	2.7	6.6	2.9	6.53
None	.2	Q	Q	Q	Q	.2	.1	Q	Q	40.89
Most-Used Refrigerator										
Electric	90.3	19.0	22.2	30.8	18.3	70.1	29.5	40.6	20.3	NE
Frost-Free	60.9	11.0	14.5	22.9	12.5	47.6	17.8	29.8	13.3	2.60
Not Frost-Free/No Freezer	29.4	8.0	7.6	7.9	5.9	22.5	11.7	10.8	7.0	5.23
No Refrigerator	.2	Q	Q	Q	Q	.2	.1	Q	Q	40.89

See footnotes at end of table.

Table 27. U.S. Household Appliance Use by Census Region and Metropolitan Status, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
						Metropolitan				
		Northeast	Midwest	South	West	Total	Central City	Outside Central City	Non-Metropolitan	
RSE Column Factors:	0.614	1.347	1.077	1.189	1.159	0.713	1.128	0.857	1.182	
Second-Used Refrigerator										
Electric	12.3	2.6	4.1	3.2	2.3	9.3	2.7	6.6	2.9	6.53
Frost-Free	4.8	.9	1.4	1.5	1.0	3.7	1.1	2.6	1.1	11.01
Not Frost-Free/No Freezer	7.5	1.7	2.8	1.7	1.3	5.6	1.6	4.0	1.9	7.74
None	78.3	16.4	18.1	27.7	16.0	60.9	26.9	34.0	17.3	1.13

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million homes (1.0 percent) have both a central air conditioner and one or more window or wall units. These homes are counted here.

NE RSE row factor not estimated because RSE's for all statistics in this row are between 0.0 and 1.0 percent.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 28. U.S. Household Appliance Use by Census Region and Metropolitan Status, November 1987

(Percent of Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
						Metropolitan				
		Northeast	Midwest	South	West	Total	Central City	Outside Central City	Non-Metropolitan	
RSE Column Factors:	0.614	1.347	1.077	1.189	1.159	0.713	1.128	0.857	1.182	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Type of Appliances Used										
Electric Appliances Used										
Television Set (color)	92.7	93.9	92.9	91.8	92.6	93.2	90.3	95.3	91.2	NE
Clothes Washer (automatic)	73.3	70.3	74.6	75.9	70.5	71.4	62.5	78.0	79.8	2.23
Range (stove-top or burners)	56.8	47.4	52.3	66.1	56.4	54.3	43.8	61.9	65.5	3.83
Furnace Fan	51.7	31.5	68.6	52.2	51.4	51.8	47.6	54.9	51.2	3.66
Electric Oven	56.6	48.7	51.5	64.9	56.8	54.0	43.4	61.7	65.5	3.76
Clothes Dryer	50.7	42.4	51.2	57.9	46.7	47.5	37.5	54.8	61.9	3.53
Television Set (b/w)	35.8	37.4	39.5	35.0	30.7	36.5	37.7	35.6	33.3	3.83
Dishwasher	43.1	38.7	34.2	45.4	54.6	46.7	36.3	54.3	30.6	3.96
Window or Ceiling Fan	46.2	40.9	46.3	58.0	31.7	44.9	41.9	47.2	50.6	3.59
Microwave Oven	60.8	51.2	67.1	60.4	63.7	60.4	51.3	67.1	62.0	2.22
Water Heater (for one household's use only)	33.7	21.0	25.1	52.2	26.0	27.6	21.3	32.1	54.8	6.99
Air Conditioner (room)[1]	30.8	39.7	36.3	31.4	13.8	30.0	31.5	28.9	33.5	5.70
Electric Blanket	30.0	23.2	30.5	33.5	30.5	28.1	23.5	31.4	36.6	4.34
Air Conditioner (central--for one household's use only)	32.5	14.7	31.7	50.4	21.9	34.9	27.4	40.4	24.1	5.59
Freezer (not frost-free)	23.0	16.3	30.7	24.1	18.7	18.7	13.8	22.4	37.8	5.00
Humidifier	14.6	14.8	32.2	7.4	5.4	14.1	10.8	16.5	16.4	6.87
Freezer (frost-free)	11.7	9.5	11.7	13.2	11.4	10.5	9.3	11.4	15.9	6.78
Portable Electric Heater	10.0	6.3	9.3	11.3	12.4	9.6	9.1	10.0	11.2	7.97
Waterbed Heater	13.9	6.9	17.8	12.0	19.4	13.6	11.8	15.0	14.7	7.41
Dehumidifier	10.0	15.1	21.0	4.4	.8	10.0	5.7	13.1	10.0	9.85
Whole-House Cooling Fan	9.5	7.8	11.0	11.5	5.9	9.5	5.9	12.2	9.3	11.74
Evaporative Cooler	3.4	.2	.5	2.1	12.4	3.3	4.4	2.5	3.7	16.64
Clothes Washer (wringer)	2.6	3.3	4.4	1.5	1.6	2.1	2.4	1.8	4.5	20.86
Swimming-Pool/Jacuzzi/Hot-Tub Heater	.7	.7	.4	.7	1.2	.7	.6	.9	.6	30.00
Gas Appliances Used										
Water Heater (for one household's use only)	46.4	36.3	59.0	37.8	56.1	49.2	49.6	48.9	36.5	5.85
Range (stove-top or burners)	42.7	51.5	48.1	33.1	43.5	45.2	55.8	37.5	34.1	5.11
Gas Oven	40.9	49.5	46.5	31.9	40.6	43.5	53.7	36.1	32.0	5.39
Clothes Dryer	15.2	16.9	21.6	7.3	19.0	17.4	15.0	19.1	7.8	8.57
Outdoor LPG Gas Grill	17.0	22.0	19.7	13.7	14.1	17.0	10.4	21.8	17.2	5.99
Outdoor Piped-Gas Grill	3.3	2.4	4.5	3.0	3.1	3.9	3.0	4.5	1.1	14.21
Outdoor Gas Light	1.4	.8	1.7	2.0	.7	1.6	1.5	1.7	.7	21.89
Swimming-Pool/Jacuzzi/Hot-Tub Heater	1.5	1.0	.3	.8	4.6	1.7	1.2	2.1	.7	18.82
Oil Appliances Used										
Portable Kerosene Heater	5.8	5.1	5.8	9.0	1.3	4.5	4.3	4.6	10.5	13.25
Water Heater (for one household's use only)	2.8	12.6	.1	.3	.1	3.2	1.2	4.6	1.5	16.20
Number of Refrigerators Used										
1	86.2	86.1	81.1	89.2	87.5	86.4	90.4	83.6	85.4	1.08
2 or More	13.6	13.8	18.5	10.5	12.5	13.3	9.2	16.3	14.5	6.53
None	.2	.1	.4	.3	*	.3	.5	.1	*	40.89
Most-Used Refrigerator										
Electric	99.8	99.9	99.6	99.7	100.0	99.7	99.5	99.9	100.0	NE
Frost-Free	67.3	57.8	65.4	74.1	68.0	67.7	60.1	73.3	65.6	2.60
Not Frost-Free/No Freezer	32.5	42.1	34.3	25.7	32.0	32.0	39.5	26.5	34.3	5.23
No Refrigerator	.2	.1	.4	.3	*	.3	.5	.1	*	40.89

See footnotes at end of table.

Table 28. U.S. Household Appliance Use by Census Region and Metropolitan Status, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
		Northeast	Midwest	South	West	Metropolitan			Non-Metropolitan	
						Total	Central City	Outside Central City		
RSE Column Factors:	0.614	1.347	1.077	1.189	1.159	0.713	1.128	0.857	1.182	
Second-Used Refrigerator										
Electric	13.6	13.8	18.5	10.5	12.5	13.3	9.2	16.3	14.5	6.53
Frost-Free	5.3	4.7	6.1	5.0	5.6	5.3	3.8	6.4	5.3	11.01
Not Frost-Free/No Freezer	8.2	9.1	12.4	5.5	6.8	8.0	5.4	9.8	9.2	7.75
None	86.4	86.2	81.5	89.5	87.5	86.7	90.8	83.7	85.5	1.13

* Value rounds to zero in the units displayed.

1 An estimated 0.9 million homes (1.0 percent) have both a central air conditioner and one or more window or wall units. These homes are counted here.

NE RSE row factor not estimated because RSE's for all statistics in this row are between 0.0 and 1.0 percent.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 29. U.S. Household Appliance Use by Family Income, November 1987

(Million Households)

Household Characteristics	Total	1987 Family Income								Below 100 Percent of Poverty Line	Below 125 Percent of Poverty Line	RSE Row Factors
		Less than $5,000	$5,000 to $9,999	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 or More			
RSE Column Factors:	0.385	1.848	1.156	1.094	1.137	1.142	0.799	0.871	0.895	1.321	1.041	
Total Households	90.5	6.2	11.5	12.6	9.0	8.8	16.2	13.4	12.9	11.8	18.2	4.12
Type of Appliances Used												
Electric Appliances Used												
Television Set (color)	83.9	4.6	9.7	11.4	8.3	8.3	15.7	13.2	12.7	9.3	15.1	4.21
Clothes Washer (automatic)	66.4	2.8	6.7	8.1	6.0	6.7	12.6	11.7	11.8	6.3	10.4	4.63
Range (stove-top or burners)	51.4	2.7	5.3	6.1	5.0	5.3	10.1	8.6	8.3	4.9	8.1	6.08
Furnace Fan	46.8	2.1	4.8	5.8	4.4	4.6	8.9	8.0	8.2	4.1	6.8	6.13
Electric Oven	51.2	2.6	5.3	6.0	5.0	5.2	10.2	8.5	8.5	4.8	7.9	6.07
Clothes Dryer	45.9	1.6	4.1	5.3	4.2	4.8	9.0	8.7	8.3	3.3	6.1	6.43
Television Set (b/w)	32.4	2.4	4.2	4.3	3.0	2.8	5.7	5.4	4.6	4.9	7.1	6.11
Dishwasher	39.0	.6	1.7	2.8	2.8	3.7	8.4	8.9	10.2	1.3	2.4	8.73
Window or Ceiling Fan	41.8	2.4	4.3	5.3	4.3	4.0	8.0	7.1	6.3	4.8	7.5	6.15
Microwave Oven	55.0	1.8	4.2	6.1	5.3	5.4	10.9	10.8	10.5	3.6	6.6	5.61
Water Heater (for one household's use only)	30.5	1.8	3.6	4.6	3.3	3.3	5.8	4.7	3.5	3.5	5.6	8.33
Air Conditioner (room)[1]	27.9	2.0	3.7	4.5	3.2	2.9	4.8	3.8	3.0	3.6	5.9	7.37
Electric Blanket	27.2	1.3	3.0	3.7	2.8	2.5	5.0	4.2	4.5	2.5	4.0	7.75
Air Conditioner (central--for one household's use only)	29.4	.8	2.1	2.6	2.3	2.6	6.3	6.0	6.9	1.6	2.7	8.64
Freezer (not frost-free)	20.8	1.2	2.5	2.6	1.8	2.1	3.8	3.7	3.1	2.5	3.9	8.39
Humidifier	13.2	.3	1.0	1.5	.9	1.6	2.6	2.4	3.0	.5	1.3	10.60
Freezer (frost-free)	10.6	.3	.9	1.3	.7	.9	2.1	2.1	2.2	.7	1.4	12.07
Portable Electric Heater	9.0	.9	1.5	1.4	1.0	.8	1.4	1.1	1.0	1.7	2.4	12.11
Waterbed Heater	12.5	.2	.9	1.3	1.5	1.4	2.5	2.8	1.9	.9	1.6	11.81
Dehumidifier	9.0	Q	.4	.9	.5	.9	2.2	1.9	2.1	.2	.5	13.74
Whole-House Cooling Fan	8.6	.3	.6	.9	.4	.9	1.6	1.6	2.3	.7	1.0	18.27
Evaporative Cooler	3.0	.3	.4	.6	.3	.3	.5	.4	.3	.6	.9	23.87
Clothes Washer (wringer)	2.4	.2	.3	.5	.3	.3	.2	.2	.3	.4	.7	24.96
Swimming-Pool/Jacuzzi/ Hot-Tub Heater	.6	NC	Q	Q	Q	Q	Q	.2	.2	Q	Q	38.93
Gas Appliances Used												
Water Heater (for one household's use only)	42.0	2.3	5.1	5.6	3.7	3.7	7.4	6.8	7.2	5.2	8.1	6.58
Range (stove-top or burners)	38.7	3.4	6.1	6.5	3.9	3.5	6.0	4.7	4.7	6.7	10.0	6.70
Gas Oven	37.1	3.2	5.8	6.2	3.6	3.3	5.9	4.6	4.4	6.4	9.5	6.83
Clothes Dryer	13.8	.2	.9	1.4	1.1	1.4	2.7	2.7	3.3	.8	1.3	11.76
Outdoor LPG Gas Grill	15.4	.2	.5	1.1	1.1	1.4	3.0	3.9	4.1	.4	.9	12.34
Outdoor Piped-Gas Grill	3.0	Q	Q	.2	.2	.2	.6	.6	1.0	Q	Q	22.69
Outdoor Gas Light	1.3	Q	Q	.1	Q	.3	.2	.2	.3	Q	Q	32.41
Swimming-Pool/Jacuzzi/ Hot-Tub Heater	1.3	NC	Q	Q	Q	Q	.2	.2	.7	Q	Q	27.73
Oil Appliances Used												
Portable Kerosene Heater	5.3	.4	.5	.9	.5	.5	1.1	.8	.6	.9	1.2	18.00
Water Heater (for one household's use only)	2.5	Q	.2	.2	.2	.2	.4	.5	.7	Q	.2	21.27
Number of Refrigerators Used												
1	78.1	5.8	10.6	11.5	8.1	7.6	14.0	10.8	9.7	11.1	17.0	4.42
2 or More	12.3	.3	.8	1.0	.9	1.2	2.2	2.6	3.2	.6	1.1	11.78
None	.2	Q	Q	Q	Q	NC	Q	NC	Q	Q	Q	78.84
Most-Used Refrigerator												
Electric	90.3	6.1	11.5	12.6	9.0	8.8	16.2	13.4	12.9	11.7	18.1	4.10
Frost-Free	60.9	2.7	5.8	7.3	5.9	6.0	11.6	10.7	10.9	5.5	9.0	4.99
Not Frost-Free/No Freezer	29.4	3.4	5.6	5.2	3.1	2.7	4.6	2.7	2.0	6.2	9.1	7.21
No Refrigerator	.2	Q	Q	Q	Q	NC	Q	NC	Q	Q	Q	78.84

See footnotes at end of table.

Table 29. U.S. Household Appliance Use by Family Income, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	1987 Family Income								Below 100 Percent of Poverty Line	Below 125 Percent of Poverty Line	RSE Row Factors
		Less than $5,000	$5,000 to $9,999	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 or More			
RSE Column Factors:	0.385	1.848	1.156	1.094	1.137	1.142	0.799	0.871	0.895	1.321	1.041	
Second-Used Refrigerator												
Electric	12.3	0.3	0.8	1.0	0.9	1.2	2.2	2.6	3.2	0.6	1.1	11.78
Frost-Free	4.8	Q	.2	.2	.4	.5	.9	1.1	1.5	.2	.4	19.92
Not Frost-Free/No Freezer	7.5	.2	.6	.9	.5	.6	1.3	1.5	1.8	.5	.8	14.62
None	78.3	5.9	10.7	11.6	8.1	7.6	14.0	10.8	9.7	11.2	17.1	4.44

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million homes (1.0 percent) have both a central air conditioner and one or more window or wall units. These homes are counted here.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 30. U.S. Household Appliance Use by Family Income
November 1987
(Percent of Households)

Household Characteristics	Total	1987 Family Income								Below 100 Percent of Poverty Line	Below 125 Percent of Poverty Line	RSE Row Factors
		Less than $5,000	$5,000 to $9,999	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 or More			
RSE Column Factors:	0.441	1.776	1.160	1.105	1.193	1.039	0.835	0.856	0.844	1.269	1.051	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Type of Appliances Used												
Electric Appliances Used												
Television Set (color)	92.7	74.7	84.2	90.2	92.3	95.1	96.9	98.8	98.5	78.8	82.6	1.39
Clothes Washer (automatic)	73.3	44.9	58.1	64.4	66.1	77.0	77.9	87.1	91.6	53.2	57.3	2.94
Range (stove-top or burners)	56.8	43.5	46.4	48.1	55.8	60.5	62.3	64.4	64.5	41.9	44.4	4.57
Furnace Fan	51.7	33.9	41.5	45.7	48.8	53.0	55.0	60.1	63.5	34.7	37.3	4.81
Electric Oven	56.6	41.8	45.9	47.7	55.5	59.3	62.8	63.7	65.6	40.5	43.1	4.53
Clothes Dryer	50.7	25.2	35.7	41.8	46.3	54.7	55.5	65.3	64.5	27.9	33.7	4.94
Television Set (b/w)	35.8	39.0	36.7	34.3	32.8	31.6	35.1	40.5	35.5	41.8	38.7	4.89
Dishwasher	43.1	9.5	14.7	22.6	30.7	42.3	51.6	66.2	79.0	10.8	13.3	7.09
Window or Ceiling Fan	46.2	39.4	37.5	41.9	48.0	45.4	49.6	53.3	49.2	41.1	40.9	4.70
Microwave Oven	60.8	28.5	36.6	48.6	59.1	62.2	67.4	80.5	81.1	30.7	36.0	3.76
Water Heater (for one household's use only)	33.7	28.6	31.6	36.3	36.7	37.2	35.6	35.1	27.1	30.1	30.7	7.09
Air Conditioner (room)[1]	30.8	32.3	32.0	35.5	35.1	33.1	29.9	28.8	23.0	30.7	32.5	6.20
Electric Blanket	30.0	21.7	26.5	29.6	30.8	28.3	31.0	31.6	35.2	21.1	22.0	6.72
Air Conditioner (central--for one household's use only)	32.5	12.1	17.9	20.6	25.2	29.6	38.6	45.1	53.4	13.6	14.8	7.29
Freezer (not frost-free)	23.0	19.0	22.1	20.9	19.9	23.5	23.5	27.7	24.2	21.1	21.6	7.44
Humidifier	14.6	4.4	8.8	11.5	10.2	18.8	16.2	17.6	22.9	4.5	7.2	10.38
Freezer (frost-free)	11.7	5.2	8.1	10.3	7.5	10.3	13.3	15.8	17.0	6.4	7.8	11.23
Portable Electric Heater	10.0	13.9	13.4	11.0	11.1	9.7	8.6	7.9	7.4	14.5	13.3	11.38
Waterbed Heater	13.9	3.9	8.0	10.6	16.2	16.0	15.3	21.0	14.7	8.0	8.8	10.94
Dehumidifier	10.0	1.8	3.4	7.0	5.9	10.7	13.4	14.4	16.2	1.8	2.6	13.73
Whole-House Cooling Fan	9.5	4.5	5.1	7.0	4.5	10.8	9.7	12.1	17.7	5.6	5.6	17.99
Evaporative Cooler	3.4	4.5	3.2	4.9	3.6	3.7	2.8	2.9	2.2	5.0	4.8	23.87
Clothes Washer (wringer)	2.6	3.8	2.9	4.0	3.3	3.0	1.3	1.7	2.4	3.4	3.6	24.49
Swimming-Pool/Jacuzzi/Hot-Tub Heater	.7	NC	.5	.3	.1	.5	.9	1.3	1.4	.2	.3	38.43
Gas Appliances Used												
Water Heater (for one household's use only)	46.4	37.4	44.7	44.6	41.4	42.6	45.8	50.9	56.0	44.5	44.6	5.49
Range (stove-top or burners)	42.7	54.3	53.0	51.6	42.9	40.0	37.0	35.4	36.1	57.2	54.8	5.40
Gas Oven	40.9	51.8	50.8	49.4	40.4	37.2	36.3	34.7	33.9	54.5	52.3	5.56
Clothes Dryer	15.2	3.3	7.7	11.3	12.7	16.2	16.9	20.0	25.4	6.6	7.0	11.72
Outdoor LPG Gas Grill	17.0	3.1	4.4	8.7	12.4	16.0	18.8	29.5	31.6	3.4	5.0	11.52
Outdoor Piped-Gas Grill	3.3	.7	.7	1.5	2.5	2.6	3.7	4.4	7.7	1.4	.9	22.29
Outdoor Gas Light	1.4	.5	.6	1.2	.8	3.0	1.1	1.2	2.7	.4	.6	32.07
Swimming-Pool/Jacuzzi/Hot-Tub Heater	1.5	NC	.4	.2	.8	.2	1.4	1.6	5.8	.4	.3	26.54
Oil Appliances Used												
Portable Kerosene Heater	5.8	6.9	4.7	6.9	5.5	6.0	6.6	5.9	4.4	7.7	6.3	17.36
Water Heater (for one household's use only)	2.8	.1	2.0	1.7	2.4	2.7	2.7	3.8	5.3	.4	1.0	20.84
Number of Refrigerators Used												
1	86.2	94.0	92.6	91.4	89.8	86.4	86.2	80.7	74.8	94.1	93.2	1.39
2 or More	13.6	4.8	7.2	8.3	9.8	13.6	13.7	19.3	25.1	5.1	6.2	11.32
None	.2	1.1	.2	.4	.3	NC	.1	NC	.1	.7	.6	68.78
Most-Used Refrigerator												
Electric	99.8	98.9	99.8	99.6	99.7	100.0	99.9	100.0	99.9	99.3	99.4	NE
Frost-Free	67.3	43.3	50.7	58.1	65.1	68.8	71.4	79.9	84.6	46.6	49.5	3.18
Not Frost-Free/No Freezer	32.5	55.5	49.1	41.6	34.6	31.2	28.5	20.1	15.3	52.7	49.9	5.53
No Refrigerator	.2	1.1	.2	.4	.3	NC	.1	NC	.1	.7	.6	68.78

See footnotes at end of table.

Table 30. U.S. Household Appliance Use by Family Income November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	1987 Family Income								Below 100 Percent of Poverty Line	Below 125 Percent of Poverty Line	RSE Row Factors
		Less than $5,000	$5,000 to $9,999	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	$25,000 to $34,999	$35,000 to $49,999	$50,000 or More			
RSE Column Factors:	0.441	1.776	1.160	1.105	1.193	1.039	0.835	0.856	0.844	1.269	1.051	
Second-Used Refrigerator												
Electric	13.6	4.8	7.2	8.3	9.8	13.6	13.7	19.3	25.1	5.1	6.2	11.32
Frost-Free	5.3	1.1	1.7	1.5	4.2	6.2	5.7	7.9	11.4	1.3	1.9	20.00
Not Frost-Free/No Freezer	8.2	3.8	5.6	6.7	5.6	7.4	8.0	11.4	13.7	3.8	4.3	14.33
None	86.4	95.2	92.8	91.7	90.2	86.4	86.3	80.7	74.9	94.9	93.8	1.45

NC No cases in sample.

1 An estimated 0.9 million homes (1.0 percent) have both a central air conditioner and one or more window or wall units. These homes are counted here.

NE RSE row factor not estimated because RSE's for all statistics in this row are between 0.0 and 1.0 percent.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 31. U.S. Household Appliance Use by Year of Construction, November 1987

(Million Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.363	2.202	1.525	1.108	1.128	0.895	0.822	1.090	0.819	
Total Households	90.5	3.9	7.4	10.5	9.6	16.4	13.1	8.2	21.5	5.37
Type of Appliances Used										
Electric Appliances Used										
Television Set (color)	83.9	3.8	7.1	9.8	8.9	15.2	12.4	7.5	19.2	5.41
Clothes Washer (automatic)	66.4	3.2	5.8	8.0	6.4	11.2	10.5	6.2	15.2	5.45
Range (stove-top or burners)	51.4	3.1	5.6	8.1	6.1	9.1	7.4	3.3	8.8	6.99
Furnace Fan	46.8	2.0	4.4	6.9	5.7	9.1	6.9	3.5	8.4	7.18
Electric Oven	51.2	3.1	5.4	7.9	5.9	9.1	7.3	3.6	8.9	6.85
Clothes Dryer	45.9	2.7	5.0	6.5	4.7	7.5	6.8	4.1	8.6	6.71
Television Set (b/w)	32.4	1.1	2.3	3.6	3.5	5.6	4.8	3.2	8.3	7.60
Dishwasher	39.0	2.9	5.1	6.9	5.0	7.3	5.2	2.1	4.7	7.96
Window or Ceiling Fan	41.8	2.4	3.4	4.5	3.9	7.1	6.5	4.0	10.1	6.55
Microwave Oven	55.0	2.9	5.6	7.5	6.1	9.7	7.7	4.3	11.2	5.95
Water Heater (for one household's use only)	30.5	2.6	4.0	5.2	3.3	4.4	3.5	2.4	5.2	8.43
Air Conditioner (room)[1]	27.9	.4	1.4	1.7	3.2	5.1	4.8	3.3	8.0	9.97
Electric Blanket	27.2	1.0	2.0	3.1	2.9	4.6	4.8	2.5	6.3	7.98
Air Conditioner (central--for one household's use only)	29.4	2.6	3.9	6.0	3.7	6.2	3.6	1.3	2.0	9.52
Freezer (not frost-free)	20.8	.5	1.4	2.7	2.1	3.6	3.2	2.1	5.4	8.78
Humidifier	13.2	.4	.7	2.1	1.5	2.2	1.8	.9	3.6	11.68
Freezer (frost-free)	10.6	.4	.8	1.6	1.0	2.1	1.7	.7	2.3	11.62
Portable Electric Heater	9.0	Q	.4	.6	.6	1.9	1.7	.8	2.9	14.16
Waterbed Heater	12.5	.7	1.7	2.0	1.4	2.1	1.8	.8	2.0	10.88
Dehumidifier	9.0	Q	.5	1.0	1.0	1.7	1.4	1.0	2.2	14.34
Whole-House Cooling Fan	8.6	.2	.6	1.3	1.1	1.9	1.5	.7	1.2	15.40
Evaporative Cooler	3.0	Q	.2	.3	.4	.6	.8	.4	.4	26.75
Clothes Washer (wringer)	2.4	Q	Q	Q	Q	.3	.4	.3	1.0	28.20
Swimming-Pool/Jacuzzi/ Hot-Tub Heater	.6	Q	.2	Q	Q	Q	Q	Q	Q	32.24
Gas Appliances Used										
Water Heater (for one household's use only)	42.0	.9	2.4	3.5	4.2	7.9	7.6	4.3	11.2	8.29
Range (stove-top or burners)	38.7	.7	1.7	2.4	3.5	7.4	5.6	4.8	12.5	8.75
Gas Oven	37.1	.7	1.7	2.3	3.2	7.1	5.4	4.7	12.1	8.91
Clothes Dryer	13.8	.3	.6	1.1	1.4	2.5	2.6	1.4	3.9	12.23
Outdoor LPG Gas Grill	15.4	.9	1.5	2.2	1.8	2.5	2.3	1.2	2.9	9.43
Outdoor Piped-Gas Grill	3.0	Q	Q	.4	.5	.7	.5	.3	.4	22.69
Outdoor Gas Light	1.3	NC	NC	Q	.2	.3	.3	Q	.2	34.18
Swimming-Pool/Jacuzzi/ Hot-Tub Heater	1.3	Q	Q	.2	.3	.2	.2	Q	Q	29.10
Oil Appliances Used										
Portable Kerosene Heater	5.3	Q	.3	.8	.6	.8	.6	.6	1.4	18.22
Water Heater (for one household's use only)	2.5	Q	Q	.2	.1	.4	.7	.2	.8	25.71
Number of Refrigerators Used										
1	78.1	3.5	6.7	9.2	8.4	13.7	10.8	7.1	18.8	5.86
2 or More	12.3	.4	.7	1.3	1.3	2.7	2.3	1.1	2.6	10.86
None	.2	Q	NC	NC	NC	Q	NC	Q	Q	83.61
Most-Used Refrigerator										
Electric	90.3	3.8	7.4	10.5	9.6	16.4	13.1	8.2	21.4	5.38
Frost-Free	60.9	3.3	5.4	8.2	6.4	10.2	9.3	5.3	12.8	6.12
Not Frost-Free/No Freezer	29.4	.6	2.0	2.3	3.2	6.1	3.7	2.9	8.6	9.22
No Refrigerator	.2	Q	NC	NC	NC	Q	NC	Q	Q	83.61

See footnotes at end of table.

Table 31. U.S. Household Appliance Use by Year of Construction, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.363	2.202	1.525	1.108	1.128	0.895	0.822	1.090	0.819	
Second-Used Refrigerator										
Electric	12.3	0.4	0.7	1.3	1.3	2.7	2.3	1.1	2.6	10.86
Frost-Free	4.8	.3	.3	.4	.6	1.0	.9	.5	.8	16.48
Not Frost-Free/No Freezer	7.5	Q	.4	.9	.7	1.7	1.4	.6	1.8	13.99
None	78.3	3.5	6.7	9.2	8.4	13.7	10.8	7.2	18.9	5.84

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million homes (1.0 percent) have both a central air conditioner and one or more window or wall units. These homes are counted here.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 32. U.S. Household Appliance Use by Year of Construction, November 1987

(Percent of Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.430	1.873	1.461	1.074	1.169	0.907	0.832	1.116	0.804	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Type of Appliances Used										
Electric Appliances Used										
Television Set (color)	92.7	97.7	96.5	93.5	92.5	92.5	95.0	91.4	89.6	1.03
Clothes Washer (automatic)	73.3	82.2	78.3	76.0	66.8	68.4	80.1	74.7	70.8	3.22
Range (stove-top or burners)	56.8	79.7	76.2	76.9	63.5	55.3	56.5	40.6	40.8	4.32
Furnace Fan	51.7	51.8	59.1	65.8	59.5	55.2	52.7	42.6	39.0	5.24
Electric Oven	56.6	79.8	73.2	75.0	61.5	55.7	56.3	43.2	41.4	4.29
Clothes Dryer	50.7	70.5	67.8	61.7	48.8	45.7	52.1	49.6	40.3	4.78
Television Set (b/w)	35.8	28.5	31.6	34.5	36.0	34.4	36.4	38.5	38.6	5.89
Dishwasher	43.1	74.5	69.1	65.4	51.8	44.2	39.5	25.7	21.7	5.47
Window or Ceiling Fan	46.2	61.2	45.7	42.7	40.0	43.4	50.1	49.0	47.0	4.87
Microwave Oven	60.8	75.9	75.5	71.3	63.3	59.1	58.9	52.6	52.3	3.49
Water Heater (for one household's use only)	33.7	66.9	54.4	49.2	34.5	26.7	26.5	29.6	24.0	7.00
Air Conditioner (room)[1]	30.8	9.1	19.1	16.2	33.4	31.3	36.4	40.3	37.1	8.50
Electric Blanket	30.0	24.8	27.7	29.5	29.8	28.2	36.7	29.8	29.4	6.60
Air Conditioner (central--for one household's use only)	32.5	68.6	53.4	57.7	38.9	37.5	27.8	15.6	9.3	7.19
Freezer (not frost-free)	23.0	12.6	18.6	25.5	21.4	21.7	24.8	25.1	24.9	8.32
Humidifier	14.6	11.3	9.3	19.8	15.7	13.3	14.0	11.5	16.7	10.59
Freezer (frost-free)	11.7	9.8	11.3	14.8	10.5	12.8	13.0	9.0	10.7	11.44
Portable Electric Heater	10.0	Q	5.2	5.9	6.7	11.6	12.9	9.5	13.4	13.08
Waterbed Heater	13.9	19.0	22.4	19.1	14.5	12.9	13.5	10.3	9.4	10.31
Dehumidifier	10.0	Q	7.4	9.7	10.5	10.3	10.6	12.4	10.4	13.47
Whole-House Cooling Fan	9.5	6.5	8.8	12.0	11.0	11.9	11.6	8.9	5.4	14.92
Evaporative Cooler	3.4	Q	2.2	3.1	4.3	3.4	5.8	4.3	1.7	26.17
Clothes Washer (wringer)	2.6	Q	Q	Q	Q	1.8	3.4	3.1	4.8	26.43
Swimming-Pool/Jacuzzi/ Hot-Tub Heater	.7	Q	2.5	Q	Q	Q	Q	Q	Q	30.25
Gas Appliances Used										
Water Heater (for one household's use only)	46.4	23.8	32.3	33.2	43.3	48.2	58.4	52.7	51.9	6.91
Range (stove-top or burners)	42.7	17.8	23.4	22.7	36.5	45.2	43.2	58.8	58.2	7.22
Gas Oven	40.9	17.1	22.5	22.1	33.3	43.2	41.2	56.8	56.2	7.44
Clothes Dryer	15.2	6.6	7.9	10.9	14.3	15.1	20.2	16.5	18.3	11.59
Outdoor LPG Gas Grill	17.0	24.4	20.6	21.3	19.0	15.4	17.5	14.0	13.6	8.58
Outdoor Piped-Gas Grill	3.3	Q	Q	3.9	5.0	4.1	4.2	3.5	2.0	21.40
Outdoor Gas Light	1.4	NC	NC	Q	2.1	2.0	2.6	Q	.7	32.93
Swimming-Pool/Jacuzzi/ Hot-Tub Heater	1.5	Q	Q	1.7	2.8	1.4	1.4	Q	Q	28.45
Oil Appliances Used										
Portable Kerosene Heater	5.8	Q	4.5	7.3	6.7	4.7	4.5	7.8	6.7	18.19
Water Heater (for one household's use only)	2.8	Q	Q	2.2	1.6	2.3	5.4	2.4	3.6	24.93
Number of Refrigerators Used										
1	86.2	90.1	90.3	87.3	86.8	83.4	82.3	86.7	87.7	1.63
2 or More	13.6	9.5	9.7	12.7	13.2	16.4	17.7	12.7	11.9	10.69
None	.2	Q	NC	NC	NC	Q	NC	Q	Q	70.48
Most-Used Refrigerator										
Electric	99.8	99.5	100.0	100.0	100.0	99.8	100.0	99.4	99.6	NE
Frost-Free	67.3	84.7	73.4	78.1	66.6	62.3	71.5	64.2	59.4	3.26
Not Frost-Free/No Freezer	32.5	14.9	26.6	21.9	33.4	37.5	28.5	35.2	40.2	7.87
No Refrigerator	.2	Q	NC	NC	NC	Q	NC	Q	Q	70.48

See footnotes at end of table.

Table 32. U.S. Household Appliance Use by Year of Construction, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.430	1.873	1.461	1.074	1.169	0.907	0.832	1.116	0.804	
Second-Used Refrigerator										
Electric	13.6	9.5	9.7	12.7	13.2	16.4	17.7	12.7	11.9	10.69
Frost-Free	5.3	8.2	4.5	4.3	5.9	5.9	7.1	6.0	3.6	16.63
Not Frost-Free/No Freezer	8.2	Q	5.1	8.4	7.3	10.4	10.6	6.8	8.4	13.39
None	86.4	90.5	90.3	87.3	86.8	83.6	82.3	87.3	88.1	1.59

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million homes (1.0 percent) have both a central air conditioner and one or more window or wall units. These homes are counted here.

NE RSE row factor not estimated because RSE's for all statistics in this row are between 0.0 and 1.0 percent.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 33. U.S. Household Thermal Characteristics by Census Region and Metropolitan Status, November 1987

(Million Households Except Where Averages Are Indicated)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
						Metropolitan				
		Northeast	Midwest	South	West	Total	Central City	Outside Central City	Non-Metropolitan	
RSE Column Factors:	0.605	1.243	1.123	1.186	1.301	0.727	1.149	0.917	1.002	
Total Households	90.5	19.0	22.3	30.9	18.3	70.2	29.6	40.6	20.3	0.00
Number of Windows										
6 or Fewer	19.7	4.2	3.5	6.3	5.7	17.4	9.0	8.4	2.3	7.91
7 to 12	36.9	6.7	8.2	14.0	8.0	27.2	11.3	15.9	9.8	3.77
13 to 18	22.0	4.8	6.4	7.6	3.3	16.4	6.2	10.2	5.6	5.36
19 or More	11.9	3.3	4.3	3.0	1.3	9.3	3.2	6.1	2.7	7.78
Average Number of Windows	11.6	12.5	13.1	11.1	9.9	11.4	10.6	12.0	12.4	2.17
Number of Storm Windows										
1 to 6	12.9	3.7	3.7	3.4	2.1	10.4	4.8	5.6	2.5	7.31
7 to 12	22.9	6.0	7.6	6.9	2.4	16.0	6.2	9.8	6.8	5.27
13 to 18	14.3	4.5	5.5	3.4	.9	10.6	3.7	6.9	3.7	6.81
19 or More	7.9	2.7	3.5	1.3	.4	6.1	2.0	4.1	1.8	9.80
None/No Windows	32.6	2.2	1.9	15.9	12.6	27.2	12.9	14.2	5.4	4.06
Average Number of Storm Windows	7.5	10.8	11.5	5.2	2.9	7.1	6.1	7.9	8.6	3.17
Percent of Windows with Storm Windows										
100 Percent	44.8	13.6	16.0	11.3	3.9	33.2	12.6	20.6	11.6	2.52
76 to 99 Percent	5.1	1.5	2.0	1.3	.3	3.7	1.5	2.2	1.4	9.71
51 to 75 Percent	3.7	1.0	1.4	.9	.4	2.9	1.1	1.8	.8	10.85
1 to 50 Percent	4.4	.7	1.0	1.5	1.1	3.2	1.4	1.8	1.1	11.40
None/No Windows	32.6	2.2	1.9	15.9	12.6	27.2	12.9	14.2	5.4	4.06
Number of Outside Doors										
1	9.8	2.6	2.5	2.2	2.4	9.0	5.3	3.7	.9	11.28
2	37.7	6.5	9.5	15.2	6.5	28.0	12.5	15.5	9.8	4.91
3	25.5	5.0	6.2	9.2	5.1	19.4	6.5	12.9	6.1	5.50
4 or More	13.3	2.7	3.2	3.8	3.7	10.4	2.8	7.6	2.9	7.17
None	4.2	2.3	.8	.5	.6	3.5	2.6	.9	.7	19.49
Average Number of Doors	2.4	2.2	2.4	2.5	2.6	2.4	2.1	2.7	2.5	1.83
Type and Number of Outside Doors										
Standard Doors										
1	16.9	3.1	2.8	5.6	5.4	15.4	7.4	8.1	1.5	9.55
2	42.5	7.5	11.2	15.5	8.4	31.4	12.9	18.5	11.1	4.28
3	19.0	4.2	5.1	7.0	2.6	13.9	4.8	9.1	5.1	5.70
4 or More	6.6	1.7	1.7	2.1	1.2	4.8	1.6	3.2	1.9	8.88
None/No Doors	5.5	2.6	1.5	.7	.7	4.8	3.1	1.7	.7	17.38
Average Number of Standard Doors	2.1	2.0	2.1	2.2	1.9	2.0	1.8	2.1	2.3	2.01
Sliding Glass Doors										
1	19.8	2.9	4.1	7.2	5.5	16.9	4.8	12.0	2.9	7.23
2 or More	5.9	.7	1.1	1.2	2.9	5.3	1.4	3.8	.6	16.42
None/No Doors	64.9	15.4	17.1	22.4	9.9	48.1	23.4	24.8	16.8	2.49
Average Number of Sliding Glass Doors	.4	.2	.3	.3	.7	.4	.3	.5	.2	8.32

See footnotes at end of table.

Table 33. U.S. Household Thermal Characteristics by Census Region and Metropolitan Status, November 1987 (Continued)

(Million Households Except Where Averages Are Indicated)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
		Northeast	Midwest	South	West	Metropolitan Total	Central City	Outside Central City	Non-Metropolitan	
RSE Column Factors:	0.605	1.243	1.123	1.186	1.301	0.727	1.149	0.917	1.002	
Number of Storm Doors										
1	15.2	3.2	4.3	5.7	2.1	11.5	4.7	6.7	3.7	6.93
2	24.6	6.4	8.7	7.2	2.4	17.9	7.1	10.8	6.8	5.57
3	11.2	2.9	4.2	3.3	.8	8.2	2.4	5.8	2.9	8.36
4 or More	4.5	1.3	1.7	1.0	.5	3.3	.7	2.6	1.3	11.83
None	30.9	3.1	2.6	13.2	12.0	25.9	12.2	13.8	5.0	4.57
No Outside Doors	4.2	2.3	.8	.5	.6	3.5	2.6	.9	.7	19.49
Average Number of Storm Doors	1.3	1.6	1.9	1.1	.6	1.2	1.0	1.4	1.5	3.13
Average Number of Standard Storm Doors	1.1	1.4	1.6	1.0	.4	1.0	.9	1.1	1.4	3.49
Average Number of Sliding Glass Storm Doors	.2	.2	.3	.1	.2	.2	.1	.3	.2	9.16
Percent of Outside Doors with Storm Doors										
100 Percent	32.7	8.4	12.6	9.4	2.3	23.9	9.1	14.8	8.8	4.22
51 to 99 Percent	9.0	2.4	3.3	2.2	1.1	7.0	2.0	5.0	2.0	7.86
1 to 50 Percent	13.7	2.8	3.0	5.6	2.3	10.0	3.8	6.2	3.7	6.96
None/No Doors	35.1	5.4	3.4	13.7	12.5	29.4	14.7	14.7	5.6	4.40
Total Single-Family Units	60.5	11.1	15.6	22.2	11.5	45.1	16.0	29.0	15.4	2.91
Have Caulking or Weatherstripping (single-family units)										
Yes	44.9	8.8	12.7	16.3	7.1	33.7	11.3	22.4	11.2	3.61
Caulking	38.9	7.6	11.3	14.5	5.5	29.1	9.5	19.6	9.8	3.92
Weatherstripping	37.0	7.3	10.2	13.2	6.3	28.5	9.8	18.7	8.6	4.37
No/Don't Know/Not Reported	15.6	2.3	3.0	5.9	4.3	11.4	4.8	6.6	4.2	7.39
Have Roof or Ceiling Insulation (single-family units)										
Yes	49.3	9.1	13.7	17.7	8.8	36.7	11.9	24.8	12.6	3.28
All Insulated	41.4	7.5	11.2	15.1	7.6	30.7	9.8	21.0	10.6	3.66
Part Insulated	4.5	.9	1.2	1.6	.7	3.2	1.2	2.0	1.2	11.24
None, Very Little Insulated	.5	Q	.2	Q	Q	.4	.1	.3	Q	35.16
Don't Know Amount/ Not Reported	3.0	.6	1.0	1.0	.5	2.3	.7	1.5	.7	17.84
No	6.6	1.4	1.0	2.8	1.5	4.5	2.3	2.2	2.1	10.11
Don't Know/Not Reported	4.6	.7	1.0	1.7	1.1	3.8	1.8	2.0	.7	15.11
Type of Insulation										
Batts Only	24.9	6.4	5.5	9.1	3.9	18.4	5.4	13.0	6.5	5.25
Average Number of Inches	5.4	5.5	6.1	5.0	5.3	5.4	5.2	5.4	5.6	3.00
Loose Fill Only	12.3	1.0	3.9	5.0	2.5	9.2	3.4	5.8	3.1	7.42
Average Number of Inches	7.1	5.6	8.2	6.5	7.0	6.8	6.7	6.9	7.8	3.95
Batts and Loose Fill Only	5.1	.6	2.5	1.3	.7	3.6	.9	2.6	1.5	11.22
Average Number of Inches	12.0	10.3	12.2	11.5	13.2	12.1	11.9	12.2	11.7	5.21
Other/Combination	4.1	.6	.8	1.4	1.2	3.2	1.0	2.2	.9	13.91
Don't Know Type/Not Reported	2.9	.5	.9	.9	.6	2.3	1.2	1.2	.6	14.29
No Insulation Don't Know/Not Reported	11.2	2.1	2.0	4.5	2.6	8.4	4.2	4.2	2.8	9.71

See footnotes at end of table.

Table 33. U.S. Household Thermal Characteristics by Census Region and Metropolitan Status, November 1987 (Continued)

(Million Households Except Where Averages Are Indicated)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
		Northeast	Midwest	South	West	Metropolitan			Non-Metropolitan	
						Total	Central City	Outside Central City		
RSE Column Factors:	0.605	1.243	1.123	1.186	1.301	0.727	1.149	0.917	1.002	
Have Wall Insulation (single-family units)										
Yes	35.4	7.1	10.8	12.0	5.4	25.2	7.4	17.8	10.2	4.39
All Walls	30.1	5.9	9.3	10.5	4.4	21.4	6.1	15.2	8.8	4.89
Some Walls	5.3	1.2	1.5	1.6	1.0	3.9	1.3	2.6	1.4	12.19
No	13.4	2.4	2.4	5.1	3.5	10.2	4.4	5.8	3.2	7.23
Don't Know/Not Reported	11.7	1.6	2.4	5.1	2.5	9.6	4.2	5.4	2.1	8.42
Floor Insulation (single-family units)										
Basement/Crawl Space	46.2	10.2	14.4	14.0	7.6	33.3	11.7	21.6	12.9	3.82
Heated	17.7	4.7	8.3	3.0	1.7	13.4	4.3	9.0	4.3	7.46
None or Part Heated	28.5	5.6	6.1	11.0	5.9	19.9	7.4	12.6	8.6	5.28
Floor Insulated	6.7	1.6	1.5	2.4	1.1	4.7	1.3	3.4	2.0	13.63
All Parts Insulated	4.8	.9	1.0	2.0	.9	3.4	.9	2.5	1.5	17.06
Some Parts Insulated	1.9	.7	.5	.4	.2	1.3	.3	1.0	.6	19.86
Floor Not Insulated	13.8	2.5	2.7	5.4	3.2	9.3	3.9	5.4	4.5	8.09
Don't Know/Not Reported	8.0	1.5	1.9	3.1	1.6	6.0	2.2	3.8	2.1	9.18
No Basement/Crawl Space	14.2	.9	1.2	8.2	3.8	11.7	4.3	7.4	2.5	9.72
Insulation Characteristics (single-family units)										
Units with Some or All Storm Windows, and Some or All Storm Doors, and Roof or Ceiling Insulation	33.5	8.5	12.4	9.5	3.1	24.0	7.4	16.6	9.5	4.36
Units with One or More of These Types of Insulation	55.8	11.1	15.5	20.0	9.2	41.7	14.3	27.4	14.2	2.90
Units with None of These Types of Insulation	4.6	Q	Q	2.3	2.2	3.4	1.8	1.6	1.2	12.58

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 34. U.S. Household Thermal Characteristics by Census Region and Metropolitan Status, November 1987

(Percent of Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
						Metropolitan				
		Northeast	Midwest	South	West	Total	Central City	Outside Central City	Non-Metropolitan	
RSE Column Factors:	0.608	1.223	1.127	1.185	1.310	0.723	1.088	0.932	1.049	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Number of Windows										
6 or Fewer	21.7	22.1	15.6	20.5	31.0	24.8	30.3	20.8	11.2	7.91
7 to 12	40.8	35.2	36.8	45.3	43.9	38.7	38.1	39.1	48.2	3.77
13 to 18	24.3	25.2	28.5	24.5	17.8	23.3	20.8	25.2	27.5	5.36
19 or More	13.2	17.6	19.1	9.7	7.3	13.2	10.8	15.0	13.1	7.78
Number of Storm Windows										
1 to 6	14.2	19.2	16.7	11.0	11.4	14.7	16.2	13.7	12.5	7.31
7 to 12	25.2	31.4	34.3	22.2	12.9	22.8	20.8	24.2	33.7	5.27
13 to 18	15.8	23.6	24.8	11.1	4.8	15.1	12.6	16.9	18.2	6.81
19 or More	8.8	14.3	15.8	4.2	2.1	8.7	6.7	10.2	9.0	9.80
None/No Windows	36.0	11.5	8.4	51.4	68.8	38.7	43.7	35.0	26.6	4.05
Percent of Windows with Storm Windows										
100 Percent	49.5	71.3	71.7	36.6	21.4	47.3	42.6	50.7	57.0	2.52
76 to 99 Percent	5.7	8.1	8.9	4.2	1.8	5.3	5.1	5.5	6.9	9.71
51 to 75 Percent	4.1	5.3	6.4	2.9	2.2	4.1	3.7	4.4	4.1	10.85
1 to 50 Percent	4.8	3.8	4.6	4.9	5.8	4.6	4.9	4.4	5.4	11.40
None/No Windows	36.0	11.5	8.4	51.4	68.8	38.7	43.7	35.0	26.6	4.05
Number of Outside Doors										
1	10.9	13.7	11.4	7.2	13.3	12.8	17.8	9.1	4.3	11.28
2	41.7	34.3	42.6	49.2	35.6	39.8	42.2	38.1	48.2	4.91
3	28.1	26.1	27.9	29.8	27.8	27.6	21.9	31.9	29.9	5.50
4 or More	14.7	13.9	14.5	12.2	20.1	14.8	9.6	18.7	14.3	7.17
None	4.6	11.9	3.6	1.6	3.2	5.0	8.6	2.3	3.4	19.49
Type and Number of Outside Doors										
Standard Doors										
1	18.7	16.1	12.7	18.2	29.5	22.0	24.8	19.9	7.4	9.55
2	46.9	39.2	50.1	50.0	45.8	44.7	43.5	45.5	54.7	4.28
3	21.0	22.3	22.9	22.7	14.4	19.8	16.1	22.5	25.1	5.70
4 or More	7.3	8.7	7.6	6.8	6.4	6.8	5.3	7.9	9.1	8.88
None/No Doors	6.1	13.7	6.7	2.3	3.9	6.8	10.3	4.3	3.7	17.38
Sliding Glass Doors										
1	21.9	15.3	18.3	23.5	30.3	24.0	16.3	29.6	14.4	7.23
2 or More	6.5	3.6	4.8	4.0	15.6	7.5	4.8	9.4	2.9	16.42
None/No Doors	71.7	81.1	76.9	72.5	54.1	68.5	78.8	61.0	82.6	2.49
Number of Storm Doors										
1	16.8	16.6	19.1	18.4	11.3	16.3	16.0	16.6	18.2	6.93
2	27.2	33.4	39.2	23.2	13.0	25.4	23.8	26.6	33.4	5.57
3	12.3	15.0	18.8	10.7	4.4	11.7	8.1	14.4	14.4	8.36
4 or More	5.0	6.7	7.7	3.3	2.9	4.6	2.4	6.3	6.2	11.83
None	34.1	16.4	11.7	42.8	65.2	36.9	41.1	33.9	24.4	4.57
No Outside Doors	4.6	11.9	3.6	1.6	3.2	5.0	8.6	2.3	3.4	19.49
Percent of Outside Doors with Storm Doors										
100 Percent	36.2	44.2	56.7	30.4	12.6	34.0	30.7	36.4	43.6	4.22
51 to 99 Percent	10.0	12.6	14.6	7.2	6.2	9.9	6.8	12.2	10.1	7.86
1 to 50 Percent	15.1	14.9	13.4	18.0	12.8	14.2	12.8	15.2	18.4	6.96
None/No Doors	38.7	28.3	15.3	44.4	68.4	41.9	49.7	36.1	27.8	4.40

See footnotes at end of table.

Table 34. U.S. Household Thermal Characteristics by Census Region and Metropolitan Status, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
						Metropolitan				
		Northeast	Midwest	South	West	Total	Central City	Outside Central City	Non-Metropolitan	
RSE Column Factors:	0.608	1.223	1.127	1.185	1.310	0.723	1.088	0.932	1.049	
Total Single-Family Units	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Have Caulking or Weatherstripping (single-family units)										
Yes	74.3	79.1	81.0	73.3	62.3	74.8	70.2	77.3	72.8	2.29
Caulking	64.4	68.4	72.5	65.2	47.8	64.6	59.3	67.5	63.8	2.73
Weatherstripping	61.3	65.4	65.2	59.5	55.1	63.2	61.2	64.3	55.6	3.25
No/Don't Know/Not Reported	25.7	20.9	19.0	26.7	37.7	25.2	29.8	22.7	27.2	6.58
Have Roof or Ceiling Insulation (single-family units)										
Yes	81.5	81.5	87.4	79.6	77.2	81.4	74.1	85.4	81.9	2.01
All Insulated	68.4	67.3	71.9	67.7	66.1	68.2	60.9	72.2	69.1	2.85
Part Insulated	7.4	8.2	8.0	7.1	6.4	7.2	7.7	6.9	8.0	10.96
None, Very Little Insulated	.8	Q	1.3	Q	Q	.9	.8	1.0	Q	34.64
Don't Know Amount/ Not Reported	4.9	5.3	6.1	4.4	3.9	5.0	4.6	5.3	4.6	17.36
No	11.0	12.3	6.2	12.7	12.9	10.1	14.6	7.6	13.5	9.48
Don't Know/Not Reported	7.5	6.2	6.5	7.7	9.8	8.5	11.3	7.0	4.6	14.28
Type of Insulation										
Batts Only	41.1	57.2	35.4	41.0	33.7	40.8	33.7	44.7	42.2	4.43
Loose Fill Only	20.4	8.5	24.9	22.4	21.7	20.4	21.1	20.0	20.3	7.49
Batts and Loose Fill Only	8.4	5.2	15.8	6.0	6.3	8.0	5.9	9.1	9.8	10.27
Other/Combination	6.7	5.7	5.4	6.1	10.6	7.1	6.2	7.6	5.7	13.78
Don't Know Type/Not Reported	4.8	4.8	5.8	4.2	4.9	5.2	7.2	4.1	3.8	13.66
No Insulation/ Don't Know/Not Reported	18.5	18.5	12.6	20.4	22.8	18.6	25.9	14.6	18.1	8.78
Have Wall Insulation (single-family units)										
Yes	58.5	64.1	69.2	54.1	47.2	56.0	46.3	61.4	65.9	3.50
All Walls	49.8	53.2	59.5	47.1	38.7	47.4	38.3	52.4	56.9	4.15
Some Walls	8.7	10.9	9.7	7.0	8.5	8.6	7.9	9.0	9.0	11.73
No	22.2	21.5	15.3	22.9	30.7	22.7	27.3	20.1	20.6	6.18
Don't Know/Not Reported	19.3	14.4	15.6	23.0	22.1	21.3	26.5	18.5	13.5	7.96
Floor Insulation (single-family units)										
Basement/Crawl Space	76.5	91.9	92.1	63.0	66.4	74.0	73.0	74.5	83.9	2.37
Heated	29.3	42.0	52.8	13.7	15.1	29.7	27.1	31.1	28.1	7.01
None or Part Heated	47.2	49.9	39.3	49.3	51.4	44.3	45.9	43.4	55.7	4.35
Floor Insulated	11.1	14.6	9.8	11.0	9.6	10.4	7.9	11.7	13.2	13.14
All Parts Insulated	8.0	8.1	6.3	9.1	8.0	7.5	5.7	8.4	9.5	16.69
Some Parts Insulated	3.1	6.5	3.5	1.9	1.6	2.9	2.2	3.3	3.7	19.46
Floor Not Insulated	22.8	22.1	17.4	24.3	28.0	20.7	24.3	18.7	29.0	7.15
Don't Know/Not Reported	13.3	13.2	12.1	14.0	13.8	13.2	13.7	12.9	13.6	9.27
No Basement/Crawl Space	23.5	8.1	7.9	37.0	33.6	26.0	27.0	25.5	16.1	9.01

See footnotes at end of table.

Table 34. U.S. Household Thermal Characteristics by Census Region and Metropolitan Status, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
		Northeast	Midwest	South	West	Metropolitan			Non-Metropolitan	
						Total	Central City	Outside Central City		
RSE Column Factors:	0.608	1.223	1.127	1.185	1.310	0.723	1.088	0.932	1.049	
Insulation Characteristics (single-family units)										
Units with Some or All Storm Windows, and Some or All Storm Doors, and Roof or Ceiling Insulation	55.4	76.2	79.5	42.6	27.2	53.3	46.4	57.2	61.5	3.50
Units with One or More of These Types of Insulation	92.3	99.7	99.4	89.8	80.4	92.5	89.0	94.4	91.9	1.42
Units with None of These Types of Insulation	7.7	Q	Q	10.2	19.6	7.5	11.0	5.6	8.1	11.51

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 35. U.S. Household Thermal Characteristics by Structure and Status of Unit, November 1987

(Million Households Except Where Averages Are Indicated)

Household Characteristics	Total	Housing Structure by Status of Unit												RSE Row Factors
		Single-Family			Building of 2 to 4 Units			Building of 5 or More Units			Mobile Home			
		Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:	0.304	0.342	0.362	0.891	0.938	1.560	1.060	1.164	3.401	1.175	1.295	1.449	2.196	
Total Households	90.5	60.5	51.6	8.9	10.1	2.0	8.1	14.9	1.0	13.9	5.1	4.3	0.9	6.75
Number of Windows														
6 or Fewer	19.7	3.9	2.6	1.3	3.6	.4	3.2	11.9	.6	11.3	.2	.2	Q	14.56
7 to 12	36.9	26.3	21.8	4.6	4.4	.8	3.7	2.8	.3	2.5	3.4	2.9	.5	9.15
13 to 18	22.0	18.9	16.8	2.1	1.5	.5	1.0	.2	Q	Q	1.3	1.0	.3	12.05
19 or More	11.9	11.3	10.4	.9	.5	.3	.1	NC	NC	NC	.2	.2	Q	19.38
Average Number of Windows	11.6	13.9	14.3	11.4	9.1	12.4	8.2	4.5	6.6	4.3	11.3	11.2	12.0	2.62
Number of Storm Windows														
1 to 6	12.9	4.9	4.0	1.0	2.4	.5	1.9	5.2	.3	4.9	.4	.3	Q	13.37
7 to 12	22.9	17.2	15.2	2.0	2.4	.5	1.9	1.4	.2	1.2	1.9	1.7	.2	12.70
13 to 18	14.3	12.6	11.5	1.1	1.0	.4	.6	Q	NC	Q	.7	.6	Q	13.33
19 or More	7.9	7.5	7.1	.4	.3	.2	Q	NC	NC	NC	.1	.1	NC	21.25
None/No Windows	32.6	18.3	13.8	4.4	3.9	.4	3.5	8.3	.5	7.8	2.0	1.5	.5	10.54
Average Number of Storm Windows	7.5	9.2	9.9	5.5	5.5	9.3	4.5	2.0	2.8	1.9	6.6	7.0	4.6	6.49
Percent of Windows with Storm Windows														
100 Percent	44.8	31.6	28.5	3.1	4.7	1.2	3.5	6.1	.5	5.6	2.4	2.1	.3	8.49
76 to 99 Percent	5.1	4.2	3.7	.5	.5	Q	.4	Q	Q	Q	.4	.3	Q	20.38
51 to 75 Percent	3.7	3.0	2.6	.4	.4	.2	.2	.2	NC	.2	.2	Q	Q	23.02
1 to 50 Percent	4.4	3.4	2.9	.5	.6	.2	.4	.2	NC	.2	.2	Q	Q	22.64
None/No Windows	32.6	18.3	13.8	4.4	3.9	.4	3.5	8.3	.5	7.8	2.0	1.5	.5	10.54
Number of Outside Doors														
1	9.8	.7	.4	.3	2.5	Q	2.3	6.6	.3	6.3	Q	Q	Q	21.21
2	37.7	24.0	18.9	5.1	5.2	1.0	4.2	4.3	.3	4.1	4.2	3.5	.7	9.98
3	25.5	22.7	20.3	2.4	1.1	.5	.6	.8	Q	.7	.8	.7	.1	16.44
4 or More	13.3	12.6	11.7	.9	.4	.2	.2	.3	Q	Q	Q	Q	NC	17.97
None	4.2	.6	.4	.2	.8	Q	.8	2.8	Q	2.7	NC	NC	NC	26.69
Average Number of Doors	2.4	2.9	2.9	2.4	1.8	2.3	1.6	1.3	2.0	1.2	2.2	2.2	2.1	2.62
Type and Number of Outside Doors														
Standard Doors														
1	16.9	4.3	3.4	.9	3.2	.3	2.9	9.3	.6	8.7	.2	.2	Q	18.41
2	42.5	31.8	26.5	5.3	4.9	1.1	3.8	1.5	Q	1.4	4.4	3.6	.8	9.43
3	19.0	17.6	15.7	1.8	.8	.4	.4	Q	NC	Q	.6	.5	Q	13.25
4 or More	6.6	6.3	5.6	.7	.3	Q	.2	Q	Q	Q	NC	NC	NC	20.68
None/No Doors	5.5	.6	.4	.2	.9	Q	.8	4.0	.2	3.8	NC	NC	NC	23.65
Average Number of Standard Doors	2.1	2.4	2.5	2.2	1.6	2.0	1.5	.9	1.0	.8	2.1	2.1	2.0	2.70
Sliding Glass Doors														
1	19.8	14.3	12.9	1.4	1.1	.4	.7	3.9	.4	3.5	.4	.3	Q	17.85
2 or More	5.9	4.6	4.4	.2	Q	Q	Q	1.1	Q	.8	Q	Q	NC	29.85
None/No Doors	64.9	41.5	34.2	7.3	8.8	1.5	7.3	9.9	.3	9.6	4.7	3.9	.8	7.26
Average Number of Sliding Glass Doors	.4	.4	.5	.2	.1	.3	.1	.4	1.0	.4	.1	.1	Q	15.64

See footnotes at end of table.

Table 35. U.S. Household Thermal Characteristics by Structure and Status of Unit, November 1987 (Continued)

(Million Households Except Where Averages Are Indicated)

Household Characteristics	Total	Housing Structure by Status of Unit												RSE Row Factors
		Single-Family			Building of 2 to 4 Units			Building of 5 or More Units			Mobile Home			
		Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:	0.304	0.342	0.362	0.891	0.938	1.560	1.060	1.164	3.401	1.175	1.295	1.449	2.196	
Number of Storm Doors														
1	15.2	8.4	7.1	1.4	2.3	0.4	1.9	2.5	Q	2.4	1.9	1.7	0.2	13.39
2	24.6	20.7	18.1	2.6	2.1	.8	1.3	.8	Q	.7	1.0	.9	Q	13.31
3	11.2	10.7	10.1	.7	.3	.2	Q	Q	Q	Q	Q	Q	Q	18.93
4 or More	4.5	4.3	4.2	Q	Q	Q	Q	Q	Q	Q	NC	NC	NC	20.16
None	30.9	15.7	11.8	3.9	4.5	.5	4.0	8.6	0.6	8.0	2.1	1.6	.5	10.08
No Outside Doors	4.2	.6	.4	.2	.8	Q	.8	2.8	Q	2.7	NC	NC	NC	26.69
Average Number of Storm Doors	1.3	1.7	1.8	1.0	.8	1.4	.6	.3	.5	.3	.8	.9	.5	7.62
Average Number of Standard Storm Doors	1.1	1.4	1.5	.9	.7	1.2	.6	.2	Q	.2	.8	.8	.5	7.47
Average Number of Sliding Glass Storm Doors	.2	.2	.3	.1	.1	.2	Q	.1	.2	.1	*	*	Q	20.39
Percent of Outside Doors with Storm Doors														
100 Percent	32.7	26.1	23.4	2.7	3.0	1.0	2.0	2.7	.1	2.5	1.0	.9	.1	11.82
51 to 99 Percent	9.0	8.5	7.8	.6	.4	.2	.2	Q	Q	Q	Q	Q	NC	19.32
1 to 50 Percent	13.7	9.6	8.2	1.5	1.4	.3	1.1	.8	Q	.7	1.9	1.7	.2	15.07
None/No Doors	35.1	16.3	12.2	4.1	5.3	.5	4.8	11.4	.7	10.7	2.1	1.6	.5	9.40
Total Single-Family Units and Mobile Homes	65.6	60.5	51.6	8.9	--	--	--	--	--	--	5.1	4.3	.9	6.60
Have Caulking or Weatherstripping (single-family units and mobile homes)														
Yes	48.2	44.9	40.3	4.6	--	--	--	--	--	--	3.3	2.9	.5	7.75
Caulking	41.5	38.9	35.2	3.7	--	--	--	--	--	--	2.5	2.1	.4	8.55
Weatherstripping	39.8	37.0	33.5	3.5	--	--	--	--	--	--	2.8	2.5	.3	8.83
No/Don't Know/Not Reported	17.3	15.6	11.2	4.3	--	--	--	--	--	--	1.8	1.4	.4	11.85
Have Roof or Ceiling Insulation (single-family units and mobile homes)														
Yes	52.9	49.3	45.0	4.3	--	--	--	--	--	--	3.7	3.2	.4	7.56
All Insulated	44.8	41.4	38.3	3.1	--	--	--	--	--	--	3.4	3.0	.4	8.14
Part Insulated	4.5	4.5	3.8	.6	--	--	--	--	--	--	Q	Q	Q	21.50
None, Very Little Insulated	.5	.5	.3	Q	--	--	--	--	--	--	Q	Q	Q	73.15
Don't Know Amount/ Not Reported	3.1	3.0	2.5	.5	--	--	--	--	--	--	Q	Q	Q	31.32
No	7.1	6.6	4.7	1.9	--	--	--	--	--	--	.5	.3	.2	15.63
Don't Know/Not Reported	5.6	4.6	1.9	2.6	--	--	--	--	--	--	1.0	.8	.2	18.10
Type of Insulation														
Batts Only	27.2	24.9	22.8	2.1	--	--	--	--	--	--	2.3	2.0	.3	10.36
Average Number of Inches	5.3	5.4	5.5	4.7	--	--	--	--	--	--	4.2	4.2	3.6	5.21
Loose Fill Only	12.5	12.3	11.4	.9	--	--	--	--	--	--	Q	Q	NC	13.22
Average Number of Inches	7.1	7.1	7.3	4.7	--	--	--	--	--	--	Q	Q	NC	7.53
Batts and Loose Fill Only	5.1	5.1	5.0	Q	--	--	--	--	--	--	Q	Q	Q	19.79
Average Number of Inches	11.9	12.0	11.9	Q	--	--	--	--	--	--	Q	Q	Q	8.72
Other/Combination	4.4	4.1	3.6	.5	--	--	--	--	--	--	.3	.3	Q	23.63
Don't Know Type/Not Reported	3.8	2.9	2.2	.7	--	--	--	--	--	--	.8	.7	.1	19.91
No Insulation Don't Know/Not Reported	12.6	11.2	6.6	4.6	--	--	--	--	--	--	1.5	1.0	.4	12.71

See footnotes at end of table.

Table 35. U.S. Household Thermal Characteristics by Structure and Status of Unit, November 1987 (Continued)

(Million Households Except Where Averages Are Indicated)

Household Characteristics	Total	Housing Structure by Status of Unit												RSE Row Factors
		Single-Family			Building of 2 to 4 Units			Building of 5 or More Units			Mobile Home			
		Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:	0.304	0.342	0.362	0.891	0.938	1.560	1.060	1.164	3.401	1.175	1.295	1.449	2.196	
Have Wall Insulation (single-family units and mobile homes)														
Yes	39.4	35.4	32.9	2.5	--	--	--	--	--	--	4.0	3.5	0.5	8.69
All Walls	33.9	30.1	28.1	2.0	--	--	--	--	--	--	3.8	3.3	.5	8.96
Some Walls	5.5	5.3	4.8	.5	--	--	--	--	--	--	.2	.2	Q	24.59
No	13.8	13.4	10.5	2.9	--	--	--	--	--	--	.4	.2	.1	14.19
Don't Know/Not Reported	12.4	11.7	8.2	3.5	--	--	--	--	--	--	.7	.6	.2	14.34
Insulation Characteristics (single-family units and mobile homes)														
Units with Some or All Storm Windows, and Some or All Storm Doors, and Roof or Ceiling Insulation	35.5	33.5	31.3	2.2	--	--	--	--	--	--	2.0	1.8	.1	10.52
Units with One or More of These Types of Insulation	60.2	55.8	49.3	6.5	--	--	--	--	--	--	4.4	3.8	.6	6.78
Units with None of These Types of Insulation	5.3	4.6	2.3	2.4	--	--	--	--	--	--	.7	.5	.2	16.27
Total Single-Family Units	60.5	60.5	51.6	8.9	--	--	--	--	--	--	--	--	--	5.67
Floor Insulation (single-family units)														
Basement/Crawl Space	46.2	46.2	39.9	6.4	--	--	--	--	--	--	--	--	--	7.05
Heated	17.7	17.7	16.2	1.5	--	--	--	--	--	--	--	--	--	13.26
None or Part Heated	28.5	28.5	23.6	4.9	--	--	--	--	--	--	--	--	--	9.30
Floor Insulated	6.7	6.7	6.1	.6	--	--	--	--	--	--	--	--	--	23.71
All Parts Insulated	4.8	4.8	4.4	.4	--	--	--	--	--	--	--	--	--	29.91
Some Parts Insulated	1.9	1.9	1.7	.2	--	--	--	--	--	--	--	--	--	34.79
Floor Not Insulated	13.8	13.8	11.2	2.5	--	--	--	--	--	--	--	--	--	13.68
Don't Know/Not Reported	8.0	8.0	6.3	1.7	--	--	--	--	--	--	--	--	--	16.68
No Basement/Crawl Space	14.2	14.2	11.7	2.5	--	--	--	--	--	--	--	--	--	16.52

* Value rounds to zero in the units displayed.
NC No cases in sample.
-- Data not applicable.
Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 *Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).*

Table 36. U.S. Household Thermal Characteristics by Structure and Status of Unit, November 1987

(Percent of Households)

Household Characteristics	Housing Structure by Status of Unit													RSE Row Factors
	Total	Single-Family			Building of 2 to 4 Units			Building of 5 or More Units			Mobile Home			
		Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:	0.355	0.401	0.421	0.968	0.934	1.630	1.069	1.125	2.948	1.090	1.157	1.271	1.991	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Number of Windows														
6 or Fewer	21.7	6.5	5.0	15.1	36.1	19.9	40.1	80.0	59.9	81.4	3.9	4.5	Q	10.43
7 to 12	40.8	43.5	42.2	51.2	43.9	37.9	45.4	18.8	32.3	17.9	66.4	67.4	61.8	6.66
13 to 18	24.3	31.3	32.6	23.9	15.2	25.0	12.8	1.2	Q	Q	26.0	24.0	36.2	10.07
19 or More	13.2	18.6	20.1	9.7	4.8	17.2	1.7	NC	NC	NC	3.7	4.2	Q	17.82
Number of Storm Windows														
1 to 6	14.2	8.1	7.7	10.9	23.8	23.4	23.9	34.7	30.6	35.0	7.6	7.9	Q	11.76
7 to 12	25.2	28.5	29.4	22.9	24.1	24.0	24.1	9.1	Q	8.5	36.7	39.1	24.4	10.83
13 to 18	15.8	20.8	22.3	12.0	9.6	20.9	6.9	Q	NC	Q	14.5	15.2	Q	11.93
19 or More	8.8	12.4	13.8	4.4	3.2	11.5	Q	NC	NC	NC	2.2	2.7	NC	20.22
None/No Windows	36.0	30.2	26.8	49.8	39.3	20.2	43.9	56.0	51.9	56.3	38.9	35.0	58.3	7.63
Percent of Windows with Storm Windows														
100 Percent	49.5	52.3	55.3	34.7	46.4	59.5	43.2	40.7	46.7	40.3	47.1	50.0	32.9	6.48
76 to 99 Percent	5.7	6.9	7.2	5.1	5.0	Q	5.1	Q	Q	Q	7.2	8.1	Q	19.52
51 to 75 Percent	4.1	5.0	5.1	4.7	3.7	7.6	2.7	1.0	NC	1.1	3.6	Q	Q	21.68
1 to 50 Percent	4.8	5.6	5.6	5.6	5.6	8.2	5.0	1.6	NC	1.7	3.2	Q	Q	20.91
None/No Windows	36.0	30.2	26.8	49.8	39.3	20.2	43.9	56.0	51.9	56.3	38.9	35.0	58.3	7.63
Number of Outside Doors														
1	10.9	1.1	.7	3.3	25.1	9.1	29.0	44.4	28.3	45.5	Q	Q	Q	19.81
2	41.7	39.6	36.6	57.3	51.9	52.2	51.8	29.2	29.9	29.1	82.5	81.7	86.5	6.15
3	28.1	37.5	39.3	27.1	11.0	24.7	7.6	5.7	Q	4.7	16.4	17.1	13.1	15.07
4 or More	14.7	20.8	22.7	10.0	3.8	10.2	2.3	2.1	Q	Q	Q	Q	NC	16.59
None	4.6	.9	.7	2.3	8.3	Q	9.4	18.7	Q	19.2	NC	NC	NC	24.90
Type and Number of Outside Doors														
Standard Doors														
1	18.7	7.1	6.6	10.2	31.5	14.9	35.6	62.2	62.3	62.2	3.4	3.6	Q	14.97
2	46.9	52.5	51.3	59.6	48.6	53.3	47.4	9.8	Q	9.8	85.4	84.1	92.0	5.66
3	21.0	29.0	30.5	20.4	7.6	18.8	4.9	Q	NC	Q	11.2	12.3	Q	11.94
4 or More	7.3	10.4	10.9	7.4	2.8	Q	2.3	Q	Q	Q	NC	NC	NC	18.13
None/No Doors	6.1	.9	.7	2.3	9.4	Q	9.8	27.0	24.0	27.2	NC	NC	NC	22.49
Sliding Glass Doors														
1	21.9	23.7	25.0	16.1	10.9	19.7	8.8	26.4	40.5	25.5	7.9	7.7	Q	15.66
2 or More	6.5	7.6	8.6	1.8	Q	Q	Q	7.2	26.3	5.9	Q	Q	NC	25.66
None/No Doors	71.7	68.7	66.4	82.1	87.4	74.6	90.5	66.3	33.1	68.6	91.7	91.8	91.0	3.96
Number of Storm Doors														
1	16.8	14.0	13.7	15.6	22.6	20.6	23.0	17.0	Q	16.9	37.8	40.2	25.6	11.35
2	27.2	34.2	35.1	29.4	20.9	38.1	16.6	5.5	Q	5.3	19.8	21.3	Q	10.96
3	12.3	17.8	19.5	7.6	3.1	11.3	Q	Q	Q	Q	Q	Q	Q	17.00
4 or More	5.0	7.1	8.2	Q	Q	Q	Q	Q	Q	Q	NC	NC	NC	17.37
None	34.1	26.0	22.9	43.9	44.4	23.1	49.7	57.9	59.7	57.8	40.9	36.7	61.3	7.64
No Outside Doors	4.6	.9	.7	2.3	8.3	Q	9.4	18.7	Q	19.2	NC	NC	NC	24.90
Percent of Outside Doors with Storm Doors														
100 Percent	36.2	43.2	45.4	30.1	29.6	48.4	25.0	17.9	Q	18.1	19.6	20.8	13.6	9.62
51 to 99 Percent	10.0	14.0	15.2	7.3	3.9	9.8	2.4	Q	Q	Q	Q	Q	NC	17.09
1 to 50 Percent	15.1	15.9	15.9	16.4	13.8	14.9	13.6	5.2	Q	4.8	37.6	40.1	25.2	13.18
None/No Doors	38.7	26.9	23.6	46.2	52.7	27.0	59.0	76.5	70.3	77.0	40.9	36.7	61.3	6.64

See footnotes at end of table.

Table 36. U.S. Household Thermal Characteristics by Structure and Status of Unit, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Housing Structure by Status of Unit													RSE Row Factors
		Single-Family			Building of 2 to 4 Units			Building of 5 or More Units			Mobile Home			
	Total	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:	0.355	0.401	0.421	0.968	0.934	1.630	1.069	1.125	2.948	1.090	1.157	1.271	1.991	
Total Single-Family Units and Mobile Homes	100.0	100.0	100.0	100.0	--	--	--	--	--	--	100.0	100.0	100.0	0.00
Have Caulking or Weatherstripping (single-family units and mobile homes)														
Yes	73.6	74.3	78.2	51.6	--	--	--	--	--	--	65.2	67.1	55.7	4.22
Caulking	63.2	64.4	68.3	41.4	--	--	--	--	--	--	49.8	50.0	49.0	5.39
Weatherstripping	60.7	61.3	65.0	39.4	--	--	--	--	--	--	54.5	57.7	38.8	5.82
No/Don't Know/Not Reported	26.4	25.7	21.8	48.4	--	--	--	--	--	--	34.8	32.9	44.3	8.61
Have Roof or Ceiling Insulation (single-family units and mobile homes)														
Yes	80.7	81.5	87.2	48.6	--	--	--	--	--	--	71.6	75.8	51.2	3.75
All Insulated	68.3	68.4	74.2	34.7	--	--	--	--	--	--	67.0	71.1	46.7	4.87
Part Insulated	6.9	7.4	7.4	7.3	--	--	--	--	--	--	Q	Q	Q	18.38
None, Very Little Insulated	.8	.8	.7	Q	--	--	--	--	--	--	Q	Q	Q	60.94
Don't Know Amount/ Not Reported	4.7	4.9	4.9	5.1	--	--	--	--	--	--	Q	Q	Q	26.35
No	10.8	11.0	9.1	21.7	--	--	--	--	--	--	8.9	6.4	21.6	14.47
Don't Know/Not Reported	8.5	7.5	3.7	29.7	--	--	--	--	--	--	19.4	17.9	27.2	15.57
Type of Insulation														
Batts Only	41.4	41.1	44.1	23.8	--	--	--	--	--	--	45.1	47.8	31.8	7.65
Loose Fill Only	19.0	20.4	22.2	9.9	--	--	--	--	--	--	Q	Q	NC	12.11
Batts and Loose Fill Only	7.8	8.4	9.6	Q	--	--	--	--	--	--	Q	Q	Q	15.32
Other/Combination	6.7	6.7	6.9	5.6	--	--	--	--	--	--	6.8	7.0	Q	21.79
Don't Know Type/Not Reported	5.7	4.8	4.4	7.7	--	--	--	--	--	--	16.2	17.0	12.4	17.17
No Insulation/ Don't Know/Not Reported	19.3	18.5	12.8	51.4	--	--	--	--	--	--	28.4	24.2	48.8	10.03
Have Wall Insulation (single-family units and mobile homes)														
Yes	60.1	58.5	63.8	28.0	--	--	--	--	--	--	78.4	81.6	62.7	4.55
All Walls	51.7	49.8	54.5	22.5	--	--	--	--	--	--	73.8	77.6	55.4	5.03
Some Walls	8.4	8.7	9.3	5.5	--	--	--	--	--	--	4.6	4.0	Q	22.58
No	21.0	22.2	20.3	32.9	--	--	--	--	--	--	7.4	5.4	17.2	12.27
Don't Know/Not Reported	18.9	19.3	15.9	39.1	--	--	--	--	--	--	14.2	13.0	20.0	12.61
Insulation Characteristics (single-family units and mobile homes)														
Units with Some or All Storm Windows, and Some or All Storm Doors, and Roof or Ceiling Insulation	54.1	55.4	60.7	25.0	--	--	--	--	--	--	38.5	43.2	15.5	7.98
Units with One or More of These Types of Insulation	91.8	92.3	95.6	73.3	--	--	--	--	--	--	86.0	88.9	71.9	2.58
Units with None of These Types of Insulation	8.2	7.7	4.4	26.7	--	--	--	--	--	--	14.0	11.1	28.1	14.72

See footnotes at end of table.

Table 36. U.S. Household Thermal Characteristics by Structure and Status of Unit, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Housing Structure by Status of Unit												RSE Row Factors
		Single-Family			Building of 2 to 4 Units			Building of 5 or More Units			Mobile Home			
		Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	
RSE Column Factors:	0.355	0.401	0.421	0.968	0.934	1.630	1.069	1.125	2.948	1.090	1.157	1.271	1.991	
Total Single-Family Units	100.0	100.0	100.0	100.0	--	--	--	--	--	--	--	--	--	0.00
Floor Insulation (single-family units)														
Basement/Crawl Space	76.5	76.5	77.3	71.8	--	--	--	--	--	--	--	--	--	4.17
Heated	29.3	29.3	31.5	16.7	--	--	--	--	--	--	--	--	--	10.96
None or Part Heated	47.2	47.2	45.8	55.1	--	--	--	--	--	--	--	--	--	6.47
Floor Insulated	11.1	11.1	11.8	7.0	--	--	--	--	--	--	--	--	--	20.18
All Parts Insulated	8.0	8.0	8.6	4.6	--	--	--	--	--	--	--	--	--	25.81
Some Parts Insulated	3.1	3.1	3.2	2.4	--	--	--	--	--	--	--	--	--	29.74
Floor Not Insulated	22.8	22.8	21.8	28.6	--	--	--	--	--	--	--	--	--	10.44
Don't Know/Not Reported	13.3	13.3	12.2	19.5	--	--	--	--	--	--	--	--	--	14.21
No Basement/Crawl Space	23.5	23.5	22.7	28.2	--	--	--	--	--	--	--	--	--	12.90

NC No cases in sample.
-- Data not applicable.
Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.
Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cells corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 37. U.S. Household Thermal Characteristics by Climate Zone and Census Regions, November 1987

(Million Households Except Where Averages Are Indicated)

Household Characteristics	Total	Climate Zone												RSE Row Factors
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Census Regions							
							Northeast		Midwest	South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.358	1.530	0.836	1.058	1.252	1.239	0.870	1.209	0.664	1.044	1.358	1.215	1.105	
Total Households	90.5	8.5	25.9	21.9	17.8	16.3	10.6	8.4	22.3	16.7	14.2	6.7	11.7	5.37
Number of Windows														
6 or Fewer	19.7	1.1	4.8	4.8	4.7	4.3	1.7	2.5	3.5	2.8	3.5	1.9	3.8	12.47
7 to 12	36.9	3.1	9.6	9.1	8.2	7.0	3.7	3.0	8.2	7.9	6.1	2.8	5.2	7.80
13 to 18	22.0	2.8	6.8	5.2	3.6	3.7	3.0	1.8	6.4	4.2	3.3	1.4	1.9	9.28
19 or More	11.9	1.6	4.8	2.8	1.4	1.4	2.2	1.1	4.3	1.8	1.2	.6	.8	12.67
Average Number of Windows	11.6	13.3	12.8	11.5	10.2	10.6	13.7	10.9	13.1	11.5	10.7	10.6	9.5	3.08
Number of Storm Windows														
1 to 6	12.9	1.4	4.4	4.3	1.6	1.2	1.6	2.1	3.7	2.4	1.0	1.4	.6	12.72
7 to 12	22.9	2.9	8.6	7.3	2.6	1.5	3.5	2.5	7.6	5.5	1.4	1.9	.4	10.63
13 to 18	14.3	2.4	5.7	4.2	1.2	.8	2.8	1.7	5.5	2.7	.8	.8	Q	11.52
19 or More	7.9	1.4	3.8	1.9	.5	.3	1.9	.8	3.5	1.0	.3	.3	Q	15.20
None/No Windows	32.6	.4	3.4	4.3	11.8	12.6	.9	1.3	1.9	5.3	10.6	2.2	10.4	8.89
Average Number of Storm Windows	7.5	12.1	10.8	8.8	3.4	2.4	12.2	9.1	11.5	7.4	2.6	6.4	.8	5.17
Percent of Windows with Storm Windows														
100 Percent	44.8	6.8	17.3	13.8	4.4	2.6	7.7	5.9	16.0	8.8	2.5	3.2	.7	7.08
76 to 99 Percent	5.1	.6	2.2	1.4	.5	.4	1.0	.5	2.0	.9	.4	.3	Q	15.65
51 to 75 Percent	3.7	.4	1.6	1.3	.2	Q	.7	.3	1.4	.7	Q	.4	Q	16.03
1 to 50 Percent	4.4	.3	1.4	1.1	.9	.6	.4	.3	1.0	1.0	.6	.5	.5	19.23
None/No Windows	32.6	.4	3.4	4.3	11.8	12.6	.9	1.3	1.9	5.3	10.6	2.2	10.4	8.89
Number of Outside Doors														
1	9.8	.6	3.3	2.6	1.9	1.4	1.0	1.6	2.5	1.0	1.3	.8	1.6	16.17
2	37.7	3.7	10.4	8.5	7.9	7.2	3.9	2.6	9.5	8.8	6.4	2.6	3.9	8.88
3	25.5	2.3	7.5	5.9	5.1	4.7	3.2	1.8	6.2	4.9	4.3	1.9	3.2	9.55
4 or More	13.3	1.5	3.7	3.1	2.8	2.3	2.0	.7	3.2	1.9	1.8	1.2	2.4	12.80
None	4.2	.4	1.0	1.9	.2	.7	.6	1.7	.8	.2	.4	Q	.5	26.62
Average Number of Doors	2.4	2.5	2.4	2.3	2.5	2.5	2.6	1.8	2.4	2.5	2.5	2.6	2.6	2.69
Type and Number of Outside Doors														
Standard Doors														
1	16.9	.8	4.1	4.1	4.1	3.8	1.4	1.7	2.8	2.4	3.3	1.6	3.8	13.83
2	42.5	4.1	12.3	9.2	9.4	7.5	4.5	3.0	11.2	8.7	6.7	3.4	5.0	8.26
3	19.0	2.1	6.0	4.8	3.0	3.1	2.9	1.3	5.1	4.2	2.8	1.1	1.5	10.30
4 or More	6.6	.9	1.9	1.6	1.0	1.1	1.2	.5	1.7	1.1	1.0	.4	.7	15.03
None/No Doors	5.5	.5	1.6	2.3	.4	.7	.7	1.9	1.5	.4	.4	.2	.5	24.00
Average Number of Standard Doors	2.1	2.3	2.1	2.0	2.0	2.0	2.3	1.6	2.1	2.2	2.1	2.0	1.8	2.99
Sliding Glass Doors														
1	19.8	1.6	4.9	4.3	4.2	4.8	1.8	1.1	4.1	3.3	4.0	2.0	3.6	11.80
2 or More	5.9	.3	1.3	1.2	2.0	.9	.5	Q	1.1	.6	.7	.8	2.1	21.62
None/No Doors	64.9	6.6	19.7	16.4	11.6	10.6	8.4	7.1	17.1	12.9	9.5	4.0	6.0	6.40
Average Number of Sliding Glass Doors	.4	.3	.3	.3	.5	.4	.3	.2	.3	.3	.4	.6	.7	12.36

See footnotes at end of table.

Table 37. U.S. Household Thermal Characteristics by Climate Zone and Census Regions, November 1987 (Continued)

(Million Households Except Where Averages Are Indicated)

Household Characteristics	Total	Climate Zone: Fewer than 2,000 CDD and -- More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD	More than 2,000 CDD and Fewer than 4,000 HDD	Census Regions: Northeast 5,500 HDD or More	Northeast Fewer than 5,500 HDD	Midwest 4,000 HDD or More	South Fewer than 2,000 CDD	South 2,000 CDD or More	West 4,000 HDD or More	West Fewer than 4,000 HDD	RSE Row Factors
RSE Column Factors:	0.358	1.530	0.836	1.058	1.252	1.239	0.870	1.209	0.664	1.044	1.358	1.215	1.105	
Number of Storm Doors														
1	15.2	1.4	5.5	3.7	2.1	2.4	2.1	1.1	4.3	3.5	2.2	1.4	0.7	11.94
2	24.6	3.4	9.3	7.3	3.1	1.6	3.8	2.6	8.7	5.7	1.5	1.9	.5	10.77
3	11.2	1.7	4.1	3.2	1.4	.8	1.7	1.1	4.2	2.5	.8	.6	.2	13.81
4 or More	4.5	.9	1.8	1.3	.4	.2	1.0	.3	1.7	.8	.2	.4	Q	18.02
None	30.9	.8	4.3	4.5	10.7	10.5	1.4	1.7	2.6	4.1	9.1	2.3	9.7	8.79
No Outside Doors	4.2	.4	1.0	1.9	.2	.7	.6	1.7	.8	.2	.4	Q	.5	26.62
Average Number of Storm Doors	1.3	2.0	1.7	1.5	.8	.6	1.8	1.3	1.9	1.5	.6	1.3	.2	4.84
Average Number of Standard Storm Doors	1.1	1.7	1.4	1.3	.7	.5	1.6	1.1	1.6	1.3	.5	.9	.1	5.65
Average Number of Sliding Glass Storm Doors	.2	.2	.3	.2	.1	.1	.2	.2	.3	.2	.1	.4	.1	13.30
Percent of Outside Doors with Storm Doors														
100 Percent	32.7	5.0	12.5	9.4	3.8	2.0	4.9	3.5	12.6	7.5	1.9	2.0	.3	9.10
51 to 99 Percent	9.0	1.1	3.7	2.7	.9	.7	1.5	.9	3.3	1.6	.6	.8	.3	12.98
1 to 50 Percent	13.7	1.3	4.4	3.4	2.2	2.4	2.2	.7	3.0	3.4	2.2	1.5	.8	12.68
None/No Doors	35.1	1.2	5.3	6.4	10.9	11.2	2.0	3.4	3.4	4.3	9.5	2.4	10.2	8.32
Total Single-Family Units	60.5	6.2	16.7	14.6	11.5	11.4	6.8	4.3	15.6	12.5	9.7	4.3	7.2	6.70
Have Caulking or Weatherstripping (single-family units)														
Yes	44.9	5.0	13.3	11.5	7.2	7.9	5.5	3.3	12.7	9.4	6.9	3.4	3.8	7.56
Caulking	38.9	4.3	11.8	10.3	5.8	6.8	4.8	2.8	11.3	8.4	6.1	2.9	2.6	7.95
Weatherstripping	37.0	4.1	10.8	9.7	5.9	6.6	4.5	2.8	10.2	7.5	5.7	3.0	3.3	8.14
No/Don't Know/Not Reported	15.6	1.2	3.4	3.1	4.3	3.5	1.3	1.0	3.0	3.1	2.8	.9	3.4	12.03
Have Roof or Ceiling Insulation (single-family units)														
Yes	49.3	5.7	14.1	11.8	9.0	8.5	5.9	3.2	13.7	10.2	7.5	3.8	5.1	7.41
All Insulated	41.4	4.7	11.6	10.6	7.5	7.0	4.8	2.7	11.2	8.9	6.2	3.4	4.2	7.99
Part Insulated	4.5	.5	1.3	.8	1.0	.9	.6	.4	1.2	.8	.8	.2	.5	16.41
None, Very Little Insulated	.5	Q	.2	Q	Q	Q	Q	NC	.2	Q	Q	Q	Q	57.31
Don't Know Amount/ Not Reported	3.0	.4	1.0	.4	.6	.6	.4	Q	1.0	.5	.5	.2	.3	24.23
No	6.6	.3	1.4	1.5	1.6	1.8	.6	.7	1.0	1.4	1.4	.2	1.3	15.40
Don't Know/Not Reported	4.6	.2	1.2	1.2	.9	1.1	.3	.4	1.0	1.0	.8	.3	.8	21.19
Type of Insulation														
Batts Only	24.9	2.7	7.2	6.6	4.2	4.1	4.3	2.1	5.5	5.3	3.8	1.6	2.3	9.80
Average Number of Inches	5.4	6.2	5.8	5.2	5.0	4.8	5.7	5.2	6.1	5.1	4.8	5.7	4.9	4.08
Loose Fill Only	12.3	1.3	3.3	2.7	2.6	2.4	.6	.4	3.9	2.8	2.1	1.1	1.3	12.36
Average Number of Inches	7.1	8.6	7.6	7.2	6.1	6.3	5.8	5.3	8.2	6.6	6.5	8.4	5.7	5.25
Batts and Loose Fill Only	5.1	1.0	1.7	1.2	.6	.6	.4	Q	2.5	.8	.5	.4	.3	17.85
Average Number of Inches	12.0	12.3	12.4	11.4	11.9	11.3	10.4	Q	12.2	11.6	11.3	14.0	11.8	7.67
Other/Combination	4.1	.4	.9	.8	1.1	.9	.4	.3	.8	.6	.7	.4	.8	20.18
Don't Know Type/Not Reported	2.9	.3	1.0	.5	.6	.5	.2	.3	.9	.6	.4	.2	.3	23.59
No Insulation Don't Know/Not Reported	11.2	.5	2.6	2.7	2.5	2.9	.9	1.1	2.0	2.3	2.2	.5	2.1	14.54

See footnotes at end of table.

Table 37. U.S. Household Thermal Characteristics by Climate Zone and Census Regions, November 1987 (Continued)

(Million Households Except Where Averages Are Indicated)

Household Characteristics	Total	Climate Zone					Census Regions							RSE Row Factors
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Northeast		Midwest	South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.358	1.530	0.836	1.058	1.252	1.239	0.870	1.209	0.664	1.044	1.358	1.215	1.105	
Have Wall Insulation (single-family units)														
Yes	35.4	5.1	10.9	8.5	5.5	5.4	4.9	2.2	10.8	7.2	4.8	2.7	2.7	8.78
All Walls	30.1	4.4	9.2	7.2	4.7	4.6	4.1	1.8	9.3	6.3	4.1	2.2	2.2	9.50
Some Walls	5.3	.6	1.7	1.3	.9	.7	.8	.4	1.5	.9	.7	.5	.5	16.83
No	13.4	.5	3.0	3.0	3.3	3.5	1.1	1.3	2.4	2.2	2.9	.9	2.7	11.87
Don't Know/Not Reported	11.7	.6	2.7	3.1	2.7	2.6	.8	.8	2.4	3.0	2.1	.7	1.8	12.72
Floor Insulation (single-family units)														
Basement/Crawl Space	46.2	5.9	15.3	12.9	8.5	3.7	6.4	3.9	14.4	10.8	3.2	3.7	3.9	7.69
Heated	17.7	3.3	7.5	5.8	1.0	Q	2.6	2.1	8.3	2.9	Q	1.4	.3	12.07
None or Part Heated	28.5	2.6	7.8	7.2	7.5	3.6	3.8	1.8	6.1	7.9	3.1	2.3	3.5	10.00
Floor Insulated	6.7	.9	2.0	2.1	1.4	.3	1.1	.5	1.5	2.1	.3	.7	.4	19.86
All Parts Insulated	4.8	.6	1.2	1.6	1.2	.3	.6	.3	1.0	1.7	.3	.6	.3	23.58
Some Parts Insulated	1.9	.3	.8	.5	.2	Q	.5	.2	.5	.4	NC	Q	Q	25.53
Floor Not Insulated	13.8	1.1	3.4	2.9	4.1	2.3	1.6	.9	2.7	3.4	2.0	1.0	2.2	14.31
Don't Know/Not Reported	8.0	.6	2.4	2.2	2.0	.9	1.1	.4	1.9	2.3	.8	.6	.9	14.29
No Basement/Crawl Space	14.2	.4	1.5	1.6	3.1	7.7	.4	.5	1.2	1.8	6.5	.6	3.3	15.29
Insulation Characteristics (single-family units)														
Units with Some or All Storm Windows, and Some or All Storm Doors, and Roof or Ceiling Insulation	33.5	5.2	12.4	9.8	3.8	2.4	5.4	3.1	12.4	7.3	2.2	2.4	.7	9.43
Units with One or More of These Types of Insulation	55.8	6.2	16.5	14.2	9.8	9.1	6.8	4.3	15.5	11.9	8.0	4.0	5.2	6.84
Units with None of These Types of Insulation	4.6	Q	.2	.4	1.7	2.4	Q	Q	Q	.6	1.7	.3	2.0	17.60

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 38. U.S. Household Thermal Characteristics by Climate Zone and Census Regions, November 1987

(Percent of Households)

Household Characteristics	Total	Climate Zone												RSE Row Factors
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD	Census Regions							
							Northeast		Midwest	South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.427	1.150	0.776	0.885	1.119	1.168	1.029	1.314	0.792	1.036	1.305	1.280	1.225	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Number of Windows														
6 or Fewer	21.7	13.2	18.4	22.1	26.1	26.2	15.7	30.1	15.6	16.9	24.8	27.8	32.8	11.21
7 to 12	40.8	36.2	37.1	41.5	45.7	42.9	34.6	35.9	36.8	47.3	43.0	42.7	44.6	5.28
13 to 18	24.3	32.3	26.1	23.8	20.1	22.4	28.6	21.0	28.5	25.3	23.4	21.0	16.0	7.32
19 or More	13.2	18.3	18.4	12.6	8.1	8.5	21.1	13.0	19.1	10.5	8.7	8.5	6.6	11.11
Number of Storm Windows														
1 to 6	14.2	16.1	16.9	19.7	9.1	7.2	14.7	25.0	16.7	14.2	7.4	21.7	5.5	10.70
7 to 12	25.2	33.6	33.3	33.2	14.6	9.0	33.1	29.4	34.3	32.7	9.8	29.1	3.7	8.72
13 to 18	15.8	28.7	21.8	19.0	6.9	4.8	26.1	20.4	24.8	15.9	5.3	11.4	Q	9.38
19 or More	8.6	16.4	14.7	8.5	2.9	2.1	17.9	9.7	15.8	5.8	2.4	4.3	Q	13.80
None/No Windows	36.0	5.2	13.2	19.5	66.4	77.0	8.3	15.5	8.4	31.4	75.1	33.4	89.0	6.31
Percent of Windows with Storm Windows														
100 Percent	49.5	79.5	66.6	62.9	24.4	16.0	72.3	70.0	71.7	52.8	17.4	48.5	5.9	4.04
76 to 99 Percent	5.7	6.9	8.7	6.6	2.8	2.1	9.4	6.3	8.9	5.6	2.5	4.4	Q	14.33
51 to 75 Percent	4.1	4.8	6.3	5.8	1.4	Q	6.3	4.1	6.4	4.3	Q	5.6	Q	14.93
1 to 50 Percent	4.8	3.7	5.3	5.2	5.0	3.9	3.6	4.1	4.6	5.8	3.9	8.2	4.5	17.18
None/No Windows	36.0	5.2	13.2	19.5	66.4	77.0	8.3	15.5	8.4	31.4	75.1	33.4	89.0	6.31
Number of Outside Doors														
1	10.9	7.0	12.8	11.9	10.7	8.6	9.2	19.3	11.4	5.8	8.9	12.0	14.1	15.43
2	41.7	42.8	40.3	38.8	44.4	44.3	36.7	31.3	42.6	52.5	45.2	39.7	33.3	6.91
3	28.1	27.5	28.9	26.8	28.4	28.9	29.7	21.6	27.9	29.2	30.5	28.5	27.4	7.84
4 or More	14.7	18.1	14.2	14.0	15.4	13.9	18.5	8.2	14.5	11.5	12.9	18.5	21.0	10.89
None	4.6	4.6	3.8	8.6	1.1	4.3	5.9	19.6	3.6	.9	2.5	Q	4.2	26.98
Type and Number of Outside Doors														
Standard Doors														
1	18.7	9.7	15.8	18.5	23.0	23.6	12.9	20.2	12.7	14.0	23.0	23.7	32.8	12.75
2	46.9	48.6	47.3	41.9	52.6	46.0	42.1	35.6	50.1	52.2	47.5	50.4	43.2	6.14
3	21.0	24.9	23.2	21.8	16.6	19.2	27.4	15.9	22.9	24.9	20.1	16.7	13.2	8.37
4 or More	7.3	10.5	7.5	7.4	5.8	6.9	11.1	5.6	7.6	6.7	6.9	6.7	6.2	13.66
None/No Doors	6.1	6.3	6.3	10.4	2.0	4.4	6.5	22.8	6.7	2.2	2.5	2.6	4.7	24.48
Sliding Glass Doors														
1	21.9	18.3	18.9	19.6	23.8	29.4	16.9	13.4	18.3	19.5	28.2	29.4	30.8	10.23
2 or More	6.5	4.0	5.2	5.4	11.4	5.7	4.3	Q	4.8	3.4	4.8	11.3	18.1	21.18
None/No Doors	71.7	77.7	75.9	75.0	64.8	64.9	78.8	84.0	76.9	77.2	67.0	59.4	51.1	3.86
Number of Storm Doors														
1	16.8	16.7	21.2	17.0	11.7	14.8	19.8	12.5	19.1	20.7	15.7	21.2	5.6	9.97
2	27.2	39.4	35.8	33.2	17.3	10.0	35.6	30.7	39.2	33.9	10.6	27.8	4.6	8.31
3	12.3	20.0	15.7	14.5	7.7	5.0	16.5	13.2	18.8	15.0	5.6	9.0	1.8	13.04
4 or More	5.0	10.3	6.8	5.9	2.0	1.3	9.2	3.5	7.7	4.8	1.4	6.6	Q	16.66
None	34.1	9.0	16.6	20.8	60.2	64.5	13.1	20.5	11.7	24.7	64.2	34.1	83.0	6.84
No Outside Doors	4.6	4.6	3.8	8.6	1.1	4.3	5.9	19.6	3.6	.9	2.5	Q	4.2	26.98

See footnotes at end of table.

Table 38. U.S. Household Thermal Characteristics by Climate Zone and Census Regions, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Climate Zone						Census Regions							RSE Row Factors
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD		Northeast		Midwest	South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD			5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.427	1.150	0.776	0.885	1.119	1.168	1.029	1.314	0.792	1.036	1.305	1.280	1.225		
Percent of Outside Doors with Storm Doors															
100 Percent	36.2	58.9	48.1	43.0	21.4	12.1	46.4	41.4	56.7	44.8	13.4	29.6	2.9	6.75
51 to 99 Percent	10.0	12.3	14.3	12.1	5.1	4.3	14.2	10.7	14.6	9.5	4.4	12.3	2.7	11.38
1 to 50 Percent	15.1	15.1	17.1	15.5	12.2	14.8	20.4	7.8	13.4	20.1	15.4	22.7	7.2	10.61
None/No Doors	38.7	13.6	20.5	29.4	61.3	68.8	19.0	40.1	15.3	25.6	66.7	35.4	87.3	6.47
Total Single-Family Units	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Have Caulking or Weatherstripping (single-family units)														
Yes	74.3	80.7	79.4	79.0	62.3	69.2	80.9	76.3	81.0	75.1	71.0	78.9	52.4	3.18
Caulking	64.4	69.5	70.4	70.7	49.9	59.3	70.4	65.3	72.5	67.4	62.3	68.3	35.6	3.77
Weatherstripping	61.3	66.2	64.5	66.8	50.8	57.4	66.5	63.8	65.2	60.1	58.8	70.9	45.7	4.71
No/Don't Know/Not Reported	25.7	19.3	20.6	21.0	37.7	30.8	19.1	23.7	19.0	24.9	29.0	21.1	47.6	9.31
Have Roof or Ceiling Insulation (single-family units)														
Yes	81.5	92.2	84.4	81.3	78.5	74.7	86.1	74.4	87.4	81.4	77.3	87.6	71.1	2.63
All Insulated	68.4	75.5	69.4	72.5	64.7	61.7	70.8	61.9	71.9	70.8	63.7	78.3	58.9	3.94
Part Insulated	7.4	8.6	8.0	5.3	8.3	7.7	8.2	8.2	8.0	6.1	8.3	5.1	7.3	14.56
None, Very Little Insulated	.8	Q	1.0	Q	Q	Q	Q	NC	1.3	Q	Q	Q	Q	51.27
Don't Know Amount/ Not Reported	4.9	6.4	6.1	2.9	5.0	4.9	5.9	Q	6.1	4.0	4.9	3.7	4.1	23.36
No	11.0	4.9	8.4	10.5	13.8	15.7	9.3	16.9	6.2	11.0	14.8	5.0	17.6	13.57
Don't Know/Not Reported	7.5	2.9	7.2	8.2	7.7	9.6	4.6	8.7	6.5	7.6	7.9	7.4	11.3	19.19
Type of Insulation														
Batts Only	41.1	44.1	43.1	45.4	36.2	36.3	62.7	48.4	35.4	42.5	39.0	36.8	31.9	6.23
Loose Fill Only	20.4	20.7	19.7	18.7	22.4	21.3	8.3	9.0	24.9	22.7	21.9	26.7	18.7	10.63
Batts and Loose Fill Only	8.4	16.1	10.4	8.2	5.0	5.2	6.4	Q	15.8	6.5	5.3	9.9	4.1	15.35
Other/Combination	6.7	6.5	5.2	5.5	9.5	7.8	5.4	6.3	5.4	5.1	7.4	8.7	11.8	19.21
Don't Know Type/Not Reported	4.8	4.8	6.1	3.6	5.5	4.1	3.3	7.2	5.8	4.5	3.7	5.5	4.5	21.14
No Insulation/ Don't Know/Not Reported	18.5	7.8	15.6	18.7	21.5	25.3	13.9	25.6	12.6	18.6	22.7	12.4	28.9	12.14
Have Wall Insulation (single-family units)														
Yes	58.5	81.7	65.5	58.1	47.8	47.2	72.0	51.7	69.2	57.8	49.3	62.6	38.0	4.76
All Walls	49.8	71.3	55.2	49.2	40.4	40.6	60.2	42.2	59.5	50.6	42.6	52.0	30.8	5.82
Some Walls	8.7	10.4	10.2	8.9	7.4	6.5	11.8	9.5	9.7	7.3	6.7	10.6	7.2	15.66
No	22.2	8.8	18.2	20.6	29.0	30.3	16.0	30.2	15.3	17.8	29.5	20.0	37.1	9.21
Don't Know/Not Reported	19.3	9.6	16.3	21.3	23.2	22.5	12.0	18.1	15.6	24.4	21.2	17.4	24.9	10.97

See footnotes at end of table.

Table 38. U.S. Household Thermal Characteristics by Climate Zone and Census Regions, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Climate Zone						Census Regions							RSE Row Factors
		Fewer than 2,000 CDD and --				More than 2,000 CDD and Fewer than 4,000 HDD		Northeast		Midwest	South		West		
		More than 7,000 HDD	5,500 to 7,000 HDD	4,000 to 5,499 HDD	Fewer than 4,000 HDD			5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.427	1.150	0.776	0.885	1.119	1.168	1.029	1.314	0.792	1.036	1.305	1.280	1.225		
Floor Insulation (single-family units)															
Basement/Crawl Space	76.5	94.2	91.3	88.7	73.4	32.7	93.9	88.7	92.1	86.0	33.4	86.8	54.3		2.71
Heated	29.3	53.1	44.8	39.6	8.6	Q	38.0	48.2	52.8	23.2	Q	32.2	4.9		10.15
None or Part Heated	47.2	41.1	46.5	49.1	64.8	31.3	55.9	40.5	39.3	62.7	31.9	54.6	49.4		6.30
Floor Insulated	11.1	14.0	11.9	14.7	11.8	3.0	16.6	11.5	9.8	17.2	3.1	16.7	5.4		17.70
All Parts Insulated	8.0	9.3	7.1	11.0	10.0	2.8	8.8	7.0	6.3	13.9	3.1	14.4	4.2		21.75
Some Parts Insulated	3.1	4.7	4.8	3.8	1.8	Q	7.8	4.5	3.5	3.3	NC	Q	Q		23.84
Floor Not Insulated	22.8	18.0	20.5	19.6	35.2	20.4	23.4	20.1	17.4	27.4	20.3	22.9	31.0		10.78
Don't Know/Not Reported	13.3	9.1	14.1	14.8	17.8	8.0	16.0	8.9	12.1	18.1	8.6	15.0	13.1		13.09
No Basement/Crawl Space	23.5	5.8	8.7	11.3	26.6	67.3	6.1	11.3	7.9	14.0	66.6	13.2	45.7		11.79
Insulation Characteristics (single-family units)															
Units with Some or All Storm Windows, and Some or All Storm Doors, and Roof or Ceiling Insulation	55.4	83.6	74.0	67.0	33.0	20.7	79.7	70.7	79.5	58.4	22.3	57.1	9.3		5.28
Units with One or More of These Types of Insulation	92.3	99.7	98.8	97.5	85.3	79.4	99.9	99.3	99.4	95.3	82.8	93.5	72.6		1.77
Units with None of These Types of Insulation	7.7	Q	1.2	2.5	14.7	20.6	Q	Q	Q	4.7	17.2	6.5	27.4		15.81

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 39. U.S. Household Thermal Characteristics by Year of Construction, November 1987

(Million Households Except Where Averages Are Indicated)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.367	2.078	1.543	1.171	1.194	0.928	0.844	1.055	0.735	
Total Households	90.5	3.9	7.4	10.5	9.6	16.4	13.1	8.2	21.5	5.38
Number of Windows										
6 or Fewer	19.7	1.0	2.8	3.0	3.2	4.6	1.4	.8	2.9	13.31
7 to 12	36.9	2.0	3.2	4.4	4.0	6.4	5.5	3.8	7.8	7.25
13 to 18	22.0	.7	.9	2.1	1.7	3.8	4.2	2.4	6.1	9.31
19 or More	11.9	.2	.4	.9	.7	1.6	2.0	1.3	4.7	13.55
Average Number of Windows	11.6	9.8	8.6	10.2	9.8	10.7	13.0	12.9	13.9	3.23
Number of Storm Windows										
1 to 6	12.9	.3	1.6	1.6	1.7	2.6	1.1	.9	3.2	13.99
7 to 12	22.9	1.5	2.2	2.7	2.5	3.3	2.9	2.4	5.4	9.10
13 to 18	14.3	.5	.6	1.5	1.2	2.2	2.6	1.4	4.4	11.34
19 or More	7.9	.2	.4	.7	.6	1.0	1.2	.7	3.2	15.97
None/No Windows	32.6	1.3	2.6	4.1	3.7	7.4	5.3	2.9	5.3	8.24
Average Number of Storm Windows	7.5	7.5	5.9	6.6	6.6	6.0	7.5	7.8	9.8	5.16
Percent of Windows with Storm Windows										
100 Percent	44.8	2.4	4.3	5.6	5.0	6.8	5.7	4.0	11.0	6.64
76 to 99 Percent	5.1	Q	.3	.4	.4	.8	.7	.5	2.0	17.78
51 to 75 Percent	3.7	Q	Q	.3	.2	.6	.5	.4	1.6	20.39
1 to 50 Percent	4.4	Q	Q	.2	.2	.8	.8	.5	1.6	20.00
None/No Windows	32.6	1.3	2.6	4.1	3.7	7.4	5.3	2.9	5.3	8.24
Number of Outside Doors										
1	9.8	.1	.9	.9	1.6	2.8	.8	.6	2.2	19.19
2	37.7	1.6	2.9	3.9	3.6	5.9	6.1	4.2	9.5	8.06
3	25.5	1.3	2.2	3.3	2.6	4.2	4.4	2.2	5.3	8.81
4 or More	13.3	.8	1.3	2.1	1.4	2.7	1.6	.7	2.8	11.83
None	4.2	Q	Q	.3	.4	.9	.3	.5	1.6	28.00
Average Number of Doors	2.4	2.8	2.6	2.6	2.4	2.4	2.5	2.3	2.3	2.56
Type and Number of Outside Doors										
Standard Doors										
1	16.9	.9	2.2	3.1	2.6	3.7	1.3	.7	2.5	14.37
2	42.5	2.0	3.3	4.3	4.1	7.4	7.2	4.5	9.7	7.00
3	19.0	.6	1.1	2.1	1.4	3.0	3.5	2.0	5.2	9.85
4 or More	6.6	.3	.4	.6	.5	1.0	.9	.5	2.4	16.23
None/No Doors	5.5	Q	Q	.5	1.0	1.3	.3	.5	1.7	25.62
Average Number of Standard Doors	2.1	2.1	1.9	1.9	1.8	2.0	2.3	2.2	2.2	2.86
Sliding Glass Doors										
1	19.8	1.3	2.4	4.1	3.7	4.2	2.4	.6	1.2	11.56
2 or More	5.9	.7	1.0	1.4	.9	1.3	.4	Q	.2	19.31
None/No Doors	64.9	1.9	4.0	5.0	5.1	10.9	10.3	7.6	20.2	5.89
Average Number of Sliding Glass Doors	.4	.7	.7	.7	.6	.5	.3	.1	.1	9.41

See footnotes at end of table.

Table 39. U.S. Household Thermal Characteristics by Year of Construction, November 1987 (Continued)

(Million Households Except Where Averages Are Indicated)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.367	2.078	1.543	1.171	1.194	0.928	0.844	1.055	0.735	
Number of Storm Doors										
1	15.2	0.5	1.4	2.0	2.2	2.9	1.5	1.4	3.2	11.70
2	24.6	.9	1.5	2.3	2.2	3.3	4.6	2.7	7.1	9.26
3	11.2	.6	1.2	1.2	1.0	1.8	1.9	.8	2.6	12.36
4 or More	4.5	.4	.4	.7	.5	.9	.4	.2	.9	19.22
None	30.9	1.4	2.8	4.0	3.2	6.6	4.4	2.6	6.0	8.85
No Outside Doors	4.2	Q	Q	.3	.4	.9	.3	.5	1.6	28.00
Average Number of Storm Doors	1.3	1.5	1.3	1.3	1.3	1.1	1.4	1.2	1.4	4.81
Average Number of Standard Storm Doors	1.1	1.1	.9	.9	.9	.9	1.3	1.2	1.3	5.20
Average Number of Sliding Glass Storm Doors	.2	.4	.4	.3	.3	.2	.1	*	*	12.21
Percent of Outside Doors with Storm Doors										
100 Percent	32.7	1.5	2.6	3.3	3.3	4.8	5.3	3.3	8.6	7.84
51 to 99 Percent	9.0	.4	.8	1.0	.9	1.6	1.5	.7	2.2	13.21
1 to 50 Percent	13.7	.6	1.1	1.8	1.8	2.5	1.6	1.2	3.1	11.07
None/No Doors	35.1	1.4	2.9	4.3	3.6	7.5	4.6	3.1	7.6	8.50
Total Single-Family Units	60.5	2.7	4.3	6.7	5.0	10.0	10.8	6.2	14.7	6.22
Have Caulking or Weatherstripping (single-family units)										
Yes	44.9	2.4	3.3	5.5	3.6	7.6	8.1	4.0	10.4	6.86
Caulking	38.9	2.0	3.0	4.9	3.2	6.6	7.0	3.1	9.2	7.29
Weatherstripping	37.0	2.2	2.8	4.3	3.1	6.3	6.6	3.3	8.4	7.39
No/Don't Know/Not Reported	15.6	.4	1.0	1.2	1.4	2.4	2.7	2.3	4.3	12.33
Have Roof or Ceiling Insulation (single-family units)										
Yes	49.3	2.4	4.0	6.1	4.5	8.6	8.9	4.5	10.3	6.51
All Insulated	41.4	2.2	3.5	5.3	3.5	7.6	7.8	3.6	7.8	7.06
Part Insulated	4.5	Q	Q	.3	.4	.5	.7	.7	1.6	18.89
None, Very Little Insulated	.5	Q	Q	Q	Q	Q	Q	Q	.2	54.67
Don't Know Amount/ Not Reported	3.0	Q	.3	.4	.4	.4	.3	.2	.7	24.48
No	6.6	Q	Q	.2	.2	.5	1.1	1.2	3.2	18.14
Don't Know/Not Reported	4.6	Q	.2	.3	.4	.8	.8	.5	1.2	21.32
Type of Insulation										
Batts Only	24.9	1.1	2.3	3.2	2.3	4.6	4.5	2.3	4.6	8.59
Average Number of Inches	5.4	6.4	6.4	6.3	5.0	5.2	4.9	5.4	5.1	4.01
Loose Fill Only	12.3	.6	1.0	1.8	1.0	1.9	2.1	.9	3.1	11.67
Average Number of Inches	7.1	9.1	8.3	7.6	8.9	6.9	6.2	5.9	6.4	6.32
Batts and Loose Fill Only	5.1	.3	Q	.4	.4	.9	1.1	.7	1.2	17.33
Average Number of Inches	12.0	17.9	Q	13.3	11.1	11.4	11.9	10.2	11.0	7.25
Other/Combination	4.1	.3	.3	.3	.4	.7	.7	.4	.9	20.67
Don't Know Type/Not Reported	2.9	.2	.3	.4	.3	.5	.5	.2	.5	22.39
No Insulation Don't Know/Not Reported	11.2	.3	.3	.6	.6	1.4	1.9	1.7	4.4	15.31

See footnotes at end of table.

Table 39. U.S. Household Thermal Characteristics by Year of Construction, November 1987 (Continued)

(Million Households Except Where Averages Are Indicated)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.367	2.078	1.543	1.171	1.194	0.928	0.844	1.055	0.735	
Have Wall Insulation (single-family units)										
Yes	35.4	2.2	3.3	5.0	3.3	6.0	5.6	2.9	7.0	7.55
All Walls	30.1	2.1	3.2	4.9	3.0	5.5	4.4	2.0	5.0	8.00
Some Walls	5.3	Q	Q	.2	.3	.5	1.2	.9	2.0	20.65
No	13.4	Q	Q	.4	.7	1.9	2.8	2.0	5.4	13.53
Don't Know/Not Reported	11.7	.3	.9	1.3	1.0	2.1	2.4	1.3	2.3	13.26
Floor Insulation (single-family units)										
Basement/Crawl Space	46.2	1.9	2.3	4.1	3.4	6.8	8.2	5.6	14.0	7.21
Heated	17.7	.7	.8	1.8	1.5	2.6	3.1	2.1	5.2	11.49
None or Part Heated	28.5	1.2	1.5	2.3	1.9	4.2	5.1	3.5	8.8	8.45
Floor Insulated	6.7	.5	.7	1.0	.8	1.2	1.0	.4	1.2	17.62
All Parts Insulated	4.8	.5	.7	.8	.6	.9	.7	.3	.4	20.80
Some Parts Insulated	1.9	Q	Q	Q	Q	.3	.3	Q	.8	28.38
Floor Not Insulated	13.8	.4	.4	.7	.5	1.9	2.5	2.1	5.2	12.31
Don't Know/Not Reported	8.0	.3	.4	.6	.6	1.1	1.7	1.0	2.4	14.76
No Basement/Crawl Space	14.2	.8	2.0	2.6	1.6	3.2	2.6	.6	.7	13.88
Insulation Characteristics (single-family units)										
Units with Some or All Storm Windows, and Some or All Storm Doors, and Roof or Ceiling Insulation	33.5	1.7	2.6	3.9	2.9	5.4	5.8	3.1	8.0	7.52
Units with One or More of These Types of Insulation	55.8	2.7	4.1	6.4	4.8	9.3	9.8	5.5	13.2	6.34
Units with None of These Types of Insulation	4.6	Q	.2	.3	.2	.7	.9	.8	1.5	21.37

* Value rounds to zero in the units displayed.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 40. U.S. Household Thermal Characteristics by Year of Construction, November 1987

(Percent of Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.411	1.932	1.483	1.194	1.206	0.937	0.866	1.061	0.686	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Number of Windows										
6 or Fewer	21.7	26.5	38.1	28.6	33.0	27.9	10.8	9.8	13.4	11.18
7 to 12	40.8	50.8	43.3	41.9	41.1	38.9	41.9	46.0	36.3	5.72
13 to 18	24.3	17.3	12.6	20.5	18.2	23.4	32.0	28.7	28.5	8.61
19 or More	13.2	5.4	6.0	9.0	7.7	9.8	15.3	15.5	21.9	13.29
Number of Storm Windows										
1 to 6	14.2	7.3	21.7	15.2	17.2	15.7	8.2	11.1	14.9	12.36
7 to 12	25.2	39.8	29.4	25.5	26.0	20.0	22.1	29.1	25.2	8.01
13 to 18	15.8	13.6	8.6	14.0	12.4	13.2	19.8	16.6	20.3	10.84
19 or More	8.8	5.2	4.8	6.6	6.1	5.9	9.2	8.5	15.1	15.84
None/No Windows	36.0	34.0	35.5	38.7	38.4	45.3	40.6	34.7	24.6	6.50
Percent of Windows with Storm Windows										
100 Percent	49.5	63.6	58.0	53.1	52.3	41.3	43.4	48.1	51.4	4.72
76 to 99 Percent	5.7	Q	3.6	3.5	4.5	4.9	5.5	6.4	9.1	17.09
51 to 75 Percent	4.1	Q	Q	2.5	2.3	3.7	4.0	4.8	7.3	19.56
1 to 50 Percent	4.8	Q	Q	2.3	2.5	4.8	6.5	6.1	7.6	19.04
None/No Windows	36.0	34.0	35.5	38.7	38.4	45.3	40.6	34.7	24.6	6.50
Number of Outside Doors										
1	10.9	3.4	12.2	8.6	16.4	16.8	5.8	7.4	10.2	17.77
2	41.7	40.3	38.9	37.3	37.9	35.9	46.7	51.6	44.3	6.35
3	28.1	34.8	30.4	31.1	26.8	25.5	33.4	26.4	24.8	7.50
4 or More	14.7	20.1	17.0	19.8	14.8	16.2	12.1	9.0	13.1	11.14
None	4.6	Q	Q	3.1	4.1	5.6	2.1	5.7	7.6	27.28
Type and Number of Outside Doors										
Standard Doors										
1	18.7	23.7	29.5	29.3	27.4	22.3	10.0	8.6	11.4	12.41
2	46.9	51.2	44.5	40.8	43.0	45.1	54.8	54.8	45.3	5.65
3	21.0	16.1	15.6	19.8	14.5	18.5	26.6	24.9	24.2	8.81
4 or More	7.3	7.6	6.0	5.6	4.7	6.4	6.6	6.0	11.3	16.19
None/No Doors	6.1	Q	Q	4.4	10.5	7.7	2.1	5.7	7.8	24.44
Sliding Glass Doors										
1	21.9	34.4	32.9	38.7	38.4	25.3	18.0	7.6	5.4	9.70
2 or More	6.5	17.1	13.3	13.4	9.2	8.0	3.0	Q	.8	18.61
None/No Doors	71.7	48.6	53.9	48.0	52.5	66.7	79.0	91.6	93.8	3.67
Number of Storm Doors										
1	16.8	14.0	19.0	18.8	23.0	17.8	11.8	16.8	14.9	10.44
2	27.2	22.4	19.7	22.2	23.2	20.2	35.2	33.3	33.1	8.29
3	12.3	16.1	16.5	11.2	10.6	10.9	14.5	9.5	12.3	11.80
4 or More	5.0	11.0	5.7	7.0	5.7	5.3	2.9	3.0	4.1	18.64
None	34.1	35.1	37.6	37.7	33.4	40.3	33.5	31.8	27.9	7.00
No Outside Doors	4.6	Q	Q	3.1	4.1	5.6	2.1	5.7	7.6	27.28

See footnotes at end of table.

Table 40. U.S. Household Thermal Characteristics by Year of Construction, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.411	1.932	1.483	1.194	1.206	0.937	0.866	1.061	0.686	
Percent of Outside Doors with Storm Doors										
100 Percent	36.2	39.5	35.1	31.9	34.7	29.1	40.6	39.9	39.9	6.18
51 to 99 Percent	10.0	9.3	10.5	9.6	9.6	10.0	11.6	8.0	10.0	12.72
1 to 50 Percent	15.1	14.7	15.4	17.6	18.2	15.0	12.3	14.7	14.6	10.06
None/No Doors	38.7	36.5	39.0	40.9	37.5	45.9	35.6	37.5	35.5	6.55
Total Single-Family Units	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Have Caulking or Weatherstripping (single-family units)										
Yes	74.3	86.2	76.1	82.2	72.4	76.4	75.0	63.7	71.0	3.23
Caulking	64.4	74.0	68.8	72.6	63.0	65.9	65.1	50.5	62.2	4.15
Weatherstripping	61.3	79.2	64.6	64.7	61.6	63.4	61.3	53.3	57.1	4.22
No/Don't Know/Not Reported	25.7	13.8	23.9	17.8	27.6	23.6	25.0	36.3	29.0	10.11
Have Roof or Ceiling Insulation (single-family units)										
Yes	81.5	89.0	92.0	91.5	88.9	86.2	82.1	72.4	70.1	2.35
All Insulated	68.4	81.0	81.7	79.6	70.1	76.7	72.1	57.0	53.1	3.43
Part Insulated	7.4	Q	Q	4.9	8.7	4.7	6.6	11.7	11.1	18.17
None, Very Little Insulated	.8	Q	Q	Q	Q	Q	Q	Q	1.5	51.80
Don't Know Amount/ Not Reported	4.9	Q	6.7	6.5	8.6	4.4	3.0	3.3	4.5	23.76
No	11.0	Q	Q	3.4	3.7	5.4	10.0	19.4	21.8	16.40
Don't Know/Not Reported	7.5	Q	5.7	5.1	7.4	8.3	7.8	8.2	8.0	19.66
Type of Insulation										
Batts Only	41.1	40.7	52.1	47.1	45.8	46.5	41.7	37.6	31.1	6.33
Loose Fill Only	20.4	20.3	22.6	26.5	20.8	19.0	19.3	14.2	21.2	10.47
Batts and Loose Fill Only	8.4	10.1	Q	6.0	8.2	9.1	9.9	11.3	8.3	15.69
Other/Combination	6.7	10.8	7.2	5.1	7.7	6.7	6.7	6.3	6.4	20.11
Don't Know Type/Not Reported	4.8	7.1	7.4	6.7	6.4	5.0	4.6	3.0	3.1	20.85
No Insulation/ Don't Know/Not Reported	18.5	11.0	8.0	8.5	11.1	13.8	17.9	27.6	29.9	13.35
Have Wall Insulation (single-family units)										
Yes	58.5	80.5	75.5	74.8	66.1	60.1	52.3	47.1	47.8	4.67
All Walls	49.8	77.9	74.6	72.5	59.8	54.8	41.2	32.4	33.9	5.46
Some Walls	8.7	Q	Q	2.3	6.4	5.3	11.1	14.8	13.9	18.72
No	22.2	Q	Q	6.4	13.7	18.6	25.5	31.6	36.4	11.37
Don't Know/Not Reported	19.3	11.9	21.3	18.9	20.2	21.3	22.2	21.2	15.8	11.23

See footnotes at end of table.

Table 40. U.S. Household Thermal Characteristics by Year of Construction, November 1987 (Continued)

(Percent of Households)

Household Characteristics	Total	Year of Construction								RSE Row Factors
		1985 or After	1980 to 1984	1975 to 1979	1970 to 1974	1960 to 1969	1950 to 1959	1940 to 1949	1939 or Before	
RSE Column Factors:	0.411	1.932	1.483	1.194	1.206	0.937	0.866	1.061	0.686	
Floor Insulation (single-family units)										
Basement/Crawl Space	76.5	69.3	53.4	60.6	68.5	67.8	75.9	89.9	95.2	3.71
Heated	29.3	23.9	18.3	26.5	30.5	26.0	28.5	33.7	35.3	9.68
None or Part Heated	47.2	45.4	35.0	34.1	38.0	41.8	47.4	56.2	59.9	6.26
Floor Insulated	11.1	19.8	16.2	14.6	15.0	11.6	9.1	5.7	8.4	16.25
All Parts Insulated	8.0	17.0	15.5	12.3	12.7	8.6	6.6	4.1	2.8	19.69
Some Parts Insulated	3.1	Q	Q	Q	Q	3.0	2.5	Q	5.6	26.64
Floor Not Insulated	22.8	15.9	9.7	11.2	10.7	19.3	22.8	33.8	35.1	10.92
Don't Know/Not Reported	13.3	9.7	9.0	8.3	12.3	11.0	15.5	16.6	16.4	14.21
No Basement/Crawl Space	23.5	30.7	46.6	39.4	31.5	32.2	24.1	10.1	4.8	11.79
Insulation Characteristics (single-family units)										
Units with Some or All Storm Windows, and Some or All Storm Doors, and Roof or Ceiling Insulation	55.4	61.4	60.3	59.0	57.9	54.3	54.2	50.4	54.1	4.95
Units with One or More of These Types of Insulation	92.3	97.2	95.7	96.0	95.9	92.9	91.3	87.5	90.0	1.37
Units with None of These Types of Insulation	7.7	Q	4.3	4.0	4.1	7.1	8.7	12.5	10.0	20.14

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 41. U.S. Household Conservation Improvements by Census Region and Metropolitan Status, November 1987

(Million Households Except Where Averages Are Indicated)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
		Northeast	Midwest	South	West	Metropolitan			Non-Metropolitan	
						Total	Central City	Outside Central City		
RSE Column Factors:	0.611	1.284	0.961	1.118	1.406	0.737	1.240	0.915	1.008	
Total Households	90.5	19.0	22.3	30.9	18.3	70.2	29.6	40.6	20.3	0.00
Total Households Adding Items	6.7	1.8	1.8	2.3	.8	4.9	2.0	3.0	1.8	8.39
Storm Doors (standard or sliding glass)	3.9	.8	1.0	1.6	.5	2.8	1.1	1.7	1.1	12.25
Average Number Added	1.4	1.5	1.3	1.4	1.4	1.3	1.3	1.3	1.5	4.93
Storm Windows	3.6	1.2	.9	1.1	.4	2.6	1.0	1.6	1.0	11.53
Average Number Added	7.3	7.5	6.8	8.1	5.8	7.4	6.1	8.2	7.2	12.41
Total Single-Family Units and Mobile Homes	65.6	11.8	16.8	24.5	12.5	47.5	16.7	30.8	18.1	2.75
Single-Family Units or Mobile Homes Adding Items	18.9	3.7	7.0	5.5	2.7	13.1	4.3	8.7	5.8	6.22
Caulking	6.5	1.3	2.9	1.8	.5	4.5	1.5	2.9	2.1	10.35
Weatherstripping	5.6	1.2	2.2	1.7	.5	3.9	1.4	2.6	1.6	11.07
Closable Shutters, Insulating Drapes, or Reflective Film	2.1	.4	.8	.4	.5	1.6	.5	1.1	.5	17.16
Plastic Sheets	5.0	1.0	2.6	1.1	.3	3.0	1.0	2.0	2.0	12.72
Roof or Ceiling Insulation	2.4	.4	.7	.9	.3	1.7	.5	1.1	.7	14.50
Insulation Around Water Heater	2.1	.3	.8	.6	.4	1.5	.6	.9	.6	16.00
Outside Wall Insulation	2.0	.5	.6	.6	.3	1.5	.5	1.0	.5	14.10
Automatic or Clock Thermostat	1.4	.3	.4	.5	.3	1.2	.3	.9	.2	21.10
Insulation Around Hot-Water/Cooling Pipes	1.7	.4	.6	.5	.1	1.1	.4	.7	.6	16.09
Wood-Burning Stove	.9	.2	.2	.2	.2	.4	Q	.3	.5	23.15
Insulation Around Heating/Cooling Ducts	1.2	.1	.3	.7	.1	.9	.4	.5	.3	19.40
Floor Insulation	1.2	.1	.5	.4	Q	.9	.3	.6	.3	23.55
Electrical or Mechanical Furnace Ignition	1.2	.4	.3	.2	.3	.9	.3	.6	.3	19.06
Automatic Flue Door	.3	Q	Q	Q	Q	.2	Q	Q	Q	41.33
Flame-Retention Head Burner	.2	.1	Q	Q	NC	.1	Q	.1	Q	34.20
Heat Pump	.6	Q	Q	.5	Q	.5	Q	.4	Q	27.89
Single-Family Units or Mobile Homes Adding Storm Windows, Storm Doors, or Other Conservation Measures Listed Above	21.7	4.7	7.6	6.5	2.9	15.2	5.3	10.0	6.5	5.47

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • Conservation improvements were made between September 1986 and August 1987. • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 42. U.S. Household Conservation Improvements by Census Region and Metropolitan Status, November 1987

(Percent of Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
		Northeast	Midwest	South	West	Metropolitan			Non-Metropolitan	
						Total	Central City	Outside Central City		
RSE Column Factors:	0.614	1.278	0.891	1.179	1.385	0.742	1.228	0.937	1.027	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Total Households Adding Items	7.4	9.4	8.2	7.6	4.2	7.0	6.6	7.3	8.8	8.39
Storm Doors (standard or sliding glass)	4.3	4.1	4.7	5.3	2.5	4.0	3.6	4.3	5.6	12.25
Storm Windows	4.0	6.3	4.1	3.5	2.2	3.7	3.5	3.9	5.0	11.53
Total Single-Family Units and Mobile Homes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Single-Family Units or Mobile Homes Adding Items	28.8	31.2	41.4	22.4	21.8	27.5	26.0	28.4	31.9	5.39
Caulking	10.0	10.8	17.1	7.6	4.3	9.4	9.0	9.6	11.6	9.95
Weatherstripping	8.5	10.1	13.2	6.8	4.0	8.3	8.2	8.4	9.0	10.22
Closable Shutters, Insulating Drapes, or Reflective Film	3.2	3.4	4.6	1.7	4.2	3.3	2.8	3.6	3.0	16.49
Plastic Sheets	7.6	8.1	15.2	4.6	2.8	6.3	5.9	6.5	11.0	12.29
Roof or Ceiling Insulation	3.6	3.1	4.4	3.8	2.5	3.5	3.2	3.6	3.8	13.90
Insulation Around Water Heater	3.2	3.0	4.9	2.4	2.8	3.2	3.4	3.0	3.4	15.78
Outside Wall Insulation	3.0	4.1	3.6	2.4	2.5	3.2	2.8	3.4	2.6	13.47
Automatic or Clock Thermostat	2.1	2.2	2.2	2.1	2.1	2.6	2.1	2.8	1.0	21.09
Insulation Around Hot-Water/Cooling Pipes	2.6	3.1	3.8	2.2	1.2	2.2	2.2	2.2	3.5	15.67
Wood-Burning Stove	1.3	1.5	1.2	1.0	2.0	.8	Q	1.1	2.7	23.55
Insulation Around Heating/Cooling Ducts	1.9	1.2	1.9	2.7	1.0	2.0	2.5	1.7	1.7	19.41
Floor Insulation	1.9	1.1	3.2	1.8	Q	1.9	1.7	2.0	1.9	23.30
Electrical or Mechanical Furnace Ignition	1.8	3.1	1.9	1.0	2.0	1.8	1.6	1.9	1.8	18.94
Automatic Flue Door	.4	Q	Q	Q	Q	.5	Q	Q	Q	40.53
Flame-Retention Head Burner	.3	1.2	Q	Q	NC	.3	Q	.4	Q	34.65
Heat Pump	.9	Q	Q	2.0	Q	1.1	Q	1.3	Q	26.54
Single-Family Units or Mobile Homes Adding Storm Windows, Storm Doors, or Other Conservation Measures Listed Above	33.2	39.9	45.3	26.6	23.3	32.0	31.5	32.3	36.1	4.60

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • Conservation improvements were made between September 1986 and August 1987. • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 43. U.S Households Compared by Indoor Temperature, Heating Degree-Days, and Size, November 1987

(Million Households)

Household Characteristics	Total	Heating Degree-Days (HDD) January 1987 Through December 1987 by Heated Square Footage									RSE Row Factors
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD			
		Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	
RSE Column Factors:	0.326	1.199	1.061	1.023	1.261	1.088	1.303	1.029	0.814	1.573	
Total Households	90.5	7.9	8.4	8.5	9.7	11.4	7.9	14.7	17.0	5.0	6.90
Have Heating Controls											
Yes	73.1	6.0	7.6	8.3	6.7	9.8	7.2	9.0	13.8	4.6	6.73
No/Do Not Heat	17.4	1.9	.7	.3	3.0	1.6	.6	5.7	3.2	.4	13.66
Daytime Temperature When Someone Is at Home											
Heat Is Turned On	70.4	5.8	7.5	8.2	6.5	9.7	7.2	8.3	12.9	4.4	6.83
63 Degrees or Less	2.6	.4	.3	.3	.3	.4	.2	.3	.3	Q	20.03
64 to 66 Degrees	6.6	.9	.8	.9	.6	.8	.5	.8	1.0	.3	16.74
67 to 69 Degrees	17.7	1.4	2.5	3.2	1.0	2.3	2.1	1.2	2.8	1.2	10.93
70 Degrees	19.7	1.7	2.2	2.0	2.2	3.1	2.3	2.1	3.3	.9	10.06
71 or More Degrees	23.8	1.4	1.8	1.8	2.4	3.2	2.0	3.8	5.6	1.9	10.85
Heat Turned Off	1.2	Q	Q	NC	Q	NC	NC	.3	.7	Q	32.05
Unknown/No Answer	1.4	.2	Q	Q	.2	Q	Q	.4	.2	Q	34.43
Daytime Temperature When No One Is at Home											
Heat Is Turned On	61.7	5.5	7.4	8.1	5.9	9.1	6.9	5.6	9.6	3.5	7.34
63 Degrees or Less	16.9	1.7	2.6	2.8	1.7	2.3	1.6	1.3	2.1	.7	10.71
64 to 66 Degrees	13.0	1.3	1.9	1.9	1.0	2.0	1.5	.9	1.7	.7	11.86
67 to 69 Degrees	11.8	1.0	1.5	1.8	.9	1.6	1.6	.9	1.6	.8	12.81
70 Degrees	10.0	.9	.8	.9	1.3	1.8	1.2	.9	1.7	.5	14.40
71 or More Degrees	10.0	.6	.6	.8	.9	1.4	1.0	1.5	2.4	.8	14.68
Heat Turned Off	10.1	.3	Q	Q	.5	.6	.3	3.2	4.0	1.1	15.98
Unknown/No Answer	1.3	.2	Q	Q	.2	Q	Q	.3	.2	Q	35.42
Nighttime (sleeping hours)											
Heat Is Turned On	65.7	5.7	7.5	8.1	6.0	9.3	7.0	7.0	11.3	3.8	7.02
63 Degrees or Less	14.2	1.3	2.0	2.5	1.3	2.1	1.4	1.1	2.0	.5	11.41
64 to 66 Degrees	14.5	1.2	2.1	1.9	1.2	2.0	1.7	1.4	2.3	.7	10.81
67 to 69 Degrees	13.7	1.2	1.7	2.0	1.1	1.9	1.7	1.1	2.1	1.0	12.15
70 Degrees	11.9	1.2	.9	.9	1.4	1.8	1.2	1.4	2.2	.8	12.93
71 or More Degrees	11.4	.8	.8	.8	1.1	1.5	1.0	2.0	2.6	.8	14.80
Heat Turned Off	6.0	Q	Q	Q	.4	.4	.2	1.7	2.3	.8	19.27
Unknown/No Answer	1.4	.2	Q	Q	.3	Q	Q	.3	.2	Q	32.11

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 44. U.S. Households Compared by Indoor Temperature, Heating Degree-Days and Size, November 1987

(Percent of Households)

Household Characteristics	Total	Heating Degree-Days (HDD) January 1987 Through December 1987 by Heated Square Footage									RSE Row Factors
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD			
		Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	
RSE Column Factors:	0.429	1.251	0.896	1.038	1.318	0.936	1.062	1.112	0.842	1.636	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Have Heating Controls											
Yes	80.7	75.8	91.1	97.0	69.3	85.8	92.3	61.2	81.1	92.1	2.24
No/Do Not Heat	19.3	24.2	8.9	3.0	30.7	14.2	7.7	38.8	18.9	7.9	12.10
Have Heating Controls	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Daytime Temperature When Someone Is at Home											
Heat Is Turned On	96.4	96.3	98.6	99.1	96.4	99.4	99.1	91.6	93.5	94.7	1.39
63 Degrees or Less	3.5	7.4	3.8	3.5	4.9	3.6	2.6	3.3	2.5	Q	19.14
64 to 66 Degrees	9.1	14.5	9.9	10.9	8.8	8.6	7.3	9.4	7.1	7.4	15.28
67 to 69 Degrees	24.2	22.5	33.1	39.1	15.0	23.3	28.8	13.4	20.0	26.0	6.84
70 Degrees	27.0	27.7	28.7	23.9	32.6	31.4	32.2	23.6	23.6	19.6	7.70
71 or More Degrees	32.6	24.1	23.1	21.7	35.2	32.5	28.3	41.9	40.3	40.8	7.46
Heat Turned Off	1.7	Q	Q	NC	Q	NC	NC	3.7	4.7	Q	27.96
Unknown/No Answer	2.0	3.3	Q	Q	3.5	Q	Q	4.7	1.7	Q	30.55
Daytime Temperature When No One Is at Home											
Heat Is Turned On	84.4	91.5	97.3	98.0	88.4	92.7	95.1	61.8	69.8	76.8	2.21
63 Degrees or Less	23.1	28.2	34.2	33.6	25.8	23.6	22.0	14.7	15.5	14.8	9.69
64 to 66 Degrees	17.8	21.4	25.2	23.0	15.1	20.9	20.6	10.1	12.5	15.9	13.04
67 to 69 Degrees	16.1	15.9	19.8	21.8	14.1	16.3	21.7	10.4	11.9	17.5	11.13
70 Degrees	13.7	15.5	10.5	10.5	19.6	18.0	16.3	9.9	12.4	11.8	11.60
71 or More Degrees	13.7	10.5	7.5	9.2	13.9	14.0	14.5	16.6	17.5	16.7	11.93
Heat Turned Off	13.9	4.9	Q	Q	8.0	6.6	4.1	35.2	28.8	22.8	14.31
Unknown/No Answer	1.7	3.6	Q	Q	3.7	Q	Q	3.1	1.4	Q	31.81
Nighttime (sleeping hours)											
Heat Is Turned On	89.9	94.9	97.9	98.1	90.0	95.5	96.5	77.2	81.7	81.8	1.72
63 Degrees or Less	19.4	22.3	25.7	30.3	19.7	21.4	19.0	12.0	14.8	10.6	9.64
64 to 66 Degrees	19.9	20.0	28.2	23.3	17.2	20.3	23.5	15.7	16.6	14.9	8.82
67 to 69 Degrees	18.8	19.4	22.3	23.6	16.1	19.7	23.3	11.9	15.4	21.6	10.12
70 Degrees	16.2	20.4	11.2	11.1	21.2	18.5	17.1	15.2	16.1	17.2	10.72
71 or More Degrees	15.6	12.9	10.5	9.8	15.9	15.4	13.6	22.4	18.7	17.6	11.93
Heat Turned Off	8.2	Q	Q	Q	5.9	3.6	2.7	19.1	17.0	17.3	17.24
Unknown/No Answer	2.0	4.1	Q	Q	4.2	Q	Q	3.7	1.3	Q	29.24

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 45. U.S. Households Altering Night Temperature, by Heating Degree-Days, and Size, November 1987

(Million Households)

Household Characteristics	Total	Heating Degree-Days (HDD) January 1987 Through December 1987 by Heated Square Footage									RSE Row Factors
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD			
		Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	
RSE Column Factors:	0.314	1.183	1.144	0.961	1.250	1.106	1.267	1.149	0.851	1.430	
Total Households	90.5	7.9	8.4	8.5	9.7	11.4	7.9	14.7	17.0	5.0	6.87
Households with Heating Controls and Heat Turned On in Daytime	70.4	5.8	7.5	8.2	6.5	9.7	7.2	8.3	12.9	4.4	6.83
Nighttime (sleeping hours) Temperature-Setting Behavior											
Turns Heat Down at Night	34.1	2.3	4.6	4.9	2.9	5.0	3.8	3.2	5.5	1.9	8.06
1 to 2 Degrees	4.9	.3	.7	.7	.3	.8	.6	.4	.7	.4	18.94
3 to 5 Degrees	13.7	.9	1.9	1.8	1.0	2.1	1.7	1.4	2.1	.9	11.22
6 to 10 Degrees	11.6	.9	1.6	2.0	1.1	1.4	1.1	1.0	2.0	.5	11.98
11 or More Degrees	3.8	.2	.3	.4	.5	.7	.4	.5	.7	Q	20.40
Keeps Same Temperature at Night	29.8	3.3	2.7	3.1	2.9	4.3	3.2	3.4	5.1	1.8	10.13
Turns Heat Off at Night	4.8	Q	Q	Q	.4	.4	.2	1.3	1.8	.6	18.85
Turns Heat Up at Night	1.5	.1	.2	Q	.2	.1	Q	.3	.4	Q	29.89
Other	.2	Q	Q	Q	Q	Q	NC	Q	Q	NC	71.00

NC No cases in sample.
Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.
Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 46. U.S. Households Altering Night Temperature, by Heating Degree-Days, and Size, November 1987

(Percent of Households)

Household Characteristics	Total	Heating Degree-Days (HDD) January 1987 Through December 1987 by Heated Square Footage									RSE Row Factors
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD			
		Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	Fewer than 1,000 Square Feet	1,000 to 1,999 Square Feet	More than 1,999 Square Feet	
RSE Column Factors:	0.404	1.215	1.099	0.968	1.207	1.029	1.127	1.198	0.864	1.322	
Households with Heating Controls and Heat Turned On in Daytime	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Nighttime (sleeping hours) Temperature-Setting Behavior											
Turns Heat Down at Night	48.4	39.6	60.9	59.4	44.2	51.3	52.3	39.3	42.8	44.2	5.16
1 to 2 Degrees	7.0	5.5	9.2	8.5	4.5	8.0	8.0	5.1	5.7	9.9	17.31
3 to 5 Degrees	19.4	15.0	25.8	21.9	16.1	21.7	23.0	16.3	15.9	20.0	9.77
6 to 10 Degrees	16.5	15.0	21.9	24.4	16.5	14.8	15.6	12.3	15.4	11.2	10.38
11 or More Degrees	5.4	4.0	4.0	4.6	7.1	6.8	5.8	5.6	5.8	Q	18.47
Keeps Same Temperature at Night	42.3	56.6	36.3	38.1	45.6	43.8	44.2	40.9	39.8	40.9	6.22
Turns Heat Off at Night	6.8	Q	Q	Q	5.9	3.7	2.7	15.6	14.3	13.9	17.24
Turns Heat Up at Night	2.1	2.0	2.2	Q	3.5	1.0	Q	3.5	3.1	Q	28.61
Other	.3	Q	Q	Q	Q	Q	NC	Q	Q	NC	54.94

NC No cases in sample.
Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 47. U.S. Household Mean Daytime Temperature by Census Region and Climate Zone, November 1987

(Degrees Fahrenheit)

Household Characteristics	Total	Census Region and Climate Zone							RSE Row Factors
		Northeast		Midwest	South		West		
		5,500 HDD or More	Fewer than 5,500 HDD	4,000 HDD or More	Fewer than 2,000 CDD	2,000 CDD or More	4,000 HDD or More	Fewer than 4,000 HDD	
RSE Column Factors:	0.449	0.922	1.282	0.725	0.938	1.454	1.484	1.284	
Households with Heating Controls and Heat Turned On in Daytime	70.1	68.6	69.8	70.0	70.4	72.4	69.1	69.7	0.24
Nighttime (sleeping hours) Temperature-Setting Behavior									
Turns Heat Down at Night									
Yes	70.5	69.2	70.4	70.3	71.0	72.9	69.6	70.4	.33
No	69.7	67.9	69.2	69.6	69.9	72.1	68.5	69.3	.30
Main Heating Fuel									
Natural Gas	70.0	68.6	70.2	69.9	70.5	72.5	68.8	69.6	.28
Electricity	70.7	68.5	70.3	69.6	70.1	72.4	69.3	70.7	.67
Fuel Oil or Kerosene	69.1	68.5	69.1	69.7	69.8	Q	69.7	Q	.60
LPG	70.4	Q	NC	70.2	70.4	71.3	70.9	69.7	.79
Wood/Coal/Other	71.8	70.5	Q	72.4	72.7	Q	69.2	Q	1.18
Secondary Heating									
Yes	70.0	68.6	69.3	70.0	70.4	72.3	69.2	69.2	.31
No	70.2	68.6	70.0	69.9	70.4	72.6	69.0	70.2	.33
Main Heating Fuel									
Gas, Electricity, Oil Paid by Household									
Yes	70.0	68.5	69.6	69.8	70.2	72.4	69.1	69.7	.24
No	70.5	68.9	70.7	70.5	71.3	72.7	69.2	70.9	.82
Wood/Coal/Other	71.8	70.5	Q	72.4	72.7	Q	69.2	Q	1.18
Age of Householder									
Under 25 Years	70.1	67.6	71.5	69.9	70.2	72.8	67.0	68.3	1.12
25 to 34 Years	69.8	68.1	69.5	69.1	70.3	73.1	68.0	69.7	.51
35 to 44 Years	69.6	68.0	69.2	69.0	69.6	72.3	68.7	70.0	.52
45 to 59 Years	70.0	68.3	69.9	70.3	70.1	71.9	69.2	68.6	.38
60 Years and Over	70.8	69.6	70.1	70.9	71.5	72.2	70.4	70.8	.36

NC No cases in sample.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 48. U.S. Household Use of Air-Conditioning Equipment, Summer 1987

Household Characteristics	Million Households	Percent of Households						Temperature of Cooled Area		RSE Row Factors
		Total	Did Not Use Air-Conditioning Equipment	Air Conditioning Turned On:			Not Living Here In Summer 1987	Million Households Reporting	Degrees Fahrenheit	
				A Few Times	Quite a Bit	All Summer				
RSE Column Factors:	0.858	--	3.235	1.036	1.406	1.246	3.498	0.938	0.060	
Total Households	57.6	100.0	4.8	34.9	23.5	32.4	4.4	48.5	73.7	2.96
Census Region										
Northeast	10.4	100.0	7.2	50.4	25.9	12.8	3.6	7.6	71.1	6.19
Midwest	15.1	100.0	5.4	41.9	28.7	21.3	2.7	13.2	73.8	6.08
South	25.4	100.0	3.0	20.3	20.3	51.6	4.7	22.4	74.5	4.30
West	6.7	100.0	6.2	50.7	20.0	14.7	8.5	5.4	73.9	9.22
Cooling Degree-Days (CDD)-January 1987 Through December 1987										
2,000 or More	15.0	100.0	3.1	15.9	18.7	57.1	5.2	13.5	75.3	7.63
1,000 to 1,999	25.7	100.0	4.7	36.2	24.5	30.4	4.2	21.6	73.5	5.17
500 to 999	14.8	100.0	6.4	48.9	26.8	13.9	4.0	11.7	72.4	6.77
Fewer than 500	2.1	100.0	6.4	57.3	21.4	10.8	Q	1.7	71.6	15.57
1987 Family Income										
Less than $5,000	2.9	100.0	3.6	37.9	22.9	21.8	13.8	2.2	74.0	11.52
$5,000 to $9,999	5.9	100.0	7.2	39.4	20.2	31.2	Q	4.6	73.8	7.47
$10,000 to $14,999	7.2	100.0	5.8	40.5	22.9	25.5	5.3	5.6	73.2	6.83
$15,000 to $19,999	5.6	100.0	5.8	37.7	24.9	26.1	5.6	4.5	73.6	8.30
$20,000 to $24,999	5.6	100.0	4.3	30.3	28.0	34.3	3.1	4.8	73.3	8.38
$25,000 to $34,999	11.0	100.0	4.2	34.8	20.7	36.4	3.9	9.7	73.9	5.67
$35,000 or $49,999	9.7	100.0	5.9	31.6	22.1	36.7	3.6	8.5	74.0	6.22
$50,000 or More	9.8	100.0	2.1	31.9	27.0	34.9	4.1	8.7	73.7	6.65
Air-Conditioning (A/C) Equipment										
Central A/C Units	30.7	100.0	3.5	25.2	22.5	44.1	4.7	28.9	74.6	4.12
Individual Room A/C Units[1]	26.9	100.0	6.2	46.1	24.5	19.0	4.2	19.6	72.3	4.18
Pay for Electricity/Gas for Air-Conditioning										
Yes	54.3	100.0	4.9	35.5	23.5	32.2	4.0	45.8	73.8	3.05
No	3.3	100.0	3.3	26.6	23.8	35.1	11.2	2.7	72.3	13.07

-- Data not applicable.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 49. U.S.Household Residential Wood Consumption, for the Year Ending November 1987

Household Characteristics	Households Burning Wood					Households Burning Wood as the Main Heating Fuel					RSE Row Factors
	Number of Households		Total Number of Cords Burned		Average Number of Cords Burned per Household	Number of Households		Total Number of Cords Burned		Average Number of Cords Burned per Household	
	(millions)	(percent)	(millions)	(percent)		(millions)	(percent)	(millions)	(percent)		
RSE Column Factors:	0.615	0.570	1.134	1.038	0.847	1.284	1.095	1.643	1.398	0.887	
Total Households	22.5	100.0	42.6	100.0	1.9	5.0	100.0	23.5	100.0	4.7	9.96
Census Region and Annual Heating Degree-Days (HDD) or Cooling Degree-Days (CDD)--Long-Term Average											
Northeast	3.7	16.6	8.3	19.6	2.2	.6	12.0	Q	Q	8.1	29.06
5,500 HDD or More	3.0	13.6	Q	17.8	2.5	Q	11.4	Q	Q	8.1	29.24
Fewer than 5,500 HDD	.7	3.0	Q	Q	1.1	Q	Q	Q	Q	Q	40.95
Midwest	5.2	22.9	12.5	29.2	2.4	1.3	26.3	7.3	31.0	5.5	16.02
South	7.5	33.6	13.2	31.0	1.8	1.9	37.2	7.1	30.1	3.8	12.19
Fewer than 2,000 CDD	4.8	21.6	10.5	24.7	2.2	1.6	31.2	6.4	27.3	4.1	14.50
2,000 CDD or More	2.7	12.0	2.7	6.3	1.0	.3	6.0	.7	Q	2.2	23.72
West	6.0	26.8	8.6	20.2	1.4	1.2	24.5	4.3	18.2	3.5	10.51
Fewer than 4,000 HDD	3.1	13.6	2.8	6.5	.9	.4	7.8	1.0	4.1	2.5	19.94
4,000 HDD or More	3.0	13.2	5.8	13.7	2.0	.8	16.6	3.3	14.1	4.0	12.26
Metropolitan Status											
Metropolitan	15.9	71.0	21.6	50.6	1.4	2.0	40.5	8.8	37.4	4.3	10.40
Central City	4.2	18.5	3.7	8.6	.9	.3	5.7	1.0	4.1	3.4	18.66
Outside Central City	11.8	52.4	17.9	42.1	1.5	1.7	34.8	7.8	33.2	4.5	12.59
Non-Metropolitan	6.5	29.0	21.0	49.4	3.2	3.0	59.5	14.7	62.6	4.9	13.14
Climate Zone											
Under 2,000 CDD and--											
Over 7,000 HDD	2.9	13.0	12.8	30.0	4.4	1.1	22.5	8.5	36.2	7.5	29.59
5,500 to 7,000 HDD	6.6	29.3	10.2	24.0	1.6	1.2	23.5	5.0	21.3	4.2	13.51
4,000 to 5,499 HDD	5.0	22.4	8.8	20.7	1.8	1.2	23.0	4.7	20.2	4.1	17.06
Under 4,000 HDD	4.8	21.5	7.7	18.0	1.6	1.2	24.2	4.4	18.9	3.7	18.74
2,000 CDD or More and --											
Under 4,000 HDD	3.1	13.9	3.1	7.3	1.0	.3	6.9	.8	3.4	2.3	23.53
Measured Heated Area of Residence (square feet)											
Fewer than 600	.6	2.7	2.9	6.7	4.7	.4	7.2	Q	Q	6.6	34.52
600 to 999	2.6	11.7	5.8	13.6	2.2	1.0	20.2	4.1	17.5	4.0	12.19
1,000 to 1,599	6.5	28.8	14.1	33.0	2.2	2.0	40.4	9.3	39.6	4.6	12.92
1,600 to 1,999	3.4	15.3	5.6	13.0	1.6	.6	10.9	2.3	9.6	4.1	13.76
2,000 to 2,399	3.4	15.0	4.5	10.5	1.3	.4	7.6	1.8	7.9	4.8	14.47
2,400 to 2,999	3.2	14.4	6.3	14.7	1.9	.4	7.7	1.9	8.0	4.9	17.50
3,000 or More	2.7	12.0	3.6	8.4	1.3	.3	5.9	1.7	7.2	5.7	17.44
Year of Construction											
1939 or Before	4.2	18.6	12.5	29.4	3.0	1.5	30.5	9.1	38.7	5.9	13.08
1940 to 1949	1.7	7.7	3.9	9.1	2.2	.5	9.7	2.4	10.1	4.9	15.85
1950 to 1959	2.9	12.8	4.2	9.8	1.4	.5	10.8	2.0	8.5	3.7	13.91
1960 to 1969	3.7	16.7	5.0	11.7	1.3	.5	9.1	1.9	8.1	4.1	17.52
1970 to 1974	2.3	10.3	3.2	7.5	1.4	.5	10.8	1.8	7.8	3.4	14.36
1975 to 1979	3.8	16.9	7.1	16.7	1.9	.6	11.6	2.6	11.1	4.5	16.30
1980 to 1984	2.9	12.7	5.2	12.2	1.8	.7	13.6	2.8	12.0	4.1	15.71
1985 or After	1.0	4.3	1.5	3.6	1.6	.2	3.9	.9	3.7	4.4	29.51

See footnotes at end of table.

Table 49. U.S.Household Residential Wood Consumption, for the Year Ending November 1987 (Continued)

Household Characteristics	Households Burning Wood					Households Burning Wood as the Main Heating Fuel					RSE Row Factors
	Number of Households		Total Number of Cords Burned		Average Number of Cords Burned per Household	Number of Households		Total Number of Cords Burned		Average Number of Cords Burned per Household	
	(millions)	(percent)	(millions)	(percent)		(millions)	(percent)	(millions)	(percent)		
RSE Column Factors:	0.615	0.570	1.134	1.038	0.847	1.284	1.095	1.643	1.398	0.887	
1987 Family Income											
Less than $5,000	0.7	3.3	2.1	4.9	2.8	0.4	7.3	1.7	7.2	4.6	21.77
$5,000 to $9,999	1.4	6.1	4.8	11.2	3.5	.7	14.4	3.2	13.6	4.4	16.54
$10,000 to $14,999	2.1	9.5	6.9	16.1	3.2	.7	13.8	4.2	17.9	6.0	21.56
$15,000 to $19,999	1.5	6.7	3.1	7.2	2.0	.4	8.0	1.7	7.2	4.2	15.31
$20,000 to $24,999	2.1	9.2	5.5	13.0	2.7	.7	13.2	3.0	12.7	4.5	19.93
$25,000 to $34,999	4.0	17.7	7.9	18.4	2.0	.9	18.5	4.9	20.7	5.2	11.17
$35,000 or $49,999	4.9	21.8	6.6	15.5	1.3	.8	15.3	2.7	11.6	3.5	12.19
$50,000 or More	5.8	25.7	5.8	13.6	1.0	.5	9.4	2.1	9.1	4.5	17.49
Main Heating Fuel											
Natural Gas	9.0	40.3	6.8	16.0	.8	--	--	--	--	--	8.81
Fuel Oil or Kerosene	2.7	12.2	5.7	13.3	2.1	--	--	--	--	--	20.12
Electricity	4.3	19.3	4.3	10.1	1.0	--	--	--	--	--	15.78
Wood	5.0	22.4	23.5	55.1	4.7	5.0	100.0	23.5	100.0	4.7	12.42
Fireplace	.3	1.2	.8	1.8	2.8	.3	5.4	.8	3.2	2.8	26.93
Airtight Stove	3.9	17.2	17.7	41.4	4.6	3.9	76.8	17.7	75.2	4.6	9.01
Nonairtight Stove	.2	.9	1.1	2.7	5.7	.2	4.0	1.1	4.9	5.7	33.37
Furnace/Other	.7	3.1	3.9	9.2	5.6	.7	13.8	3.9	16.6	5.6	20.21
LPG	1.0	4.6	2.1	4.8	2.0	--	--	--	--	--	24.01
Other	.3	1.3	Q	Q	1.1	--	--	--	--	--	66.55
Secondary Heating with Wood											
Yes	17.1	75.9	18.1	42.6	1.1	--	--	--	--	--	7.60
No	5.4	24.1	24.5	57.4	4.5	5.0	100.0	23.5	100.0	4.7	12.60
Amount of Wood Burned in Past 12 Months											
Less than 0.5 Cords	8.6	38.4	1.6	3.8	.2	Q	Q	Q	Q	Q	7.60
0.5 to 1.4 Cords	5.5	24.3	4.1	9.7	.8	.4	8.3	.4	1.5	.9	11.09
1.5 to 2.4 Cords	2.8	12.7	5.3	12.4	1.9	1.0	19.9	1.9	8.1	1.9	8.48
2.5 to 3.4 Cords	1.6	7.2	4.7	11.0	2.9	.8	16.6	2.4	10.3	2.9	11.49
3.5 to 4.4 Cords	.9	3.9	3.4	8.1	3.9	.5	10.9	2.2	9.2	3.9	17.18
4.5 Cords or More	3.0	13.6	23.5	55.1	7.7	2.1	42.0	16.6	70.7	7.9	13.09
Any Wood Purchased											
Yes	8.2	36.6	18.1	42.5	2.2	2.0	40.2	9.7	41.5	4.8	11.30
No/Not Reported	14.2	63.4	24.5	57.5	1.7	3.0	59.8	13.7	58.5	4.6	7.98

-- Data not applicable.

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • The number of households burning wood as the main heating fuel may be less than the number reported in other tables. • Some households report that wood is their main heating fuel but they have not burned any wood because they just moved in or have just purchased a wood stove. • This table contains only households that reported burning wood in the 12 months prior to the interview. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 50. U.S. Average Annual Heating Degree-Days, January 1987 Through December 1987

Household Characteristics	Total	Main Heating Fuel						RSE Row Factors
		Natural Gas	Fuel Oil or Kerosene	Electricity	Liquefied Petroleum Gas	Wood	Other/None	
RSE Column Factors:	0.394	0.477	0.560	1.175	1.420	1.121	5.087	
Total Households	4,203	4,282	5,355	3,213	3,979	4,838	2,145	3.79
Census Region and Division								
Northeast	5,722	5,573	5,729	5,816	Q	7,112	Q	3.68
New England	6,441	6,046	6,583	6,319	Q	7,063	NC	4.17
Middle Atlantic	5,515	5,491	5,368	5,693	Q	7,140	Q	4.80
Midwest	5,755	5,697	6,278	5,467	5,860	6,049	Q	3.68
East North Central	5,874	5,805	6,194	5,628	6,183	6,314	Q	4.09
West North Central	5,460	5,429	6,598	5,048	5,275	5,523	Q	3.70
South	2,810	2,978	3,568	2,367	2,580	3,575	2,232	8.32
South Atlantic	2,927	3,592	3,534	2,139	2,275	3,845	Q	12.96
East South Central	3,291	3,089	3,835	3,386	3,270	3,492	Q	9.75
West South Central	2,295	2,381	Q	2,005	2,505	2,726	NC	14.90
West	3,088	2,903	4,220	3,272	4,271	4,387	995	7.00
Mountain	4,494	4,771	Q	2,490	5,922	5,977	Q	10.37
Pacific	2,639	2,193	4,057	3,460	3,465	4,177	409	7.11
Climate Zone								
Under 2,000 CDD and--								
Over 7,000 HDD	7,068	6,865	7,331	7,418	6,829	7,276	Q	2.34
5,500 to 7,000 HDD	5,730	5,743	5,898	5,564	5,476	5,472	5,778	1.80
4,000 to 5,499 HDD	4,623	4,581	4,789	4,568	4,448	4,515	4,790	1.83
Under 4,000 HDD	2,503	2,251	3,194	2,731	3,123	3,094	1,728	5.40
2,000 CDD or More and --								
Under 4,000 HDD	1,578	1,956	1,352	1,256	1,583	2,083	70	14.13
Secondary Heating								
Yes	4,167	4,091	5,235	3,242	4,061	4,865	4,976	4.14
No	4,229	4,393	5,438	3,192	3,883	4,715	1,172	4.55
Air Conditioning								
Yes	3,961	4,212	5,099	2,962	3,727	4,205	1,856	4.67
Central Unit	3,532	3,915	5,204	2,715	3,495	3,710	Q	6.00
Electric	3,519	3,902	5,204	2,715	3,532	3,710	Q	6.01
Individual Room Units	4,450	4,536	5,069	3,666	3,900	4,533	1,961	4.83
One Unit	4,556	4,626	5,130	3,883	4,088	4,598	Q	4.90
Two or More Units	4,223	4,337	4,982	2,995	3,221	4,316	Q	8.08
No	4,627	4,408	5,634	4,247	4,358	5,233	2,261	4.98
Housing Structure by Status of Unit								
Single-Family Detached	4,183	4,145	5,375	3,217	4,064	4,798	2,364	4.61
Single-Family Attached	4,465	4,582	5,292	3,924	NC	Q	Q	10.22
Building of 2 to 4 Units	4,463	4,560	5,422	3,382	NC	5,124	1,255	7.69
Building of 5 or More Units	3,996	4,475	5,141	2,955	NC	Q	Q	7.33
Mobile Home	4,249	4,338	5,641	3,277	3,781	5,214	Q	9.72
Year of Construction								
1939 or Before	4,880	4,825	5,521	4,149	3,576	5,444	1,714	4.99
1940 to 1949	4,175	4,075	5,212	2,761	4,100	4,664	2,998	8.06
1950 to 1959	3,956	3,844	5,094	2,845	3,981	4,242	1,928	7.59
1960 to 1969	3,920	3,864	5,016	3,184	4,040	4,956	Q	7.01
1970 to 1974	4,316	4,642	5,186	3,279	4,459	4,610	Q	7.13
1975 to 1979	3,972	4,280	6,019	3,333	3,593	4,621	3,829	8.12
1980 to 1984	3,827	4,414	6,065	3,085	3,903	4,524	Q	10.00
1985 or After	3,601	4,367	Q	2,955	5,012	4,349	Q	14.66
Status of Unit								
Owned	4,294	4,308	5,480	3,224	4,133	4,866	2,743	4.10
Rented	4,036	4,236	5,094	3,198	3,290	4,699	969	6.01

See footnotes at end of table.

Table 50. U.S. Average Annual Heating Degree-Days, January 1987 Through December 1987 (Continued)

Household Characteristics	Total	Main Heating Fuel						RSE Row Factors
		Natural Gas	Fuel Oil or Kerosene	Electricity	Liquefied Petroleum Gas	Wood	Other/None	
RSE Column Factors:	0.394	0.477	0.560	1.175	1.420	1.121	5.087	
1987 Family Income								
Less than $5,000	3,997	4,401	4,763	3,169	2,795	3,806	3,640	8.14
$5,000 to $9,999	4,268	4,210	5,344	3,627	4,204	4,416	Q	6.61
$10,000 to $14,999	4,175	4,277	5,207	2,907	3,797	5,380	2,246	6.71
$15,000 to $19,999	4,310	4,461	5,280	3,200	4,415	5,411	1,671	6.62
$20,000 to $24,999	4,360	4,409	5,320	3,344	4,584	4,947	Q	5.86
$25,000 to $34,999	4,243	4,303	5,404	3,243	4,280	5,205	2,242	5.38
$35,000 or $49,999	4,201	4,339	5,518	3,116	4,465	4,686	Q	6.16
$50,000 or More	4,043	4,035	5,630	3,172	3,985	4,357	Q	7.37
Below 100 Percent of Poverty Line	3,923	4,034	4,708	3,324	3,303	4,350	2,440	6.56
Below 125 Percent of Poverty Line	4,105	4,185	5,141	3,328	3,540	4,445	2,386	6.08
Age of Householder								
Under 25 Years	4,039	4,363	5,209	3,143	3,725	5,082	Q	9.59
25 to 34 Years	4,181	4,263	5,378	3,203	4,129	5,071	1,697	5.28
35 to 44 Years	4,180	4,297	5,364	3,121	3,898	4,979	2,215	5.38
45 to 59 Years	4,092	4,126	5,367	3,176	3,825	4,752	2,369	5.43
60 Years and Over	4,361	4,381	5,349	3,397	4,077	4,460	2,169	5.30
Race of Householder								
White	4,322	4,433	5,481	3,250	4,150	4,903	2,667	3.87
Black	3,514	3,565	4,486	2,790	2,457	3,250	Q	7.37
Other	3,694	3,790	5,119	3,210	Q	Q	Q	10.38
Householder of Hispanic Descent								
Yes	3,320	3,461	5,178	2,442	Q	Q	Q	8.90
No	4,255	4,332	5,366	3,252	3,978	4,857	2,845	3.76

NC No cases in sample.
Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.
1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Table 51. U.S. Average Annual Cooling Degree-Days, January 1987 Through December 1987

Household Characteristics	Number of Households (millions)			Annual Cooling Degree-Days			RSE Row Factors
	Total	Main Heating Fuel		Total	Main Heating Fuel		
		Electricity	Other/None		Electricity	Other/None	
RSE Column Factors:	0.859	2.411	1.025	0.602	1.283	0.610	
Total Households	90.5	17.9	72.6	1,368	1,837	1,253	2.75
Census Region and Division							
Northeast	19.0	2.1	17.0	828	815	829	4.56
New England	4.3	.4	3.9	537	540	537	7.90
Middle Atlantic	14.8	1.7	13.1	912	883	916	4.15
Midwest	22.3	1.4	20.8	1,041	1,119	1,036	3.90
East North Central	15.9	1.0	14.8	984	1,052	979	5.00
West North Central	6.4	.4	6.0	1,184	1,292	1,177	4.86
South	30.9	10.6	20.3	2,141	2,389	2,013	4.56
South Atlantic	15.6	5.8	9.8	2,108	2,543	1,850	6.44
East South Central	6.1	2.2	3.9	1,845	1,784	1,879	6.48
West South Central	9.2	2.6	6.7	2,393	2,560	2,329	6.62
West	18.3	3.8	14.5	1,024	1,144	992	5.66
Mountain	4.4	.7	3.7	1,579	3,204	1,254	7.84
Pacific	13.9	3.1	10.8	846	649	902	6.45
Air Conditioning							
Yes	57.6	14.4	43.2	1,582	2,068	1,419	3.13
Central Unit	30.7	10.7	20.0	1,756	2,182	1,528	4.04
Electric	30.1	10.7	19.4	1,763	2,182	1,533	3.99
Individual Room Units	26.9	3.8	23.2	1,383	1,743	1,325	4.62
One Unit	18.4	2.8	15.5	1,316	1,628	1,260	5.36
Two or More Units	8.6	.9	7.6	1,527	2,101	1,459	6.37
No	32.9	3.5	29.4	995	884	1,008	5.05
Households with Electric A/C	57.0	14.4	42.6	1,583	2,068	1,419	3.14
Housing Structure by Status of Unit							
Single-Family Detached	35.0	7.1	27.9	1,640	2,099	1,523	3.93
Owned	31.6	6.6	25.0	1,617	2,116	1,485	4.13
Rented	3.5	.5	3.0	1,843	1,889	1,835	8.53
Single-Family Attached	3.8	1.4	2.5	1,426	1,822	1,208	14.15
Owned	2.7	1.0	1.8	1,315	1,761	1,075	13.52
Rented	1.1	.4	.7	1,700	1,962	1,546	20.83
Building of 2 to 4 Units	4.8	.8	3.9	1,475	2,394	1,279	10.33
Owned	1.2	Q	1.1	1,329	Q	1,114	17.84
Rented	3.6	.7	2.8	1,524	2,223	1,344	11.39
Building of 5 or More Units	10.3	4.4	5.9	1,529	2,070	1,125	8.93
Owned	.8	.4	.4	1,099	Q	1,030	23.44
Rented	9.4	4.0	5.5	1,567	2,167	1,132	9.32
Mobile Home	3.1	.7	2.4	1,487	1,840	1,377	11.64
Owned	2.7	.7	2.0	1,419	1,777	1,297	12.87
Rented	.5	Q	.4	1,877	Q	1,777	23.59
Year of Construction							
1939 or Before	10.0	.7	9.3	1,277	1,663	1,248	7.07
1940 to 1949	4.6	.5	4.1	1,583	2,315	1,492	7.82
1950 to 1959	8.1	.9	7.3	1,594	2,209	1,523	6.38
1960 to 1969	11.3	1.9	9.4	1,642	1,959	1,578	6.39
1970 to 1974	6.9	1.9	4.9	1,481	2,019	1,270	7.63
1975 to 1979	7.8	3.8	4.0	1,709	1,984	1,447	7.85
1980 to 1984	5.5	2.7	2.7	1,838	2,271	1,404	9.48
1985 or After	3.0	2.0	1.0	1,790	2,120	1,117	14.66
Status of Unit							
Owned	39.0	8.7	30.2	1,562	2,023	1,429	3.95
Rented	18.1	5.7	12.4	1,628	2,138	1,393	6.12

See footnotes at end of table.

Table 51. U.S. Average Annual Cooling Degree-Days, January 1987 Through December 1987 (Continued)

Household Characteristics	Number of Households (millions)			Annual Cooling Degree-Days			RSE Row Factors
	Total	Main Heating Fuel		Total	Main Heating Fuel		
		Electricity	Other/None		Electricity	Other/None	
RSE Column Factors:	0.859	2.411	1.025	0.602	1.283	0.610	
1987 Family Income							
Less than $5,000	2.9	0.8	2.1	1,783	2,168	1,632	3.68
$5,000 to $9,999	5.8	1.3	4.5	1,614	1,825	1,555	7.01
$10,000 to $14,999	7.1	1.5	5.6	1,647	2,109	1,522	5.67
$15,000 to $19,999	5.5	1.4	4.0	1,630	2,216	1,423	8.05
$20,000 to $24,999	5.5	1.4	4.1	1,566	2,091	1,384	7.02
$25,000 to $34,999	10.9	3.0	7.9	1,581	2,071	1,395	5.01
$35,000 or $49,999	9.6	2.6	7.0	1,582	2,165	1,361	5.55
$50,000 or More	9.7	2.3	7.4	1,446	1,921	1,295	6.34
Below 100 Percent of Poverty Line	5.3	1.4	3.9	1,824	2,041	1,747	7.20
Below 125 Percent of Poverty Line	8.8	2.1	6.7	1,718	2,031	1,620	6.14
Age of Householder							
Under 25 Years	4.0	1.6	2.4	1,755	2,233	1,432	9.23
25 to 34 Years	13.6	3.9	9.7	1,605	2,078	1,412	4.85
35 to 44 Years	11.7	3.5	8.2	1,615	2,128	1,398	4.63
45 to 59 Years	12.1	2.7	9.3	1,588	2,001	1,469	4.63
60 Years and Over	15.7	2.7	13.0	1,492	1,944	1,399	5.84
Race of Householder							
White	49.5	13.0	36.5	1,542	2,053	1,360	3.33
Black	6.2	1.2	5.1	1,936	2,233	1,867	7.03
Other	1.3	.3	1.1	1,456	2,057	1,314	12.97
Householder of Hispanic Descent							
Yes	2.8	.7	2.1	2,007	2,717	1,758	10.13
No	54.3	13.7	40.6	1,562	2,034	1,402	3.19

Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

1 An estimated 0.9 million (1.0 percent) homes have both a central air conditioner and one or more window or wall units. These homes are not counted here. They are counted under "Central Unit."

Notes: • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Appendix A

How the Survey Was Conducted

Appendix A

How the Survey Was Conducted

Introduction

The Residential Energy Consumption Survey (RECS) was designed by the Energy Information Administration (EIA) to provide information concerning energy consumption within the residential sector. The RECS was conducted in two major parts: the Household Survey and the Fuel Supplier Survey. The Household Survey collected information concerning the housing unit through personal interviews with a representative national sample of households. In the Fuel Supplier Survey, data concerning actual energy consumption are obtained from billing records maintained by the household's fuel suppliers. These data are collected via mailed questionnaires to all the suppliers for the households in the Household Survey. Copies of the data collection forms for the Household Survey and the adjunct Rental Agent Survey are reproduced in Appendix D, "Survey Forms."

This report is based on the results from the Household Survey. Two later reports, *Household Energy Consumption and Expenditures 1987, Part 1: National Data* and *Part 2: Regional Data* will present the results of the Fuel Supplier Survey.

This appendix contains sections providing detailed information for the Sample Design, Household Survey and its adjunct Rental Agent Survey, Fuel Supplier Survey, and Supplemental Data collection for the Family Support Administration.

Sample Design

The universe for the RECS includes all housing units occupied as the primary residence in the 50 States and the District of Columbia. The sample of households used as the basis for the 1987 estimates was selected by using a probability sampling design developed especially for the Residential Energy Consumption Survey. The sample design was used for the first time for the 1980 RECS and was revised prior to the 1984 survey.

To accommodate all objectives of the RECS, including provisions for a longitudinal feature of the sample of housing units, the sample for the 1984 RECS was divided into two parts. One half of the 1984 sample of housing units was selected using the original 1980 sample design. The second half was selected using the revised 1984 design. The revised design was used for the complete sample for the 1987 RECS.

Multistage Area Probability Sample

In both the original and revised sample designs, the total land area of the 50 States and District of Columbia was divided into approximately 1,800 Primary Sample Units (PSU's) on the basis of Metropolitan Statistical Areas (MSA's), county and independent city boundary lines, and population characteristics.[5]

Specific objectives of the 1984 sample revisions were to update the information for U.S. counties used in sample selection, to maximize the overlap of specific PSU's selected in 1980 and 1984, and to minimize the restructuring of the sample within PSU's that continued in the revised design. The 1980 design included a requirement for a minimum level of precision of estimates for the 9 geographically defined Census divisions and the 10 Federal regions; the requirement for Census divisions was retained for the 1984 design, but the requirement for Federal regions was dropped. In all other respects, the design of sample revisions was based on a continuation of the general plan used for the 1980, 1981, and 1982 RECS.

[5]Boundary definitions for counties, independent cities, and equivalent units were generally those used by the Census of Population and Housing, 1970 and 1980, for the original and revised designs, respectively. There were 3,141 such units in the 1970 Census and 3,135 in the 1980 Census. Prior to 1983, MSA's were referred to as Standard Metropolitan Statistical Areas. The number of PSU's created for the 1980 and 1984 RECS sample designs were, respectively, 1,782 and 1,799. Additional detail on RECS sample design can be found in "The 1987 RECS Sample Design Procedures Manual," prepared by the Response Analysis Corporation.

Table A1. Sources of Data for 1987 RECS Sample Design

Data Components	Source of Data Used in 1980 Design	Source of New Data Used in 1984 Revisions
Population estimates for counties and equivalent units	July 1978 estimates of the Bureau of the Census	1980 Census of Population
Metropolitan statistical area (MSA) definitions	Lists published by Office of Management and Budget (OMB). Current as of early 1980, with some modifications based on estimates of population changes	OMB definitions published June 27, 1983
Principal home heating fuel	1970 Census of Housing	1980 Census of Housing

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1987 Residential Energy Consumption Survey.

Three principal sources of information were used to update the data base used for sample revisions: population estimates, metropolitan statistical area definitions, and principal heating fuel (Table A1).

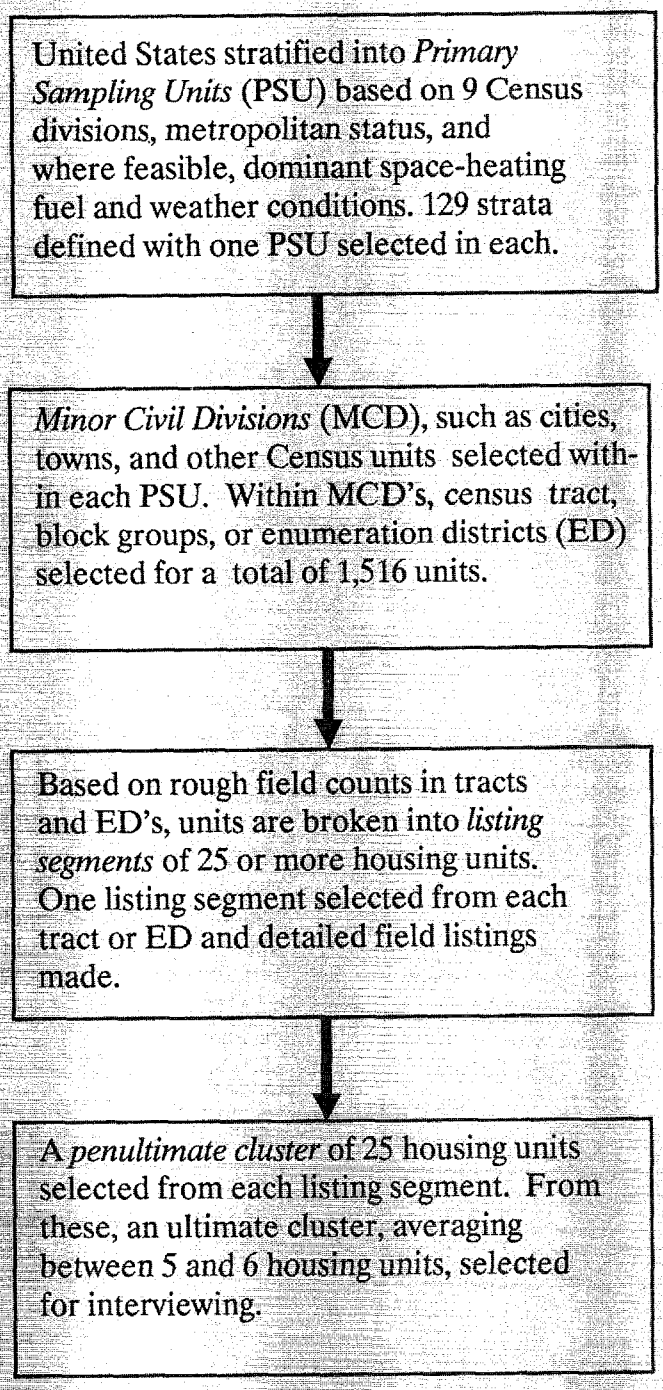
Stratification of PSU's in both the original and revised designs was based on the nine geographically defined Census divisions, metropolitan or nonmetropolitan definitions of PSU's, and to the extent feasible on dominant space-heating fuel and weather conditions. PSU's in the original design were grouped into 131 strata and in the revised design into 129 strata (Figure A1).

Some PSU's comprising all or part of large metropolitan areas were large enough in population to be a stratum by themselves; PSU's of this type are called Self-Representing (SR) because the sample from each PSU represents only that PSU. In other strata, one PSU was selected from among two or more PSU's in the stratum. Each of the PSU's selected from these strata is called Non-Self-Representing (NSR) because each PSU also represents the nonselected PSU's in its stratum. The revised design included 129 strata, of which 32 were SR PSU's and 97 were NSR.

Although both PSU's and strata were often defined somewhat differently in the two designs, the specific procedures used to make probability selections of PSU's for the revised design produced a high degree

Single-family attached housing units are examples of housing structures included in the Residential Energy Consumption Survey.

Figure A1. Multistage Area Probability Sample Activities



Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1987 Residential Energy Consumption Survey.

of overlap in the actual PSU's selected. Of the 129 PSU's in the revised design, 111 continued in the sample from the original design and 18 were newly selected.

A number of intermediate probability sampling stages preceded the final selection of RECS households in the 1987 sample.

- *Minor Civil Divisions (MCD)* such as cities, towns, and other Census units were selected within each PSU. Within the MCD's, census tracts, block groups, or enumeration districts (ED's) were selected. In the RECS design, 1,516 units are selected at this secondary level (tracts or ED's). These tracts and ED's continue in the RECS sample for a number of surveys. Rough field counts in tracts and ED's form the basis for selection of listing segments of 25 or more housing units, with well-defined geographic boundaries.
- A *listing segment* is selected from each tract or ED. Detailed field listings are created for selected segments by field workers who visit the area and identify each housing unit by street address, apartment number, or other obvious features.
- A *penultimate cluster* of 25 housing units is selected from each *listing segment*. The *ultimate cluster* to be contacted for interviews (averaging about 5 housing units for the 1987 RECS) is systematically selected from the cluster, and these housing units constitute the assignments given to interviewers.

Longitudinal Sample Design

A plan for rotation of sample units from an earlier RECS, first used in the 1982 RECS, was continued in 1987. The primary objective of this rotation plan was to observe changes in a sample of the same housing units over the period between two RECS data-collection cycles. To accomplish this objective in an efficient way and to set the stage for continuity in the RECS series, systematic random procedures were used to divide the total set of 1,516 tracts and ED's into four subsamples, designated in Table A2 as C, D, E, and F.

In the 1987 RECS, Groups C and D were the returning rotation groups in which procedures were designed to interview a sample of the same housing units that had been in the sample in the preceding 1984 RECS. This half of the sample had used the revised design for the 1984 RECS.

Groups E and F constitute the new rotation groups in which housing units were included in the RECS sample for the first time in 1987. Selection of housing units in the new rotation groups was based on the revised sample design used for the first time for this half of the 1987 RECS.

Procedures for updating the sample for new construction and for other changes in the housing unit stock were incorporated in sampling operations so that each rotation group, as well as the total RECS sample, is a probability sample of the population covered by the survey.

Returning Rotation Groups C and D

The general plan for these sample units (758 of the total of 1,516) was to conduct interviews in the same housing units that had been contacted 3 years earlier--including housing units that had been vacant, as well as noninterviews (refusals, not-at-homes, etc.), and completed units--plus a supplemental sample of housing units in sample clusters believed to include large proportions of low-income households.

Before contacting households for the 1987 RECS, interviewers made visits to sample segments to check 1984 housing unit listings for missed units and to update listings for new construction, demolition, and conversion of structures from one use to another. Newly constructed or converted units, and those missed in the 1984 listings, were sampled at the 1987 RECS sampling rate.

Table A2. Overview of RECS Sample Operations

Rotation Group	1982	1984	1987	1990
C	R	S[a]	R	N
D	R	N[a]	R	S
E	S	R	N[a]	R
F	N	R	S[a]	R

[a] Revised sample used for the first time for these rotation groups; new tracts/ED's were selected in sample units that did not continue from the original sample.

R = Housing units return from preceding survey.
S = Selected housing units from the same penultimate clusters as had been used in the preceding survey.
N = Selected new listing segments.

Rotation Groups E and F

The 758 sample units (at the census tract or ED level) in these rotation groups included 615 that continued in the sample from the original design and 143 newly selected units. In the 143 newly selected units, up-to-date field counts and detailed listings of housing units formed the basis for selection of a listing segment and a cluster of 25 housing units from the listing segment.

In the 615 tracts and ED's that continued in the sample, the first step was to perform a new construction update procedure based on a canvass, primarily by telephone, of local sources of information (such as building-permit-issuing agencies, zoning boards, and tax offices). The objective was to determine whether significant new construction--defined as groups of 25 or more housing units--had occurred within the tracts or ED's since 1982. In the canvass, significant new construction was found in census tracts and ED's in approximately 205 of the 615 units. New field counts were made and new segments were selected based on the new measures of size.

In census tracts and ED's in which significant new construction (clusters of 25 or more new housing units) was not found, procedures diverged in Rotation Groups E and F. In Rotation Group F, 1984 RECS housing unit listings were checked and updated (for such things as missed units, new construction) before the start of field contacts for interviews. This step in Rotation Group F was identical to the listing checks carried out for Rotation Groups C and D. However, housing units for the 1987 RECS sample were selected from among those *not* selected in the earlier RECS. In Rotation Group E, a new listing segment was selected for the 1987 RECS.

Supplemental Sample

A feature of the 1987 survey was a supplemental sample of households designed to be merged with the main RECS sample and meet special analytical needs of the Office of Family Assistance, Family Support Administration (FSA). The supplemental sample comprised some 1,258 (17.5 percent) of the total sample of 7,183 occupied housing units.

The plan for the supplemental sample included procedures to "oversample" households below poverty level, particularly those using electricity, fuel oil, or kerosene as the main space-heating fuel. The number of households in the population using these fuels (as the main space-heating fuel) is smaller than the number using natural gas. Consequently, the number of sample households (in the main sample) using electricity, fuel oil, or kerosene is smaller than the number using natural gas. The analytical needs of FSA require an increased sample size for households below poverty level, particularly those using electricity, fuel oil, or kerosene as the main space-heating fuel. Thus, procedures were designed to increase the sample size for households of these types to the extent feasible.

As a first step in selection of the supplemental sample, interviewers were instructed to rate the general income level of households in the listing segment based on their observations of housing units in the segment and their general knowledge of the area (after completing their listing of housing units in the segment). Interviewers placed each listing segment into one of four groups: Highest 25 percent (well-off or wealthy), upper middle, lower middle, or lowest 25 percent (poor or near-poor). Whenever possible, listing segments that were rated on income were also rated on main home heating fuel in the sample segment.

The actual selection of supplemental units was accomplished by increasing sampling rates in listing segments that interviewers judged to include large proportions of poor or near-poor households and, in some cases, lower-middle income segments were included. Relative sampling rates were established for groups of housing units as shown in Table A3.

An additional aspect of the selection of supplemental units was a ceiling on the actual sampling rate that

Table A3. Relative Sampling Rates Based on Income Rating and Main Home-Heating Fuels

Main Home-Heating Fuel	Income Rating		
	Upper-Middle or Highest	Lower-Middle	Poor or Near-Poor
Electricity or Fuel Oil/Kerosene	1.0	1.3	2.5
All Other Fuels	1.0	1.0	2.2

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1987 Residential Energy Consumption Survey.

applied to any given sample unit. The ceiling was equal to the highest overall sampling rate used in any Census division in the 1987 RECS sample. Thus, in some cases the relative sampling rates shown in Table A3 were adjusted downward so that the overall sampling rate for housing units did not exceed the ceiling rate for the 1987 RECS.

A relative sampling rate of 1.0 in Table A3 means that the overall sampling rate applied to households in a sample cluster is the rate established for the main sample. Relative sampling rates higher than 1.0 were used for households in the "oversampled" groups shown in Table A3. (For example, a relative sampling rate of 1.3 means that households in the group were sampled at a rate 30 percent higher than the rate established for the main sample.) An estimated 1,258 additional households (that is, households selected as a result of the supplemental sampling process) were selected in 510 segments, and 1,108 interviews were completed in these households (including both personal and mailed questionnaires).[6]

The outcome of the oversampling procedure is summarized in Table A4. Some 30.7 percent of completed interviews in the supplemental sample were with households below the poverty level, compared with 13.0 percent of completed interviews in the main sample. The corresponding figures for 125 percent of poverty level were 43.3 percent and 20.4 percent of supplemental sample and main sample interviews, respectively.

Household Survey

The original sample consisted of 8,232 units, of which some 225 either were not used for dwelling purposes or were not habitable. Of the 8,007 habitable housing units, 824 were ineligible for this study due to a current vacancy or seasonal occupancy (the units were not the primary residence for the occupants). Personal interviews were conducted at 5,856 of the 7,183 eligible units, for a response rate of 81.5 percent. Subsequently, mail questionnaires were sent to 1,153 of the 1,327 households that had not participated in personal interviews. Completed questionnaires were returned by 373 of these households, or 32.4 percent of those mailed. Of the total eligible households, responses were received from 86.7 percent (or 6,229 households).

Approximately three-quarters of the personal interviews were completed in September and October 1987; 94 percent were completed by the end of December 1987. Interviewing continued until February 1988 in a

Table A4. Poverty Status in 1987 and Home Heating Fuel in 1987 RECS Main and Supplemental Samples[a]

Poverty Status and Home Heating Fuel	Basic Sample Households[a]		Supplemental Sample Households[a]	
	Number	Percent	Number	Percent
All Households	5,121	100.0	1,108	100.0
Below Poverty Level	665	13.0	340	30.7
Electricity	108	2.1	59	5.3
Fuel Oil/Kerosene	75	1.5	46	4.2
Other Fuels	482	9.4	235	21.2
Not Below Poverty Level	4,456	87.0	768	69.3
Below 125 Percent of Poverty Level	1,043	20.4	480	43.3
Electricity	159	3.1	81	7.3
Fuel Oil/Kerosene	135	2.7	70	6.3
Other Fuels	749	14.6	329	29.7
Not Below 125 Percent of Poverty Level	4,078	79.6	628	56.7

[a] Households are classified according to the poverty status of the family or nonfamily householder. The actual reference period for income reported in the 1987 RECS was the 12 months preceding the RECS interview; the interview date for most households was within the final calendar quarter of 1987.

Notes: • Table shows unweighted numbers and percentages of completed units. • See "Glossary" for the definition of poverty.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1987 Residential Energy Consumption Survey.

[6]The estimated numbers of basic sample interviews were derived by multiplying the number of household units in each ultimate cluster by the ratio: Sampling rate for basic sample / Sampling rate for total (basic + supplemental) sample. For example, the ratio above for a sample segment rated "lower-middle" for income level and "electricity or fuel oil/kerosene" as main home heating fuel, in general, was equal to 1/1.3. The number of units in the supplemental sample was then equal to the total number of units in the ultimate cluster minus the estimated number in the basic sample.

few sample locations in which low response rates were experienced. Most of the 373 completed mail questionnaires were received in February and March 1988. In keeping with past practice in this series of surveys, November was regarded as the rough midpoint for data-collection activity. Thus, November 1987 was the date for determining the independent estimates of the size of the universe of households used in the ratio estimation of survey results.

The Interview

The average personal interview lasted 56 minutes, with 85 percent of the interviews lasting between 30 and 75 minutes. The interview with the householder (or spouse) covered structural features of the house related to energy, such as insulation, doors, and windows; the heating and cooling systems, with the fuels used in these systems; use of wood; energy conservation improvements; household appliances; household vehicles; receipt of government assistance for the cost of heating; and demographic data on household members. The questionnaire is reproduced in Appendix D, "Survey Forms."

At the end of the interview, respondents were asked to sign a waiver authorizing the interviewing contractor to obtain records of energy consumption from the housing unit's energy supplier(s). At this time, the interviewer also measured the dimensions of the housing unit, using a retractable 50-foot metal tape measure, and recorded the dimensions on a rough-drawn diagram of the floor plan. (See Appendix B, "Estimates of the Size of U.S. Housing Units in Square Feet," for further details on the measurement of housing units.)

The Interviewers

A total of 293 interviewers completed one or more personal interviews for this study. As shown in Table A5, 131 interviewers (45 percent) had completed interviews on a prior RECS. The remainder were conducting their first RECS, but had interviewing experience either with other survey research organizations, or with the U.S. Bureau of the Census.

Two-day regional training meetings were held in 5 locations around the country in August 1987. These meetings were attended by 248 of the interviewers (85 percent). Each session was led by a group of trainers who had attended a 2-day workshop in Princeton, New Jersey and were monitored by Department of Energy staff. The 2-day training session for interviewers covered general interviewing techniques, background of the Residential Energy Consumption Surveys, a question by question review of the household questionnaire, ways to measure the respondents' homes, the accurate recording of the Vehicle Identification Number (VIN), and administrative requirements. The 45 interviewers who were not able to attend a regional training meeting were trained either on the telephone by one of the trainers or in person by a field supervisor.

All interviewers were required to complete a practice interview and quiz on the questionnaire and sampling procedures. These materials were reviewed by the contractor's central office staff. The basic training document for both the regional meetings and other training was a 132-page manual, *Instructions for Interviewers, 1987 Residential Energy Consumption Survey.*

Interviewers were paid on an hourly basis for their work on RECS, including time for home study, attendance at training sessions, review of completed interviews, actual interviewing time, and travel time to and from training sessions and sample clusters. Interviewers were also reimbursed at standard mileage rates for use of personal vehicles and other travel expenses. Interviewers working in locations believed to present a hazard to their safety were compensated for use of an escort. Each interviewer conducted an average of 20 interviews. Nineteen interviewers each completed fewer than six interviews; the average for this group of 19 interviewers was 3.5 completed interviews. Seven interviewers completed 50 or more interviews; the average for this group of interviewers was 61.1 completed

Table A5. Experience and Training of 1987 RECS Interviewers

Experience on Prior RECS	Training for This RECS[a]	Number of Interviewers
Yes	Regional training meeting	116
Yes	Other training	15
No	Regional training meeting	132
No	Other training	30
		293

[a] All interviewers completed a practice interview and quiz.
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1987 Residential Energy Consumption Survey.

interviews. Twenty percent of the personal interviews were verified by telephone or mail to ensure that interviews were conducted as intended.

Rental-Agent Survey

The Rental-Agent Survey is an adjunct to the Household Survey to verify information from household respondents in rental units on fuels and main heating equipment used. Telephone interviews were carried out with rental agents and landlords of RECS households living in multiunit dwellings whose occupants did not pay directly to utility companies or fuel suppliers for one or more household fuels.

The interviews with rental agents or their representatives were conducted in the spring of 1988. Altogether, 303 rental agents were interviewed. These interviews covered 856 households in 401 buildings. The 856 households were 89.1 percent of the total of 961 households living in multiunit buildings who had one or more fuels included in their rent.

Editing Completed Questionnaires

Completed interviews were mailed by the interviewers to the survey contractor headquarters. The first step in the review process was to verify the accuracy of the basic identifying information. Next, the questionnaires were manually reviewed by two editors to ensure completeness and the logical consistency of selected patterns of responses, and to prepare the questionnaires for translation into machine-readable form. Keypunching of the data was 100 percent verified. Finally, the data were machine edited to further ensure completeness, logical consistency, and the legitimacy of coded values. The computer editing utilized a proprietary software package called EDITOR II.

The contractor attempted to resolve inconsistencies or ambiguities in the data internally, by reference to other parts of the questionnaire. When these efforts failed to resolve an important problem, particularly those involving heating fuels or heating equipment and/or relationships between questionnaire responses, the contractor made a followup contact with the rental agent or a telephone contact with a member of the household in question. Telephone contacts with a household member were completed with approximately 1 percent of households during the course of data editing for this survey.

Comparisons were made between rental agents' and household respondents' reports on main heating fuel, main heating equipment, supplemental heating fuel, water-heating fuel, and air-conditioning fuel. Each discrepancy was individually examined. Changes were made in the household record whenever it was judged that the rental agent was more knowledgeable than the household respondent on specific fuels and/or equipment.

Editors generally followed the guideline that the rental agent was the more knowledgeable person when the landlord paid for the fuel and the fuel was used as the main home-heating, water-heating, or air-conditioning fuel, or when the rental agent's description of the main heating equipment differed from that of the household respondent. The respondent was generally considered the more knowledgeable person for the definition of supplemental heating fuel, as the supplemental heating fuel was more likely to be under the household's control, even in multi-unit dwellings. The changes in the household records that resulted from these inquiries are given in Table A6.

Minimizing Nonresponse

In an effort to maximize the validity of the survey data, a multiwave, multicontact approach was employed. Before the initial contacts, a letter was sent to each household from the Administrator of the EIA, briefly

Table A6. Changes Made in Household Records on the Basis of Information from Rental Agents

Type of Changes Made in Household Records	Fuel Paid by Rental Agent	Number with Any Changes Made	Percentage with Changes Made
All Households in Rental-Agent Survey	856	358	42
Main Heating Fuel	671	62	9
Main Heating Equipment	[a]	206	31
Supplementary Heating Fuel	[a]	29	4
Water-Heating Fuel	811	120	15
Air-Conditioning Fuel	154	61	40

[a] For the 671 households whose rental agent paid for the main heating fuel, responses of rental agents and household respondents were compared.
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1987 Residential Energy Consumption Survey.

describing the purposes and stressing the importance of the survey. Beginning in September 1987, interviewers made up to seven or more callbacks at different times of the day throughout the week in an effort to minimize the number of uncontacted households. The interviewers also queried neighbors regarding the most opportune times to contact the prospective respondent. By the end of the first wave, 225 addresses were found to be nonresidential and an additional 760 were found to be ineligible (Table A7). Some 5,075 personal interviews were completed, leaving 2,172 nonrespondents in this wave.

A second wave was initiated in an effort to contact households that were not available during the first wave and to attempt to convince selected first-wave refusals to reconsider. A new set of letters preceded the renewed effort and, in most cases, the sampled housing units were assigned to a different interviewer. Again, up to seven or more attempts were made to contact the prospective respondents. At the end of this wave, an additional 60 addresses were found to be ineligible. As a result of the second wave, an additional 717 interviews were completed, leaving 1,395 nonrespondents.

A third wave was initiated in an effort to reach nonrespondents in a number of locations that had low completion rates. Four addresses were found to be ineligible and an additional 64 personal interviews were completed in the third wave.

In a final attempt to reduce nonresponse, an abbreviated version of the questionnaire (adapted for self-administration) was mailed to most of the remaining nonrespondents. As a result of this effort, 373 additional

Table A7. Interviews Completed by Stage

	Personal Interviews			Status After Third Wave	Mail Questionnaire	Final Status
	First Wave	Second Wave	Third Wave			
Total Listed Units	**8,232**	**2,172**	**1,395**	**8,232**	**1,327**	**8,232**
Nonhousing Units						
Business, Other	58	0	0	58	--	58
Not Habitable	92	0	0	92	--	92
Nonhousing Unit	75	0	0	75	--	75
Subtotal	**225**			**225**		**225**
Housing Units	8,007	2,172	1,395	8,007	1,327	8,007
Ineligible Units						
Vacant	646	53	4	703	--	703
Seasonal Vacant	114	7	0	121	--	121
Subtotal	**760**	**60**	**4**	**824**		**824**
Eligible Units	7,247	2,112	1,391	7,183	1,327	7,183
Not Completed--Personal Interview						
No One Home	715	361	65	220	--	220
Eligible Respondent Not Home	78	25	6	32	--	32
Refused	1,231	614	58	[a] 1,004	--	1,004
Illness	17	5	0	9	--	9
Language Barrier	28	7	0	14	--	14
Wrong Respondent or Unit	5	0	0	3	--	3
Not Contacted[b]	50	377	1,198	21	--	21
Other	48	6	0	24	--	24
Subtotal	**2,172**	**1,395**	**1,327**	**1,327**		**1,327**
Not Completed--Mail Questionnaire						
Unusable Address	--	--	--	--	41	41
Post Master Return	--	--	--	--	85	85
Returned Blank	--	--	--	--	18	18
Returned Unusable	--	--	--	--	1	1
Not Returned	--	--	--	--	676	676
Other Not Mailed	--	--	--	--	133	133
Subtotal					**954**	**954**
Total Interviews Completed	**5,075**	**717**	**64**	**5,856**	**373**	**6,229**

[a] A household that refused an interview during any one of the three waves was classified as a "refusal" for the final status even though no one was at home in the second or third wave.

[b] Includes households that moved after initial contact.

-- Data not applicable.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1987 Residential Energy Consumption Survey.

households responded. After three waves of personal interview attempts and the mailed questionnaire, 954 households or 13.3 percent of all eligible housing units had not responded.

These efforts were successful in accomplishing the following improvements in response:

- Approximately 82 percent of the households were contacted and agreed to be interviewed personally. An additional 5 percent of the sample households completed and returned mailed questionnaires.
- Of the 6,229 responses, 81.5 percent were obtained during the first wave of contacts; 11.5 percent were obtained during the second wave; and 1.0 percent resulted from third-wave contacts. Some 6.0 percent were responses to the mailed questionnaire.
- Of all households that participated in the personal interviews, 31.8 percent required only one visit in the first wave and 71.0 percent were completed with no more than two first wave callbacks.
- A total of 366 personal interviews were completed in the second and third waves with respondents who had previously refused to participate, representing 6.3 percent of all completed personal interviews. In addition, of the 373 mailed questionnaires that were completed and returned, 286 were from households that previously refused to participate.

Response Rates and Household Characteristics

This section of the report compares various response and nonresponse rates across Census region, location type, and structure type. These rates are reported in Table A8.

Several patterns are clear from Table A8. First, personal interviews enjoyed the most success in the South Region (84.0 percent), in non-MSA areas (85.6 percent), and among residents of single family or mobile homes (82.3 percent). Conversely, the interviewers had their lowest success rates in the Northeast Region (79.0 percent), metropolitan areas (central city) (79.8 percent), and in buildings with five or more residential units (79.4 percent). When looking at the categories comprising these groupings it is important to remember that their characteristics are not necessarily independent. Rather, they are very likely to overlap; for example, large apartment buildings are concentrated in metropolitan areas.

The total response-rate patterns with regard to highest and lowest rates generally are not affected by adding the mailed-questionnaire responses; however, the overall range from highest to lowest decreases by one to

Table A8. Response Rates for Region, Location, Type of Structure, and Rotation Groups

(Percentage of Eligible Housing Units)

Characteristic	Response Rates			Personal Interview Nonresponse Rates	
	Personal Interview	Mail Questionnaire	Total Response	Refuse	Unable to Contact
Total	81.5	5.2	86.7	14.0	4.5
Census Region					
Northeast	79.0	5.7	84.7	16.3	4.7
Midwest	80.7	5.9	86.6	15.1	4.2
South	84.0	4.2	88.2	11.7	4.3
West	81.8	5.1	86.9	13.3	4.9
Location Type					
MSA--Central City	79.8	5.2	85.0	14.4	5.8
MSA--Outside Central City	80.4	6.0	86.4	15.6	4.0
Non-MSA	85.6	4.1	89.7	10.9	3.5
Structure Type					
Single-Family or Mobile Home	82.3	5.4	87.7	14.5	3.2
Buildings with Two to Four Units	80.1	3.9	84.0	12.4	7.5
Buildings with Five or More Units	79.4	5.4	84.8	13.0	7.6
Sample Rotation Group					
Returning Rotation Group	79.5	5.2	84.7	16.3	4.2
New Rotation Group	83.5	5.1	88.6	11.7	4.8

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1987 Residential Energy Consumption Survey.

two percentage points. The highest refusal rates correspond to the lowest success rates for the personal interviews. The lowest refusal-rate categories generally match the highest personal-interview success groups.

Overall response rates are approximately four percentage points higher for new rotation groups (households not contacted for an earlier RECS) than for returning rotation groups. Conversely, refusal rates are approximately four percentage points higher for the returning rotation groups that had been contacted in an earlier RECS or companion survey, Residential Transportation Energy Consumption Survey (RTECS). These findings replicate results for earlier RECS.

Survey Estimates

All the statistics published in this report are estimates of population values, such as the total number of households in the United States. These estimates are based on a randomly chosen subset of the entire population of households. The universe includes all households in the 50 States and the District of Columbia, including households on military installations. The definition of "households" is the same as that used by the U.S. Bureau of the Census. At the time of this RECS, November 1987, the universe was estimated to contain 90,537,000 households, based on the Current Population Survey (CPS) estimates of the population.

There are two major types of nonresponse--for an entire sampled household (unit nonresponse), or for a particular item of interest from a responding household (item nonresponse). The next two sections provide details on the procedures followed for each type of imputation.

Adjustments for Unit Nonresponse

Weight adjustment was the method used to reduce unit nonresponse bias in the survey statistics. Weights were calculated for each sample household. The household weight reflected the selection probability for that household and additional adjustments. These adjustments included correcting for potential biases arising from the failure to list all housing units in the sample area and to contact all sample housing units. Contacts were not successful with 13.3 percent of the eligible units.

The adjustment for these noninterviews was designed to spread the effects of nonresponse over the interviewed sample of households in the final cluster. The noninterview weight is equal to the number of households in the ultimate cluster (interviews plus noninterviews) divided by the number of interviews. When the weight computed in this way was greater than 2.0, however, that part of the noninterview adjustment that exceeded 2.0 was spread over the remaining ultimate clusters in the PSU.

The failure to list all housing units in the field-listing task is a common problem in surveys of this type. The result is an undercount of housing units in the sample area and, hence, an underestimate of the number of households in the universe. The undercount in the 1987 RECS is in the range of 8 to 10 percent. This problem is treated in two ways in the RECS. One treatment occurs during the interviewing process. The second treatment occurs in the estimation process. During the interviewing stage, unlisted housing units or households are discovered by querying the household where interviews are conducted to determine if other households are present in the unit. In addition, the interviewer is instructed to conduct an interview at all housing units contained in the geographical area between the interviewed household and the next listed address. This tactic reduces the number of missed households but does not completely eliminate the noncoverage problem.

The noncoverage problem is also treated by using ratio estimation to adjust selected estimates of households to official population values. Ratio adjustment took place in two stages for the 1987 RECS. The first stage adjustment was computed from information for PSU's in NSR strata only. A separate factor was created for each of 20 cells (four regions classified by five home heating-fuel categories). The implementation of this factor reduced somewhat the amount of variance caused by the sampling of PSU's. The first-stage adjustment for Cell "c" is given by:

$$R_{1c} = N_c / M_c$$

where N_c is the total number of households (1980 Census population) in Cell c for all PSU's in RECS NSR strata (including those PSU's not selected for RECS). M_c is an estimate of N_c obtained from the 1980 Census data for the NSR PSU's that were selected for the 1987 RECS. In particular, M_c is given by the sum (over all NSR PSU's selected for RECS) of the product of the PSU sampling weight and the number of households in Cell c (1980 Census population) for PSU.

For all observations in NSR PSU's, the households weights (adjusted for nonresponse) were multiplied by R_{1c} where c is the cell in which the observation falls.

The second-stage factor adjusted the weights (after the nonresponse adjustment and the first-stage adjustment) from the survey so that the sum of the weights in the 12 categories shown in Table A9 will equal the CPS estimates for the population in the 12 categories. The second-stage adjustment for Category k is given by:

$$R_{2k} = H_k / G_k$$

where H_k is the CPS estimate of the number of households in Category k, and G_k is the sum of the RECS households weights before the second-stage ratio adjustment (after nonresponse adjustment and the first-stage adjustment) over all households in Category k. H_k is based on a linear interpolation of values for each of the 12 cells between CPS estimates for March 1987 and March 1988.

For all observations, the households weights (adjusted for nonresponse and the first-stage adjustment) were multiplied by R_{2k} where k is the category in which the observation falls. This second-stage factor reduced both the between-PSU variance and the within-PSU variance.

The third stage in the weight adjustments was similar to the second stage. The only difference was that instead of the 12 categories used in the second stage, the following 3 categories were used:

One-person households, male householder,
One-person households, female householder,
All other households.

The purpose of this third stage was to reduce possible bias in the RECS sample due to undercoverage of one-person households, particularly those comprised of a single-male.

The fourth and final stage in the weight adjustments was exactly like the second stage. The final household weights will (for each of the categories in Table A9) sum to the control totals shown in that table.

Adjustments for Item Nonresponse

Item nonresponse occurs when respondents do not know the answer or refuse to answer a question, or when an interviewer does not ask a question or does not record an answer. Imputations were made for nonresponse on about two-thirds of the items for which some nonresponse occurs, including most items to be used for making national estimates. Items for which national estimates are made, but for which imputations were not made, include questions on the presence, type, and amount of attic and floor insulation; thermostat settings; and the presence of wall insulation. For these items, the number of missing cases was considered large enough so that the imputations would have introduced too many additional errors.

Hot-deck imputation was the method used most frequently. This procedure requires sorting the file of households by variables related to the missing item. A household is then selected that has the same value for the related variables, and this "donor" household supplies the value for the variable that is missing in the "donee" household.

Less frequently used imputation methods included regression estimates, random selection from the known values of a variable, and deductive and allocation procedures. Regression procedures were used to impute the total square footage of the housing unit when actual measurements were missing. Discussion of the regression procedure and other imputations involved in the square footage estimates is found in Appendix B, "Estimates of the Size of U.S. Housing Units in Square Feet."

The random selection procedure was used primarily to assign dates (month and/or year) when those responses were missing, and to impute for missing numbers that were conditional on other numbers (e.g., number of storm windows, conditional on total number of windows).

Deductive procedures were used primarily for missing information on fuels used for specific purposes and methods of payment for fuel uses. The amount of missing data on these items was generally quite small; other available information in the questionnaire, or from

Table A9. Population Estimates Used as Controls in Ratio Estimates

Census Region	Thousand Households			
	MSA--Central City	MSA--Outside Central City	Non-MSA	Total
Northeast	6,653	10,173	2,223	19,049
Midwest	6,700	9,112	6,447	22,259
South	9,426	12,710	8,769	30,905
West	6,868	8,607	2,849	18,324
Total United States	**29,647**	**40,602**	**20,288**	**90,537**

Note: See "Glossary" for definition of MSA and Non-MSA.
Source: Estimates derived from the March 1987 and March 1988 Current Population Surveys, U.S. Bureau of the Census.

related data sources (utility bills and rental agent survey), provided reasonably conclusive assignments for the missing data.

Allocation procedures involved the use of explicit rules to assign values in place of missing information on relationship to householder, and age and sex of persons in household, based on the configuration of known information on these variables for other household members.

The numbers of questionnaire items for which various types of imputation procedures were used are shown below.

Imputation Method	Number of Questionnaire Items
Not Imputed	150
Imputed	268
Hot-deck	116
Random	62
Deductive	59
Allocation	35
Total*	422

*Excludes 45 items for which missing values, if any, are determined by explicit editing rules in the initial stages of questionnaire editing.

Table A10 shows the most frequently imputed items, the number of cases requiring imputation, and the method used.

The amount of item imputations for the 373 mailed questionnaires was considerable since the mailed questionnaire contained only a small subset of questions from the household interview. For the mailed questionnaire, a modified hot-deck imputation method was used. A hot-deck matrix was created for both mailed questionnaire and personal-interview households using Census region, type of housing unit structure, space-heating fuel, hot-water fuel, and presence and type of air conditioning. Whenever possible, a donor personal-interview household was chosen for each mailed-questionnaire household from the same cell of the hot-deck matrix. For 95 percent of the mailed questionnaires, donors matched on all hot-deck variables.

Because each cell of the matrix usually contained several possible donors, a donor was chosen from the cell on the basis of how closely it matched the mailed-questionnaire household on a number of additional variables. These variables were: income, number of household members, number of household vehicles, age of householder, tenure, number of rooms, model year of newest vehicle, and household structure (married couple, other). Except for information on household vehicles, which was taken directly from the mailed questionnaire, the entire set of responses from the donor household was imputed to the mailed-questionnaire household. This means that all responses for mailed-questionnaire households are imputed except for weather data, fuel-consumption data acquired from the household's fuel suppliers, the geographic location of the mailed-questionnaire household, information on household vehicles, and those items in the hot-deck imputation process for which an exact match was obtained.

Fuel-Supplier Survey

The overall objective of the fuel-supplier survey was to provide data on which to estimate the annual fuel consumption and expenditures of sample households. Five utility fuels were covered in the annualization--electricity, natural gas, fuel oil, kerosene, and LPG.[7] For each of the fuels, the goal was to obtain complete consumption records from January 1, 1987 through December 31, 1988. The results from the Fuel-Supplier Survey will be published in late 1989 in 2 reports: *Household Energy Consumption and Expenditures 1987, Part I, National Data* and *Part 2, Regional Data.*

Toward the end of the household interview, each household reported for each use of the fuel whether or not the fuel was paid for by the household, included in rent, or paid another way. For the households that paid directly, the respondent was asked for the names, addresses, and telephone numbers of the fuel companies supplying the household; these respondents were also asked to sign a waiver, authorizing the contractor to collect consumption data from the suppliers.

[7]Households using LPG only for outdoor cooking grills were not included in the LPG data collection; LPG used by these households is excluded from consumption and expenditures estimates. Data on usage of wood fuel were reported by the household, since it was not practical to collect these data from suppliers as is done with the major home fuels. Unless otherwise noted, consumption of wood is not included in the tables for this report.

Table A10. Items Most Frequently Imputed

Imputed Item	Cases Imputed	Percentage of Total Sample[a] (5,856)	Method of Imputing	Question Number on Questionnaire
1987 Family Income	665	11	Hot-deck	109
Main Fuel Same as in November 1984	472	8	Hot-deck	9
Year House Was Built	454	8	Hot-deck	3
Availability of Natural Gas	354	7	Hot-deck	122
Roof or Ceiling Insulation Added Since September 1985	211	4	Hot-deck	60
Insulation Added Between House and Basement or Crawl Space Since September 1985	166	3	Hot-deck	66a
Lower Rent Due to Government Aid	162	3	Hot-deck	119
Storm Doors for Non-sliding Doors Added Since September 1985	135	2	Random	48b
Storm Windows Added Since September 1985	126	2	Random	52
Warm Air Forced Through Ducts	107	2	Hot-deck	14
Heating System Broken Last Winter	104	2	Hot-deck	25a
Basement or Crawl Space Heated	95	2	Hot-deck	170
Square Feet of Housing Unit	71	1	[b]	--
No Heat from Landlord Last Winter	65	1	Hot-deck	24a
Ran Out of Bulk Fuel Last Winter	64	1	Hot-deck	23a
Marital Status of Householder	64	1	Hot-deck	103
Utility Shut Off Fuel Last Winter	62	1	Hot-deck	22a
Month Caulking Was Added	60	1	Random	67e
Age of Householder	60	1	Allocation	96
Government Assistance in Paying Cooling Costs	57	1	Hot-deck	111b
Government Assistance for Other Energy Costs	57	1	Hot-deck	111c
Condominium or Cooperative	57	1	Hot-deck	116
Government Provided Other Energy Device	55	1	Hot-deck	110h
Government Assistance in Paying Heating Costs	55	1	Hot-deck	111a
Hot Water Equipment Heat Water for Other Units	52	1	Hot-deck	37
Age of Second Household Member	52	1	Allocation	96
Government Provided Furnace Tuneup	52	1	Hot-deck	110g
Month Storm Windows Were Added	51	1	Random	53
Caulking Added Since September 1985	51	1	Hot-deck	66e
Month Weather Stripping Was Added	51	1	Random	67f
Government Provided Furnace Repairs	51	1	Hot-deck	110f
Employment Status of Third Household Member	50	1	Hot-deck	96
Government Repaired Broken Windows or Doors	50	1	Hot-deck	110c

[a] Mailed questionnaires are not included in the percentage. To account for these, add five percentage points to the percentage points given.
[b] See Appendix B for details on the square-footage imputations.
-- Data not available.
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1987 Residential Energy Consumption Survey.

Altogether, the fuel-supplier survey included initial contact attempts with 1,025 companies. The number of companies in the survey supplying each fuel and the total number of households supplied are shown in Table A11.

Table A11. Companies in Fuel-Supplier Survey and Number of Households Supplied

Fuel Supplier	Number of Companies[a]	Number of Households with Companies Identified
Electricity	266	5,345
Natural Gas	138	3,069
Fuel Oil or Kerosene	440	636
Kerosene	72	98
LPG	205	440

[a] The total number of companies in the survey was 1,025--41 supplied both electricity and natural gas; 14 supplied fuel oil and LPG; 28 supplied fuel oil and kerosene; 3 supplied LPG and kerosene; and 5 supplied LPG, fuel oil, and kerosene.
Notes: • The fuel-oil figure excludes 24 households with suppliers unknown and 9 households whose estimates of fuel-oil quantities were based mainly on cash-and-carry purchases. • The kerosene figure excludes 7 households with suppliers unknown and 206 households whose estimates of kerosene quantities were cash-and-carry purchases. • The LPG figure excludes 9 households with suppliers unknown. • Households were asked for names of their "fuel oil or kerosene" suppliers. • For those households using both fuels and more than one supplier, it was not possible to determine which fuel was purchased from a given supplier until data were received.
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1987 Residential Energy Consumption Survey.

Data Collection Procedures

Data-collection procedures for electricity and natural gas companies included at least the following steps:

- An initial letter from the Deputy Administrator of the EIA, addressed to the president or other official in the company, outlining the general nature of the request for participation. Enclosures in the letter included a printed statement, "About the Residential Energy Consumption Survey," specimen copies of reporting and authorization forms, and a postage-paid postcard with a checklist of available publications and data tapes.
- A telephone contact to determine the name of the person to whose attention the survey materials should be sent.
- The mailing of survey materials to the person named as contact person.
- A followup-telephone contact a few days later to answer questions or discuss survey procedures as necessary.
- Completed forms or copies of records returned by mail.
- A letter from the survey contractor thanking the company for its effort.

The personal contacts established at an early point largely precluded mailings of materials to an inappropriate person and the delays that might develop from such mailings.

Procedures for fuel oil or kerosene and LPG dealers were the same as for electric and natural gas companies up through and including the mailing of survey materials to the company person named as the contact. These companies, however, most often had only one or two households for which information was to be supplied, and data collection was generally completed by telephone. A pretest of the procedure conducted earlier had indicated a somewhat greater likelihood that companies would respond by telephone than as a result of a request to complete and return the forms by mail.[8] Companies that chose to return the forms by mail, however, were not discouraged from doing so. After the company returned the information, additional contact with companies and households was sometimes required to identify the correct record in the company files.

Data-Collection Dates

The first set of advance letters was mailed to utility companies in late January 1988. The cutoff date for receipt of usable information was October 30, 1988.

Energy-Consumption Records

The fuel-supplier survey was conducted for households that paid their own fuel bills directly to the supplier and authorized access to their records. These limitations meant that imputations of fuel consumption were required for households without consumption records (their fuel bills were included in the rent) and for households that did not permit access to their records.

Households lacking consumption records because they do not pay fuel bills directly to fuel suppliers occur most frequently among users of natural gas and fuel oil (see Table A12). These households are 16.7 percent of users of natural gas and 24.3 percent of users of fuel oil.

The proportion of households that did not sign authorization forms (access to records denied) was in the range of 1 to 9 percent for the five fuels. Most households that signed authorization forms did so at the time of the personal interview or at the time of completing the mailed questionnaire. To maximize the number of households with records, however, a followup request was mailed to those who did not sign a form at the time of the personal interview. About 19 percent of this group returned signed forms in response to the mail request and, therefore, were included in the fuel-supplier survey.

Table A12 shows that factors affecting nonresponse are somewhat different for fuel oil, kerosene, and LPG than they are for electricity and natural gas. The most frequent reasons for nonresponse for households using fuel oil, kerosene, or LPG were that the company was unknown or not contacted and that the dealer could not identify the customer. A number of factors contribute to this nonresponse. First, many customers purchase fuel from a number of dealers on a cash and carry basis. Second, some customers use several different fuel suppliers and pay cash for deliveries. In both cases, few records are kept and efforts to get consumption records for households rarely are successful.

Refusal of companies to participate in the survey was not a significant factor.

[8]The test is described in *RECS Consumption Consumption and Expenditures - April 1980 Through March 1981, Part 1: National Data,* DOE/EIA-0321/1 (Washington, D.C., September 1982), Appendix A, "How the Survey Was Conducted."

Some additional factors related to the usability of fuel records are discussed in a later section on imputations and adjustments for missing data.

Comparison with 1984 RECS

The proportion of households with usable fuel-consumption records is higher in 1987 than it was in 1984. The difference is four percentage points for electricity, four for natural gas, six for LPG, twelve for fuel oil, and two for kerosene.

For electricity and natural gas, three factors contributed to the increase. First, new procedures for annualizing records made it possible to use more fuel records, including those that were for relatively short periods and those where the household did not pay for all uses of the fuel. Second, data were collected for households who pay for utility bills that included another household. Third, refusal conversion techniques resulted in the elimination of supplier nonresponse.

For fuel oil and LPG, three factors contributed to the increase. First, the number of households with fuel included in rent declined. Second, data were collected for households who pay for utility bills that included another household. Third, a greater number of usable bills were collected.

For kerosene, collection of household estimates during the household interview decreased the number of imputations.

Fuel-Consumption Imputations

Not all the fuel records that were collected in the fuel-supplier survey could be used. For example, some records covered too few months of usage; other records were incomplete and it was not possible to determine exactly what information was missing. The extent of these unusable records is shown in Table A12. The problem of unusable records is small for the metered fuels (electricity and natural gas). For fuel oil, kerosene, and LPG, however, the problem of unusable records is more serious, since 7 percent of fuel oil, 2 percent of kerosene, and 8 percent of LPG records were unusable. One reason for this is that partial-year records

Table A12. Energy-Consumption Records and Missing Data for Survey Households Using Electricity, Natural Gas, Fuel Oil, Kerosene, or LPG
(Percentage of Households Using the Fuel)

Survey Households	Electricity	Natural Gas	Fuel Oil	Kerosene	LPG
Total Households Using the Fuel	100.0	100.0	100.0	100.0	100.0
(Sample Number)	(6,228)	(3,990)	(951)	(414)	(543)
Usable Records Received from Fuel Supplier[a]	83.0	74.0	55.6	11.6	64.5
Quantity Estimated by Household[b]	([d])	([d])	.4	63.3	.6
Unusable Records Received from Fuel Supplier	.8	1.5	6.9	2.2	7.6
Household Pays Supplier Directly--No Record Available for the Household	8.7	7.8	12.8	22.7	21.9
Household Not Identified in Company Records	2.0	1.2	3.2	1.7	5.9
Company Refused to Participate	([d])	([d])	([d])	([d])	([d])
Company Unknown or Not Contacted	([d])	.3	3.3	20.5	7.2
Authorization Form Not Signed	6.7	6.3	6.3	.5	8.8
Fuel Used Included in Rent or Paid in Other Way[c]	7.5	16.7	24.3	.2	5.5

[a] Data were unusable for electricity and natural gas if the records covered less than 5 months and included seasonal use (heating or cooling) or if the records covered less than 2 months. Data were unusable for fuel oil, kerosene, and LPG if the record covered less than 1 year.
[b] Households in this group are those that purchased kerosene primarily on a cash-and-carry basis. These households supplied estimated purchases of kerosene during the household interview. In addition, if a household indicated that it had the ability to use LPG, fuel oil, or kerosene - but planned no purchases during 1987 - the household was assigned zero consumption.
[c] These data exclude households that payed for some, but not all, uses of a fuel.
[d] Represents or rounds to zero
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1987 Residential Energy Consumption Survey.

of electricity and natural consumption are considered usable, whereas a partial-year record for the storage fuels (fuel oil, kerosene, LPG) is not acceptable.[9]

A variety of information from household respondents as well as from suppliers is reviewed and used as a basis for declaring a fuel oil, kerosene, or LPG record complete or incomplete. Questionnaire information from respondents includes the number of suppliers and an estimate of the annual number of deliveries. Suppliers provided dates of onset and termination of service to the household.

Households with unusable records, as described earlier, and households with no records had their fuel consumption imputed using nonlinear regression techniques. The equations were developed using RECS sample households for which approximately a full year of data was available and acceptable. Separate regression equations were developed for the five fuels: electricity, natural gas, fuel oil, kerosene, and LPG.

The strategy for imputing consumption varied across fuels for two reasons. First, fuels differ in the number of ways they can be used. Electricity, for example, is used for a large number of appliances, water heating, space heating, and space cooling. Kerosene, on the other hand, is used almost exclusively for space heating. As a result, the equation for electricity includes a larger number of terms to represent all of the possible end uses.

The number of sample cases also influences the analysis strategy. For the electric and natural gas equations, there were a large number of sample cases, allowing for the inclusion of a greater number of factors. For example, the electricity equations included an income variable.

Two equations were used for kerosene. The equation for households that used kerosene as a main heating fuel was very similar to the heating portion of the fuel oil equation. The equation for households that used kerosene as a supplementary heating fuel was much less complex.

Fuel expenditures were imputed by applying a cost factor to the imputed consumption. The cost factor for electricity and natural gas was derived from the fuel-consumption records of households in the same neighborhood or geographic area as the household for which data were missing; the cost factor for fuel oil and LPG was based on regression fits for cost versus quantity for all fuel users.

The consumption data were standardized to a 365-day period. For fuel oil, kerosene, and LPG, no adjustment was necessary, since the annual consumption data were the accumulation of all delivery records from January 1, 1987 through December 31, 1987. For electricity and natural gas, records were deemed usable if more than 145 days of data existed or if more than 60 days of data existed and the fuel was not used for heating or air conditioning. For all usable records, an annualization procedure was used to compute an annualized consumption amount for a 365-day period.

For a small proportion of households, 12-month fuel-consumption quantities were scaled down in accordance with respondent-supplied information as to the proportion of the fuel used for nonhousehold purposes such as for drying grain, operating a commercial welding shop, or the use of another household. This adjustment was made to the consumption and expenditures for 4 percent of the households using electricity, 4 percent using LPG, 2 percent using natural gas, and 1 percent using fuel oil.

A final adjustment was made to all imputed fuel quantities. To maintain the variance structure of the unimputed fuel-consumption data, rather than impute a single value for all households that may be equivalent on the independent variables in the regression equation, an error term was added to the predicted fuel consumption. This allowed estimates for sampling error to be calculated without separating imputed from unimputed data.

Table A13 shows the availability of consumption records by the type of housing structure. Usable records were most often obtained for single-family units, more often for electricity (90.2 percent of the units) and natural gas (89.6 percent) than for fuel oil (75.3 percent), kerosene (77.1 percent) or LPG (67.8 percent). The problems inherent in collecting data for the storage fuels were described earlier: multiple suppliers, "cash-and-carry" customers, companies supplying purchase data instead of usage data, and economic instability of the suppling companies.

Most of the consumption and expenditures data for large apartment buildings, especially natural gas and fuel oil, are imputed data. Usable records were obtained for only 25.7 percent of the apartments in large buildings that used natural gas and none of those using fuel oil. Liquefied petroleum gas and kerosene are infrequently used in large apartment buildings. Electricity data for these apartments were obtained in 62.1 percent of the cases.

The reason data on consumption and expenditures are so often imputed for multiunit structures is that energy use is not directly metered for individual apartments. A master meter registers the usage for a number of units in the building. Under these circumstances, there

[9]The number of households with partial-year records, as a proportion of total households using the fuel, is 8.5 percent for electricity and 5.5 percent for natural gas.

is no way to measure the consumption of individual apartments directly.

Other segments of the data for which the lack of usable records may lead to an imputation bias include natural gas and fuel oil for apartments in smaller buildings (two to four units per building) and fuel oil and LPG used in mobile homes. Usable records in these segments were obtained for between 38.6 percent and 64.7 percent of the households.

Table A13. Energy-Consumption Records and Missing Data for Surveyed Households, by Fuels Used and Type of Housing Structure

(Percent of Households)

Type of Fuel Used	Total Households Using the Fuel	Mobile Home	Single-Family	Two to Four Units	Five or More Units
Electricity	100.0	100.0	100.0	100.0	100.0
(Sample Number)	(6,228)	(365)	(4,087)	(775)	(1,001)
Usable Record	83.0	82.2	90.2	72.8	62.1
Unusable Record[a]	.8	1.1	.4	.9	2.0
Records Not Available	8.7	7.9	8.1	11.2	9.1
Fuel Used Is Included in Rent or Paid in Other Ways[b]	7.5	8.8	1.2	15.1	26.8
Natural Gas	100.0	100.0	100.0	100.0	100.0
(Sample Number)	(3,990)	(142)	(2,538)	(613)	(697)
Usable Record	74.0	73.9	89.6	64.3	25.7
Unusable Record[a]	1.5	4.9	1.3	1.5	1.6
Records Not Available	7.8	6.3	7.7	11.4	5.0
Fuel Used Is Included in Rent or Paid in Other Ways[b]	16.7	14.8	1.3	22.8	67.7
Fuel Oil	100.0	100.0	100.0	100.0	100.0
(Sample Number)	(951)	(34)	(611)	(132)	(174)
Usable Record	56.0	64.7	75.3	38.6	([c])
Unusable Record[a]	6.9	8.8	9.0	6.1	([c])
Records Not Available	12.7	26.5	15.4	12.9	.6
Fuel Used Is Included in Rent or Paid in Other Ways[b]	24.3	([c])	.3	42.4	99.4
Kerosene	100.0	100.0	100.0	100.0	100.0
(Sample Number)	(414)	(64)	(323)	(19)	(8)
Usable Record	74.9	67.2	77.1	73.7	(4)
Unusable Record[a]	2.2	6.3	1.5	([c])	([c])
Records Not Available	22.7	26.6	21.4	26.3	(3)
Fuel Used Is Included in Rent or Paid in Other Ways[b]	.2	([c])	([c])	([c])	(1)
LPG	100.0	100.0	100.0	100.0	100.0
(Sample Number)	(543)	(128)	(407)	(4)	(4)
Usable Record	65.0	59.4	67.8	(1)	([c])
Unusable Record[a]	7.6	10.9	6.6	([c])	([c])
Records Not Available	21.9	16.4	23.1	(2)	(2)
Fuel Used Is Included in Rent or Paid in Other Ways[b]	5.5	13.3	2.5	(1)	(2)

[a] Data were unusable for electricity and natural gas if the records covered less than 5 months and included seasonal use (heating or cooling) or if the records covered less than 2 months. Data were unusable for fuel oil, kerosene, and LPG if the record covered less than 1 year.

[b] These data exclude households that paid for some, but not all, uses of a fuel.

[c] Represents or rounds to zero.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, The 1987 Residential Energy Consumption Survey.

Supplemental Data Collection for the Family Support Administration

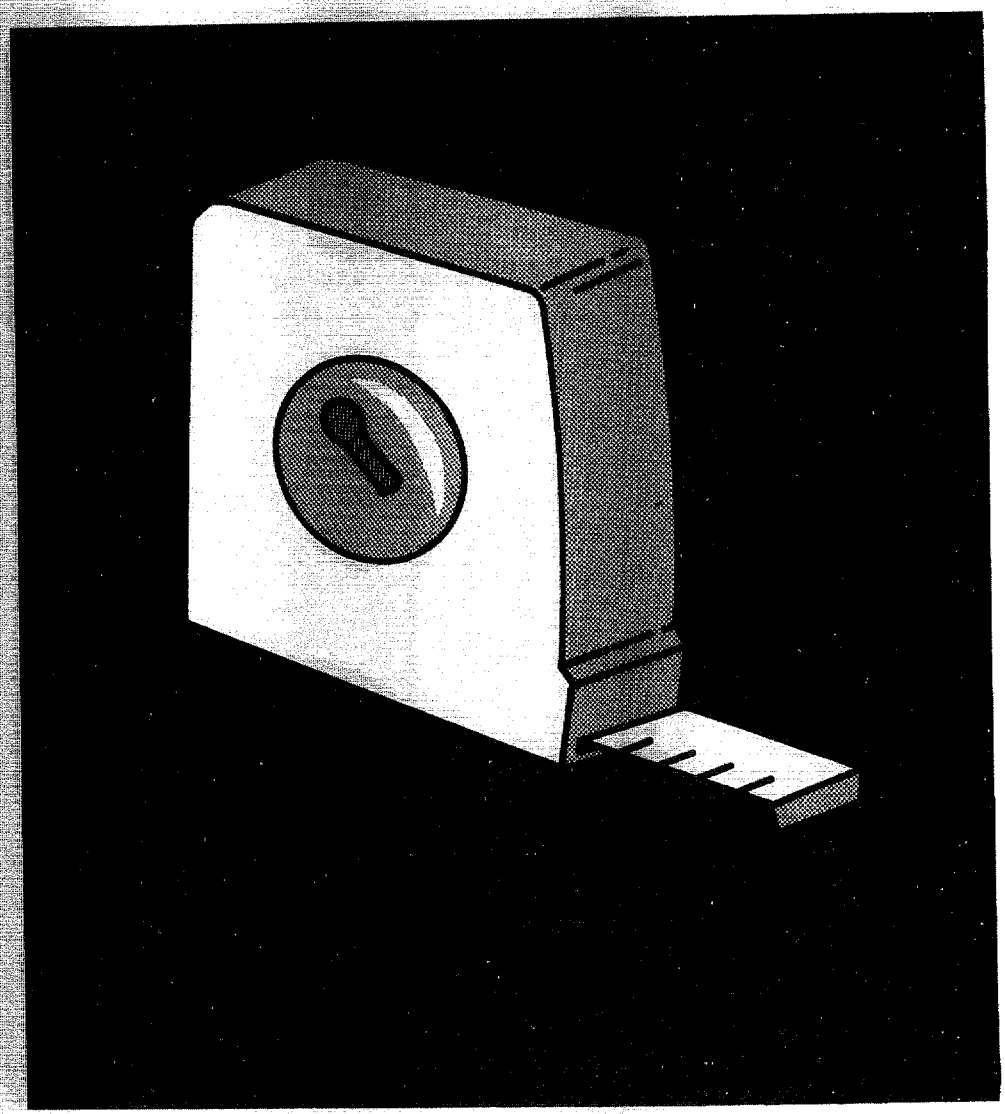
Portions of the 1987 RECS data set and analyses are based on a supplemental data collection carried out by telephone in mid-1988. The primary purpose of this followup activity was to collect additional information of interest to the Family Support Administration on government assistance to low-income households for use in program administration of the Low-Income Home Energy Assistance Program (LIHEAP).

The supplemental data collection was carried out entirely by telephone in May 1988. Telephone contacts for this purpose were combined, whenever possible, with the midyear contact for the 1988 RTECS. Information was collected on government assistance to low-income households to pay heating costs for the period from October 1, 1987 to March 31, 1988.

A household was eligible for the supplemental survey if: the income question in the 1987 RECS was not answered; the income of the family was less than $30,000 and less than 175 percent of the federal LIHEAP eligibility guideline; the income of the family was less than 125 percent of the federal LIHEAP eligibility guideline; or if the household reported receiving LIHEAP or public assistance during the 1987 RECS interview. Of the 3,831 households included in this group, 2,385 (62.3 percent) followup interviews were completed. Nonrespondents included households with no phones, households that could not be reached or refused to be interviewed, and households that could not be reached or refused earlier RTECS contacts.

Appendix B

Estimates of the Size of U.S. Housing Units in Square Feet



Appendix B

Estimates of the Size of U.S. Housing Units in Square Feet

Introduction

Interviewers for the 1987 Residential Energy Consumption Survey (RECS) were given 50-foot tape measures to ascertain the dimensions of housing units. The instructions were to measure the "area enclosed from the weather." This included garages attached to the house, attics either heated or finished, and basements enclosed from the weather (see Square Feet in Glossary for further definition). Interviewers indicated which areas were heated and unheated and recorded the dimensions of the heated areas and the unheated areas. This finer breakdown into heated and unheated areas more closely measures the floorspace of the housing unit that places the demand on the heating system and, therefore, is the figure that may prove to be more useful in analyzing residential energy consumption. All measurements were rounded to the nearest foot by the interviewer or in the editing process. Interviewers were given an option of measuring the home from the inside, taking into account the thickness of inside walls, or from the outside.

Interviewers were instructed to measure all housing units including units in the returning Rotation Groups C and D, even if there exists complete measurements taken in the 1984 RECS. (See Appendix A, "How the Survey Was Conducted," for a discussion of Rotation Groups.) The subsample of households in Rotation Groups C and D with complete measurements in 1984 and 1987 will serve as the basis for further methodological analyses of differences between 1984 RECS and 1987 RECS measurements. (See Appendix C, "Quality of the Data," for a brief comparison of the two measurements.)

Interviewers attempted to measure the size of all 5,856 housing units where personal interviews were conducted. In 5,785 cases, usable measurements were acquired or were available from data collected during the 1984 RECS. In 71 cases, the measurements either were not usable or were not made. Although most cases contained the basic information, some imputations were required to produce a final set of three square footage amounts for each housing unit:

HOMEAREA = total square footage of floorspace enclosed from the weather

HEATED = total square footage of heated floorspace

UNHEATED = HOMEAREA - HEATED = total square footage of unheated floorspace

Table B1 indicates the number of cases with missing data. The imputations required standardizing all measurements to outside measurements when the measurement was made from inside the home, characterizing a measurement as inside or outside when this was unknown, apportioning the total space between heated and unheated when this proportion was unknown or partially known, and estimating the total square footage when the measurements were not made or not usable.

The following 3 sections describe the procedures followed for each of the three major categories of data. The final section provides a comparison of the measurements from the 1984 and 1987 RECS.

Table B1. Completeness of Data on Square Footage of Housing Units

Amount of Information Collected	Number of Households	Percent
Complete Set of Dimensions	4,272	73
Outside Measurement of Home	2,478	42
Inside Measurements of Home	1,794	31
Partial Information Information available on heated and unheated areas. Unknown weather dimensions are for inside or outside of home	1,213	21
Total floorspace known but information on heated and unheated areas is missing. Also may be unknown whether dimensions are for inside or outside of home	157	3
Basement dimensions missing	62	1
Complete set of dimensions for all floors except basement. Basement total floorspace known, but information on heated and unheated areas for basement is missing	65	1
Values for heated and unheated were taken from 1984 RECS data	16	0
All dimensions missing or unusable	71	1
Total	5,856	100

Note: The floorspace for the 373 housholds responding by mail was imputed through a hot-deck procedure. These mail questionnaires are not included in this table.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Form EIA-457A, The 1987 Residential Energy Consumption Survey.

Treatment of Housing Units with Complete Measurements

As shown in Table B1, 4,272 homes had complete dimensions for all enclosed areas and information on which areas are heated and which areas are unheated. The only adjustment required for these cases was to scale up the measurements for the 1,794 homes that were measured on the inside. The inside measurements were standardized to outside dimensions. The scaling factor was determined for each housing unit as a function of the floorspace of the first floor, the total floorspace of the home, and the housing unit type. The formula for the scale factor (SCALE) is given below:

$$SCALE = 1.0955$$
$$-.00004359 \times FSFF$$
$$+.000021795 \times TFS$$
$$-.07875 \times IMH$$
$$+.02745 \times ISAH.$$

Where:

FSFF is the floorspace of the first floor,

TFS is total floorspace of the home,

IMH is the indicator variable for the mobile home and,

ISAH is the indicator variable for the single family attached home.

The above equation indicated that the scale factor varies by the floorspace of the first floor, the total floorspace, and the type of dwelling. In particular, the scale factor is reduced when the dwelling is a mobile home and is increased when the dwelling is a single-family attached home. For dwellings with only one floor, the scale factor decreases as the floorspace increases. For dwellings with more than one floor, the scale factor decreases as the floorspace of the first floor increases. The scale factor increases as the floorspace of the remaining floors increases.

These scale factors, which increased the inside measurements, ranged from 1.01 to 1.17. Ninety percent of the scale factors were between 1.067 and 1.130. If the equation resulted in a scale factor of less than 1.0, the scale factor was set equal to 1.01. There was no upper bound placed on the scale factor.

The equation was developed in the following manner: Regression prediction equations were developed independently for homes measured from the inside and homes measured from the outside. Both equations were used to generate estimates of floorspace for homes measured from the inside. The relationship between the ratio of predicted "outside" to "inside" floorspace, the actual inside floorspace for the first floor, the actual inside total floorspace for these homes, and the housing type were used in fitting the regression equation for the scale factor.

Treatment of Housing Units with Some Missing Data

The 1,213 cases lacking information as to whether the measurements were inside or outside, or a combination of inside and outside, were treated as though measurements were outside. This was because average predictions based on regression equations using homes measured outside matched average totals for this group very closely, while predictions based on regression equations using homes measured inside were seriously biased on the low side.

The 157 cases lacking information on the ratio of heated to unheated space borrowed that ratio from housing units with complete data, on a PSU-by-PSU basis. For most of these cases, information was also lacking as to whether the measurements were inside or outside, and measurements were again assumed to be outside. In 7 of these 157 cases, the measurements were known to be inside measurements and scale factors were used to increase the floorspace estimates.

For the 62 cases with missing basement dimensions, the basement floorspace was imputed by using a simple regression based on the floorspace of the first floor. The heated and unheated areas were determined or imputed and then added to known totals for the remaining floors. In 20 of these 62 cases, the measurements for the remaining floors were known to be inside measurements and scale factors were used to increase the floorspace estimates.

There were 65 cases in which the ratio of heated to unheated space for the basement was unknown. This ratio was imputed by using an appropriate empirical distribution of heated to unheated ratios. Three such distributions were used: one for single-family homes with basements only; one for homes with a basement plus crawl space and/or slab; and one for basements of homes in buildings with two to four units. In 11 of these 65 cases, the measurements were known to be inside measurements and scale factors were used to increase the floorspace estimates.

Treatment of Housing Units with No Usable Measurements

A regression equation was used for the 71 cases with no usable data. After HOMEAREA had been imputed by using the regression equation, the ratio of heated to unheated space was imputed using the same procedures described above for housing units for which that ratio was missing.

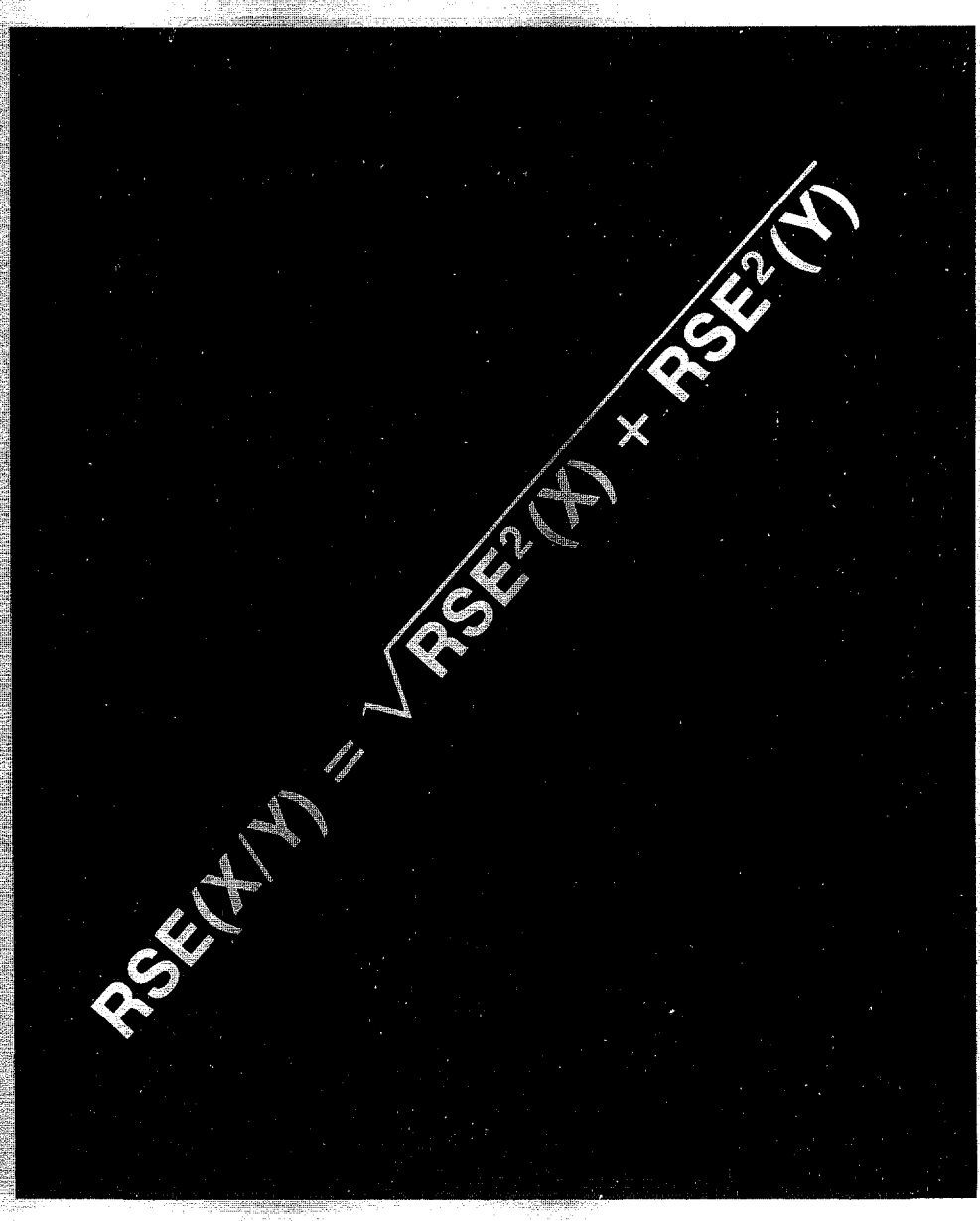
The prediction equations for outside dimensions were used in the imputations because regression equations based on cases with inside measurements did not yield fits that were substantially better. This procedure eliminated the need to scale up these estimates to outside dimensions.

Comparison with 1984 RECS

The average total floorspace for the 1984 RECS is 1,672 square feet. The average for the 1987 RECS is 1,733 square feet. This increase is statistically significant. The increase is most likely a result of improvements in the procedures used to obtain the square footage measurements and not a result of an actual increase in the average size of dwellings. In particular, the interviewers for the 1987 RECS were given special training on how to properly measure a housing unit. This training probably was the reason for the increase in the percentage of housing units (56 percent to 73 percent) where the square footage data could be based on a complete set of measurements. In addition, the quality of the measurements that were obtained most likely increased.

Appendix C

Quality of the Data



Appendix C

Quality of the Data

Data from the 1987 Residential Energy Consumption Survey (RECS) are subject to many sources of nonsampling error, bias, and sampling error. Nonsampling error and bias are measures of variability due to the way the survey was conducted. They can include population undercoverage during sampling, response bias and variance, interviewer error, coding and/or keypunching error, and nonresponse bias. The wording and format of survey questionnaires, the procedures used to select and train interviewers, and the quality control built into the data collection, receipt, and processing operations were all designed to minimize these sources of error (for discussion of these procedures, see Appendix A, "How the Survey Was Conducted"). In addition, response adjustments and ratio estimations were incorporated into the survey estimator to help reduce both sampling and nonsampling error. These procedures also are discussed in Appendix A, "How the Survey Was Conducted."

Sampling error is a measure of the variability in the data because a sample of households was surveyed rather than the entire population. Because the survey used probability sampling techniques, sampling errors of the survey estimates can be estimated and used as a guide in making inferences from the sample estimates to the total population.

Nonsampling Error

Completeness of Data

Noncovered Housing Units. Data are not collected for the following two types of housing units:

- Vacant housing units. These units may have minimal heating for protection from the weather and lighting for security. The American Housing Survey (AHS) conducted by the Bureau of the Census estimated that there were 6.1 million vacant, year-round housing units in 1985.
- Second homes for the owner's use. The AHS estimates there were 2.2 million homes "held for occasional use" in 1985.

These two types of units are not included in the RECS survey primarily because of the difficulty in acquiring data and limitations in the availability of funds for the RECS. The RECS data are collected by interviewing someone who knows the housing unit and who can sign an authorization form for release of fuel records from the fuel supplier. That type of person is less likely to be available for vacant or second homes than for primary residences.

Some effects of these omissions are an underestimation of the total number of residential housing units, the number of units in subcategories and the amount of energy consumed in the residential sector.

Sampling Unit Interview Error

The design of the 1987 RECS included a longitudinal panel. This panel is a subsample of the entire 1987 RECS sample. Unfortunately, the interviewers sometimes made mistakes and interviewed the occupants of the wrong housing unit. This usually occurred in rural areas where the housing units did not have a street address. In the cases where this occurred for the longitudinal panel, the 1987 RECS data set would indicate that the housing unit was also sampled for the 1984 RECS data set when, in fact, a different housing unit was interviewed. This occurred an undetermined number of times. But there is evidence that it occurred at least 15 times out of the 2,065 longitudinal housing units in the 1987 RECS. These 15 units were discovered in a limited check among the 40 housing units where the percent change in the square footage from the 1984 RECS to the 1987 RECS was the largest. A more extensive check performed for the 1984 RECS revealed that this type of mistake occurred at least 50 times out of the 1,830 longitudinal housing units in the 1984 RECS.

Quality Control: Performance Statistics. The RECS has begun collecting performance statistics on the data

coding and editing phase of RECS work. Performance statistics are information about an ongoing process that provides feedback on how well the process is working. This information, first compiled for the 1984 RECS, provided useful input for decisions concerning the data collection and data editing procedures for the 1987 RECS. Several changes in the procedures were made for the 1987 RECS based on performance statistics from the 1984 RECS including major changes in the keying verification and interviewer training procedures.

Keying errors that were not caught in the 1984 RECS were found to be more costly to correct at a later stage than if they were discovered and corrected in the data cleaning stage. Many of the keying errors were not initially detected because keying was verified only 25 percent of the time for some data items. To save costs in the later stage, all data items were 100 percent verified for the 1987 RECS.

For each interviewer that worked on the 1984 RECS, the number of errors was tabulated. Those interviewers who were also working on the 1987 RECS were given extra training in the areas where they had made errors in their work on the 1984 RECS. Items with the largest number of errors also received special attention in the interviewer training for all interviewers.[10]

Quality of Specific Data Items

Square Feet of Floorspace. For each sampled dwelling, the square footage of the dwelling and the square footage of the heated floor space is determined or estimated. (See Appendix B, "Estimates of the Size of U.S. Housing Units in Square Feet," for a discussion of the square footage measurements.) Errors in the square footage of floor space in a sampled dwelling can be made in several places. The interviewer can record incorrect measurements, forget to include some parts of the dwelling, include floorspace that is not part of the housing unit, or incorrectly label which areas are heated and which areas are not heated.

For housing units in the longitudinal panel, the interviewers attempted to obtain the square footage measurements during both the 1984 RECS and the 1987 RECS. An analysis of longitudinal housing units was made in order to study the order of the measurement error in the determination of the total square footage of a housing unit. All of the longitudinal housing units were used in the study with the following exceptions:

1. Housing units where it was determined that the wrong unit was interviewed for the 1984 RECS or the 1987 RECS.
2. Housing units where the square footage was imputed for either the 1984 RECS or the 1987 RECS.
3. Housing units where the respondents indicated that a change in the square footage was made between the two surveys.
4. Housing units whose occupants responded by mail for either the 1984 RECS or the 1987 RECS.

The results of the analysis showed a median percentage difference of 11 percent for total square feet (heated area plus unheated area). The percentage difference was the absolute value of the difference between the two measurements as a percentage of the average of the two measurements.

Type of Housing Unit. The type of the housing unit was determined by the interviewer without the help of the respondent. The amount of interviewer error made in determining the type of the housing unit can be studied using the housing units in the longitudinal panel. Table C1 presents a cross tabulation of the 1984 RECS housing type and the 1987 RECS housing type for 2,049 longitudinal households. (The 15 cases where it was determined that different housing units were interviewed and the one case where the basement was converted to an apartment were not used in the table.)

Table C1 indicates that there are several areas where there is confusion among the interviewers on how to classify dwellings. The housing type that appears to cause the most confusion is "single family attached" units. It is possible for some housing units to change type. This would occur if additional housing units are created in a building or if some residential space is converted to nonresidential usage. This occurrence is probably much smaller than the number of mistakes made by interviewers.

Indoor Temperatures. The data on indoor temperatures are believed to be generally accurate for ordering households along a temperature gradient. The following limitations, however, are causes for further study of the role these data play in residential energy consumption. The questionnaire asked respondents for indoor temperatures during sleeping hours and during the day when the home was occupied and when it was unoccupied. The questionnaire did not ask for temperatures on a specific day, the implication was that typical temperatures were being requested. The reported temperatures, especially for some respondents, are impressions of typical temperatures and may not represent the actual temperatures, or the averages of actual

[10]For more information about RECS performance statistics, see Thomas B. Jabine, Review of Computer Edit and Update Performance Statistics for the Residential Energy Consumption Survey, report prepared for the Energy Information Administration, December 1987.

Table C1. Housing Type for Longitudinal Households

Housing Type as Reported in the 1984 RECS	Housing Type as Reported in the 1987 RECS				
	Mobile Home	Single Family Detached	Single Family Attached	Apartment Building 2-4 Units	Apartment Building 5+ Units
Mobile Home	115	9	0	0	0
Single Family Detached	9	1,265	16	20	1
Single Family Attached	0	26	53	14	2
Apartment Building 2-4 Units	0	10	21	209	10
Apartment Building 5+ Units	0	0	6	10	269

Sources: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1984 and 1987 Residential Energy Consumption Surveys.

temperatures, in the home. The tendency to give impressions is more likely to occur for households that turn off their heat during the day or night. Indoor temperatures for these households may not be known or may not follow a typical pattern since the outdoor weather conditions and the thermal characteristics of the housing unit will determine the indoor temperature.

Other factors likely to make these reported temperatures unreliable indicators of the actual temperatures include the following: respondents may not check temperatures or thermostat settings on a regular basis or may not have thermostats that are marked with degree settings; temperatures may differ from thermostat settings (a home can become warmer than the thermostat setting); thermostats may need to be recalibrated; and, finally, disagreement may exist among household members as to the typical temperature. The unreliability of these temperature data for some respondents was highlighted in 1982 when a small number of households were called back to inquire about nighttime temperatures that exceeded daytime temperatures. Many of these households changed their reports by 5 to 10 degrees or more.

Income. Underreporting of income is often a problem in surveys similar to the RECS. Underreporting may be exacerbated in the RECS, which measures income by only one question. In comparison, the Current Population Survey (CPS) collected by the Bureau of the Census measures income by several questions. Income questions are asked separately for each source of income and each household member. Table C2 presents a comparison of the CPS estimates with the RECS estimates.

Table C2. Estimates for 1987 Household Income from CPS and RECS
(Thousands of Households)

Income Category	Number of Households	
	1987 RECS (November 1987)	CPS Estimates (March 1988)
Total	90,537	91,066
Less than $5,000	6,176	6,271
$5,000 - $9,999	11,489	10,446
$10,000 - $14,999	12,619	9,658
$15,000 - $19,999	9,014	9,136
$20,000 - $24,999	8,751	8,406
$25,000 - $29,999	7,926	7,647
$30,000 - $34,999	8,270	7,017
$35,000 - $39,999	5,626	6,198
$40,000 - $49,999	7,749	9,479
$50,000 - $74,999	8,677	11,109
$75,000 or Over	4,238	5,700

Sources: • Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1987 Residential Energy Consumption Survey. • U.S. Department of Commerce, Bureau of the Census, Current Population Survey.

The underreporting of income on the 1987 RECS relative to the CPS is evident in the upper income categories. The 1987 RECS gives an estimate of 26,290 thousand households with an income of $35,000 or more while the CPS estimates the number is 32,486.

Poverty. The United States Bureau of the Census provides a threshold of poverty which is based on family income and the number of household members (Table C3). Households with incomes below the poverty threshold are defined as "Below 100 Percent of Poverty." Households with income below 125 percent of the poverty threshold are defined as "Below 125 Percent of Poverty."

Because the RECS income data were collected using categories of income, an exact match of Census thresholds could not be made. An additional source of error in the determination of poverty status is the nonsampling error in the reported income. The CPS estimate for households below 100 percent of poverty was 11,945,000 for March 1987. The 1987 RECS estimate was 11,768,000 households below 100 percent of poverty. The fact that the two estimates are very close together may be misleading. For example, the 1984 RECS estimate was 13,680,000 households below 100 percent of poverty, while the CPS estimate for 1984 was 11,887,000. The 1984 RECS report (Appendix C, "Quality of the Data.") incorrectly gave the CPS estimate as 13,886,000.

Table C3. Definition of Poverty

Number of Persons Per Family	Below 100 Percent of Poverty		Below 125 Percent of Poverty	
	1984 RECS Income Range Less Than[a]	Census Threshold[b]	1984 RECS Income Range Less Than[a]	125 Percent Threshold[b]
1 and--				
respondent 64 or Younger	$6,000	$5,909	$7,500	$7,386
respondent 65 or Older	5,000	5,447	7,500	6,809
2 and--				
householder 64 or Younger	7,500	7,641	10,000	9,551
householder 65 or Older	7,500	6,872	9,000	8,590
3	9,000	9,056	11,000	11,320
4	11,000	11,611	15,000	14,514
5	14,000	13,737	17,500	17,171
6	15,000	15,509	20,000	19,386
7	17,500	17,649	22,500	22,061
8	20,000	19,515	25,000	24,394
9 or More	22,500	23,105	30,000	28,881

[a] The income category that contained the Census threshold was taken as the upper limit in defining poverty when the Census threshold was equal to or above the midpoint of the income category. For example, since the threshold of $5,447 was not above the midpoint of the category $5,000 to $5,999, the next lower income category was used.

[b] Figures from the U.S. Bureau of the Census, **Money Income and Poverty Status of Families and Persons in the United States: 1987** (Advance Date from the March 1988 Current Population Survey) **(Current Population Reports,** Series P-60, No. 161, August 1988), Table A1, p.41.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, 1987 Residential Energy Consumption Survey.

Conservation Improvements. An error in the tabulation for previous RECS publications has been detected which excluded households contacted by mail from tables similar to Tables 41 and 42 contained in this report. For a comparison of how this exclusion reduced the count of households making conservation improvements, see the Table C4 below. Table C4 corresponds to Table 41 of this report. Table C4 excludes mail respondents while Table 41 includes mail respondents. Households contacted by mail, generally about six percent of all households, were excluded from these tabulations of conservation improvements in the reports for the 1980, 1981, 1982, and 1984 RECS.

Table C4. U.S. Household Conservation Improvements by Census Region and Metropolitan Status, November 1987

(Million Households Except Where Averages Are Indicated)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
						Metropolitan				
		Northeast	Midwest	South	West	Total	Central City	Outside Central City	Non-Metropolitan	
RSE Column Factors:	0.611	1.284	0.961	1.118	1.406	0.737	1.240	0.915	1.008	
Total Households	90.5	19.0	22.3	30.9	18.3	70.2	29.6	40.6	20.3	0.00
Total Households Adding Items	6.7	1.8	1.6	2.3	.8	4.9	2.0	3.0	1.8	8.39
Storm Doors (standard or sliding glass)	3.9	.8	1.0	1.6	.5	2.8	1.1	1.7	1.1	12.25
Average Number Added	1.4	1.5	1.3	1.4	1.4	1.3	1.3	1.3	1.5	4.93
Storm Windows	3.6	1.2	.9	1.1	.4	2.6	1.0	1.6	1.0	11.53
Average Number Added	7.3	7.5	6.8	8.1	5.8	7.4	6.1	8.2	7.2	12.41
Total Single-Family Units and Mobile Homes	65.6	11.8	16.8	24.5	12.5	47.5	16.7	30.8	18.1	2.75
Single-Family Units or Mobile Homes Adding Items	18.9	3.7	7.0	5.5	2.7	13.1	4.3	8.7	5.8	6.22
Caulking	6.5	1.3	2.9	1.8	.5	4.5	1.5	2.9	2.1	10.35
Weatherstripping	5.6	1.2	2.2	1.7	.5	3.9	1.4	2.6	1.6	11.07
Closable Shutters, Insulating Drapes, or Reflective Film	2.1	.4	.8	.4	.5	1.6	.5	1.1	.5	17.16
Plastic Sheets	5.0	1.0	2.6	1.1	.3	3.0	1.0	2.0	2.0	12.72
Roof or Ceiling Insulation	2.4	.4	.7	.9	.3	1.7	.5	1.1	.7	14.50
Insulation Around Water Heater	2.1	.3	.8	.6	.4	1.5	.6	.9	.6	16.00
Outside Wall Insulation	2.0	.5	.6	.6	.3	1.5	.5	1.0	.5	14.10
Automatic or Clock Thermostat	1.4	.3	.4	.5	.3	1.2	.3	.9	.2	21.10
Insulation Around Hot-Water/Cooling Pipes	1.7	.4	.6	.5	.1	1.1	.4	.7	.6	16.09
Wood-Burning Stove	.9	.2	.2	.2	.2	.4	Q	.3	.5	23.15
Insulation Around Heating/Cooling Ducts	1.2	.1	.3	.7	.1	.9	.4	.5	.3	19.40
Floor Insulation	1.2	.1	.5	.4	Q	.9	.3	.6	.3	23.55
Electrical or Mechanical Furnace Ignition	1.2	.4	.3	.2	.3	.9	.3	.6	.3	19.06
Automatic Flue Door	.3	Q	Q	Q	Q	.2	Q	Q	Q	41.33
Flame-Retention Head Burner	.2	.1	Q	Q	NC	.1	Q	.1	Q	34.20
Heat Pump	.6	Q	Q	.5	Q	.5	Q	.4	Q	27.89
Single-Family Units or Mobile Homes Adding Storm Windows, Storm Doors, or Other Conservation Measures Listed Above	21.7	4.7	7.6	6.5	2.9	15.2	5.3	10.0	6.5	5.47

NC No cases in sample.
-- Data not applicable.
Q Data withheld either because the RSE was greater than 50 percent or fewer than 10 households were sampled.

Notes: • Conservation improvements were made between September 1986 and August 1987. • To obtain a Relative Standard Error (RSE) percentage for any table cell, multiply the cell's corresponding column and row factors. • Because of rounding, data may not sum to totals. • Percentages are calculated on unrounded numbers. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Forms EIA-457 A, B, C of the 1987 Residential Energy Consumption Survey (for specific titles of forms, see Appendix D).

Gas Central Air Conditioning. Some respondents incorrectly report that they have gas air conditioners when in reality they have electric air conditioners. The majority of the households claiming to have natural gas or LPG central air conditioning may actually have electric systems. Three possible explanations for these errors are as follows. (1) Respondents may have confused Freon with the fuel running the compressor. (2) The housing unit is in apartment buildings and the occupants do not know the fuel used in the central air-conditioning system. (3) Households with gas central forced-air heating systems and electric central air-conditioning systems may have thought they were both gas systems. This may be especially true if one thermostat controls both systems. In the 1987 RECS, an estimated 1.7 million households initially reported that they had gas air conditioners, but after checking back with the respondents, checking with the rental agents, or looking for a pattern in the natural gas utility bills that indicates increased usage during periods of demand for air conditioning, the estimated number of households that use gas air conditioners was reduced to 0.6 million. This estimate may still be too high.

New Homes. The RECS estimates of the number of homes constructed from 1985 through 1987 that use gas (natural gas or LPG) as the main heating fuel do not seem to agree with the U.S. Bureau of Census estimates published in *Characteristics of New Housing: 1987* U.S. Department of Housing and Urban Development. The RECS data indicate that 30.7 percent of homes (excluding mobile homes), constructed from 1985 through 1987 are heated with natural gas and 2.6 percent are heated with LPG. Census data indicate that 43.2 percent of new homes are heated with gas (natural gas or LPG). Data on heating fuels of newly constructed mobile homes are not available from Census data. The Census data covers all units completed any time during 1985 through 1987. The RECS data count units that were occupied as of the time the interview was attempted, which may be as early as September 1987. Hence, all units that were first occupied during the last part of 1987 may not be covered by RECS. The Census estimates are based on units completed but not necessarily occupied and even if the units are occupied they may not be the primary residence. The RECS estimates are based on occupied units that are the primary residence of the occupants. The Census data give the fuel for the main heating equipment that was installed in the home. The RECS data give the fuel that the occupants indicate is the main space-heating fuel. Furthermore, after being occupied, the residents sometimes change the main heating fuel by installing wood stoves or portable heaters.

Sampling Error

The form of the sampling error that is presented here is the relative standard error (RSE). The RSE is also known as the coefficient of variation. For a given survey statistic, Y, the relative standard error, RSE (Y), is given by:

$$RSE(Y) = (S_Y / Y) \times 100.$$

Thus the standard error of Y is given by:

$$S_Y = RSE(Y) \times Y / 100.$$

This section provides an explanation and example of the procedures used to calculate approximate RSE's for each statistic shown in Table 7 through 51 of the *Household Characteristics 1987*. This section also includes a discussion of the derivation of the procedures used to calculate the approximate RSE's and explanations of the procedures used to calculate the RSE for percentages and the RSE for ratios.

For some surveys, a convenient algebraic formula for computing variances can be obtained. However, the RECS used a multistage area sample design of such complexity (see Appendix A, "How the Survey Was Conducted") that it is virtually impossible to construct an exact algebraic expression for estimating variances. Instead, the method used to estimate sampling variances for this survey was balanced half-sample replication. This numerical method involves pairing primary sampling units (PSU's) in strata so that differences between the members of each pair can be used to build an estimate of sampling variance. The strata were collapsed to 85 new strata to achieve this pairing of PSU's. Of these 85 strata, 44 consisted of two non-self-representing PSU's belonging to the same Census Divisions, with one PSU constituting each member of a pair. Of the remaining 41, 32 strata were each composed of one self-representing PSU; that is, they consisted of large metropolitan areas that came into the sample with certainty. In each of the latter strata, all of the PSU's were treated as a composite PSU, while the segments within the composite PSU were segregated into two groups representing the two members of a pair. There was no between-PSU component of variance for self-representing PSU's. The 9 remaining strata consisted of a non-self-representing PSU that was treated as if it were a self-representing PSU. These 9 unmatched non-self-representing PSU's were not matched due to a desire to match within the 9 Census divisions and the desire to treat Alaska and Hawaii as 2 separate and unique strata.

Half-sample replication involved repeatedly drawing pair members from the 85 strata. Each replication was called a "half-sample" because only one member of the pair within each of the 85 strata was selected. For each half-sample, the sampling weights were ratio adjusted upward. The result of the adjustment is that the sum of the weights for each of the 12 cells (four Census regions by three types of Metropolitan Statistical Area (MSA)) equals the appropriate control total. (See Appendix A, "How the Survey Was Conducted," Table

A9). In this way, each half-sample can produce unbiased survey statistics based on roughly one-half of the data. Using different combinations of members from the 85 pairs, it is possible to produce a total of $2^{85} = 3.9 \times 10^{25}$ unique half-samples. Although desirable for good variance estimation, a large number of half-samples would be computationally infeasible. However, the method of balanced half-sample replication allows a small number of half-samples (approximately equal to the number of strata) to produce estimates of variance that are identical to estimates based on all possible unique half-samples for linear survey statistics. The use of ratio adjustments in RECS means that even a statistic giving the number of households in a category is not a linear statistic. For nonlinear survey statistics, the variance estimate computed using the method of balanced half-samples is approximately equal to the variance estimate computed using all possible half-samples. With this balancing method, each half-sample is constructed by using an orthogonal matrix to control the selection of pair members from strata. For the RECS, 128 balanced half-samples were used in variance estimation.

The variances are estimated from the half-sample statistic in the following way. Let Y' be a survey estimate of characteristic Y for a certain category of housing units (for example, total number of households in the West Census region whose main heating fuel is natural gas). Then, the estimated variance of Y' is given by:

$$S^2_{Y'} = (1/128) \sum_{i=1}^{128} (Y'_i - Y')^2,$$

where Y'_i is the ith half-sample estimate of Y. The standard error of Y' is given by:

$$S_{Y'} = \sqrt{S^2_{Y'}}.$$

As mentioned above and in Appendix A, "How the Survey Was Conducted," the national total number of households is not estimated from the survey results. The household weights are ratio adjusted so that the total weighted number of households equals the number obtained from the CPS. The same is true for the total number of households in the 12 cells mentioned above (four Census regions by three types of MSA designations). The variance estimation procedure used for RECS assumes that the CPS numbers are exact and are not subject to error. Any error in the CPS results can be considered as a bias in the RECS results and not as part of the sampling error for RECS. The weights for each half-sample are also constructed such that the national total and the total for the 12 cells match the CPS numbers. As a result, the half-sample estimate for the RSE of the national total of the number of households and the RSE's for the totals in the 12 cells will always be zero. Also the half-sample estimate of the RSE will be close to zero whenever the statistic involved is a household count that is close to a control total. Examples of this are the national total for the number of households that use electricity and the number of households that have a refrigerator.

The method of presenting the RSE's of a statistic in this report utilizes row and column factors. The row and column factors can be used to calculate an approximate RSE for each statistic.

Row and Column Factors

To estimate the RSE of a statistic in the ith row and jth column of a particular table, the approximation $RSEA(i, j)$ for the original half-sample estimate $RSE(i, j)$ is given by the formula.

$$RSEA(i, j) = R(i)\, C(j)$$

where:

R *(i)* is the RSE row factor given in the last column of the row i and,

C *(j)* is the RSE column factor given at the top of column j.

The following example illustrates this procedure.

Using the first column of the table (Figure C1) labeled "Total" and the eleventh row column labeled "Main Heating Fuel and Equipment - Natural Gas" gives an estimate of 50.0 million for the number of households where the main heating fuel is natural gas. The RSE row factor is R(11) = 4.91. The RSE column factor is C(1) = .628. The approximate RSE for the estimate is, therefore,

$$RSEA(11, 1) = (4.91)\,(.628) = 3.08 \textit{ percent}$$

Figure C1. Use of RSE and Row and Column Factors

Table 13. U.S. Household Fuel Use by Census Region and Metropolitan Status, November 1987 (Continued)

(Million Households)

Household Characteristics	Total	Census Region				Metropolitan Status				RSE Row Factors
						Metropolitan				
		Northeast	Midwest	South	West	Total	Central City	Outside Central City	Non-Metropolitan	
RSE Column Factors:	0.628	1.229	1.220	1.136	1.164	0.726	1.038	0.883	1.206	
Use Secondary Heating Equipment (more than one may be used)										
Yes	37.4	6.1	8.6	13.8	8.9	27.8	9.5	18.2	9.6	4.02
Fireplace	15.1	2.1	3.1	5.3	4.6	12.9	4.1	8.9	2.1	8.15
Portable Electric Heater	8.2	1.2	2.0	3.0	2.1	6.1	2.5	3.7	2.1	8.15
Wood or Coal Heating Stove	4.8	1.3	1.0	1.2	1.3	3.1	.7	2.4	1.6	12.39
Built-In Electric Units	3.6	.5	.5	1.4	1.2	2.3	.9	1.4	1.2	13.62
Portable Kerosene Heater	4.8	.9	1.3	2.4	.2	2.9	1.2	1.7	1.9	13.98
Central Warm-Air Furnace	2.5	Q	1.0	.7	.5	1.4	.3	1.1	1.1	22.13
Oil or Gas Room Heater	1.7	.2	.4	1.0	.2	1.0	.3	.7	.7	21.25
Cooking Stove	1.3	.2	.3	.6	.2	1.0	.6	.4	.4	24.35
Heat Pump, Steam or Hot-Water System, Pipeless Furnace, or Other	1.9	.4	.3	.8	.4	1.4	.5	1.0	.4	24.80
No	53.2	12.9	13.7	17.1	9.4	42.5	20.1	22.4	10.7	2.78
Fuel Combinations										
Use Natural Gas for Main Heat	50.0	8.1	16.6	13.5	11.8	41.8	19.5	22.3	8.1	4.91
Use Natural Gas to Heat Water and Have A/C	28.5	4.3	10.7	9.4	4.1	24.4	10.4	14.0	4.1	7.29
and Lack A/C	16.3	3.5	4.1	1.9	6.8	14.2	7.6	6.6	2.1	9.46

R (Use Natural Gas for Main Heat) = 4.91
C (Total Households) = 0.628
Approximate RSE (Total Households Using Natural Gas for Main Heat)
= (4.91 • (.628) = 3.08 percent
Approximate Standard Error (Total Households Using Natural Gas for Main Heat)
= (.0308) • (50.0) = 1.54 million households
Approximate 2 Standard Errors (95 percent confidence interval)
= (1.96) • (1.54) = 3.02 million households

Therefore, with 95 percent confidence, the number of households using natural gas for main heating is between 46.9 and 53.0 million households (50.0 ± 3.02)

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, the 1987 Residential Energy Consumption Survey.

The row and column factors are determined from a two-factor analysis of the table of RSE's on the basis of the equation,

$$\log RSEA(i, j) = m + a(i) + b(j).$$

The least squares estimates for this equation are given by:

$$m = \overline{(\log RSE)}$$

$$a(i) = \overline{(\log RSE)}_i - \overline{(\log RSE)}$$

$$b(j) = \overline{(\log RSE)}_j - \overline{(\log RSE)}$$

where:

$\overline{(\log RSE)}$ is the mean of log RSE *(i,j)* over all rows i and columns j,

$\overline{(\log RSE)}_i$ is the mean over all columns j for a particular row i, and

$\overline{(\log RSE)}_j$ is the mean over all rows i for a particular column j.

The row and column RSE factors are then computed as:

$$R(i) = \text{antilog}\,(m + a(i)) = \text{antilog}\,\overline{(\log RSE)}_i$$

$$C(j) = \text{antilog}\; b(j) =$$

$$\text{antilog}\,(\overline{(\log RSE)}_j - \overline{(\log RSE)}) .$$

The RSE row factor, R *(i)*, is the geometric mean of the RSE's in row i. The RSE column factor, C *(j)*, is an adjustment factor with geometric mean equal to 1.0.[11]

The estimation procedure used to obtain the row and column factors does not use RSE's that are less than 1.0 percent or greater than 50.0 percent. In addition, if the statistic for a cell is not listed for any reason, the RSE for that cell is not used in the procedure. This convention is used because the product of the row and column factors frequently is an inaccurate estimate for these RSE's. Using these cells in the calculation of the row and column factors may result in factors that give inaccurate RSE estimates for other cells. The only exception are Tables 43 and 44, which deal with the average temperature settings. All of the RSE's in these tables are small, hence the use of RSE's less than 1.0 percent in the calculation of the row and column factors for these tables will not result in inaccurate RSE estimates.

Whenever a household count is a control total, its RSE is zero. Hence, RSE's of control totals are not used in the row column factor calculations. Rows that contain only control totals (an example is the first row of Table 7) have a row factor that was set to equal zero. Rows that only contain household counts that are close to control totals do not have a listed row factor. A footnote is given that tells the reader that the RSE's for all statistics in these rows are less than 1.0 percent. This occurs because the half-sample estimates for the RSE's for all statistics in the row are less than one percent. The row factors for these rows should be a positive number but the number will be small. An example is row 39 of Table 27. This row gives the number of households that have refrigerators by Census region and by MSA designation.

Determination of Relative Standard Error for Percentages Based on Household Counts

The following procedure can be used when the population of the numerator is a subset of the population of the denominator. Let X be an estimate of the number of households that have characteristics C_1 and C_2. Let Z be an estimate of the number of households that have characteristic C_1 but do not have characteristic C_2. Set Y = X + Z. Then Y is an estimate of the number of households that have characteristic C_1. Set p = 100 X/Y. Then p is an estimate of the percentage of households that have characteristic C_2 among all households that have characteristic C_1. The RSE of p can be approximated using:

$$RSE(p) = \sqrt{RSE^2(X) - RSE^2(Y)}.$$

The following example illustrates this equation. Among the 50.0 million households that used natural gas as their main heating fuel, 31.6 million or 63.2 percent used a central warm-air furnace as the main heating equipment. The approximate RSE for 50.0 million households was 3.08. The approximate RSE of the 31.6 million households that used a central warm-air furnace was 4.52.

Using the above equation the RSE of the percent is:

$$RSE(p)\sqrt{4.52^2 - 3.08^2} = 3.31$$

[11]For detailed discussions of the accuracy of the RSE approximation, the procedure for estimating confidence intervals, and the statistical tests of hypotheses, see *Nonresidential Buildings Energy Consumption Survey: Commercial Buildings, Consumption and Expenditures, 1983.* DOE/EIA-0318(83). (Washington, D.C., October 1986).

This approximation works best when RSE(X) and RSE(Y) are estimated using the row column procedure or a generalized variance equation. The approximation may differ greatly from the correct value if RSE(X) and RSE(Y) are half-sample estimates. This equation may also produce inaccurate approximations when it is applied to percentages that are not based on household counts or are based on ratios of household counts that cannot be characterized by the format described above.

Determination of the Relative Standard Error for Ratios

This procedure can be used when the population of the numerator is not a subset of the denominator, but instead is one estimate divided by another. The following equation provides an approximate RSE for ratios not presented in the tables.

$$RSE\,(X/Y) = \sqrt{[RSE(X)]^2 + [RSE(Y)]^2}$$

The following example illustrates this equation. The number of households where the main space heating fuel is natural gas was 16.6 million in the Midwest Census Region. The approximate RSE (as determined by the row-column method) was 5.99 percent. The number in the Northeast Census Region was 8.1 million households, with an approximate RSE of 6.03 percent. The ratio of these estimates shows that 2.05 times as many households in the Midwest use natural gas as their main space heating fuel as in the Northeast. The RSE of this ratio is:

$$RSE\,(X/Y) = \sqrt{(5.99)^2 + (6.03)^2} = 8.50.$$

The half-width for the 95 percent confidence interval is:

$$1.96 \times .0850 \times 2.05 = .34.$$

The confidence interval for the ratio is 2.05 (±0.34).

Determination of the Standard Error of the Difference Between Two Statistics

The procedure used to compute the standard error of the difference between two statistics follows:

$$SE_{x_1-x_2} = \sqrt{SE_{x_1}{}^2 + SE_{x_2}{}^2}.$$

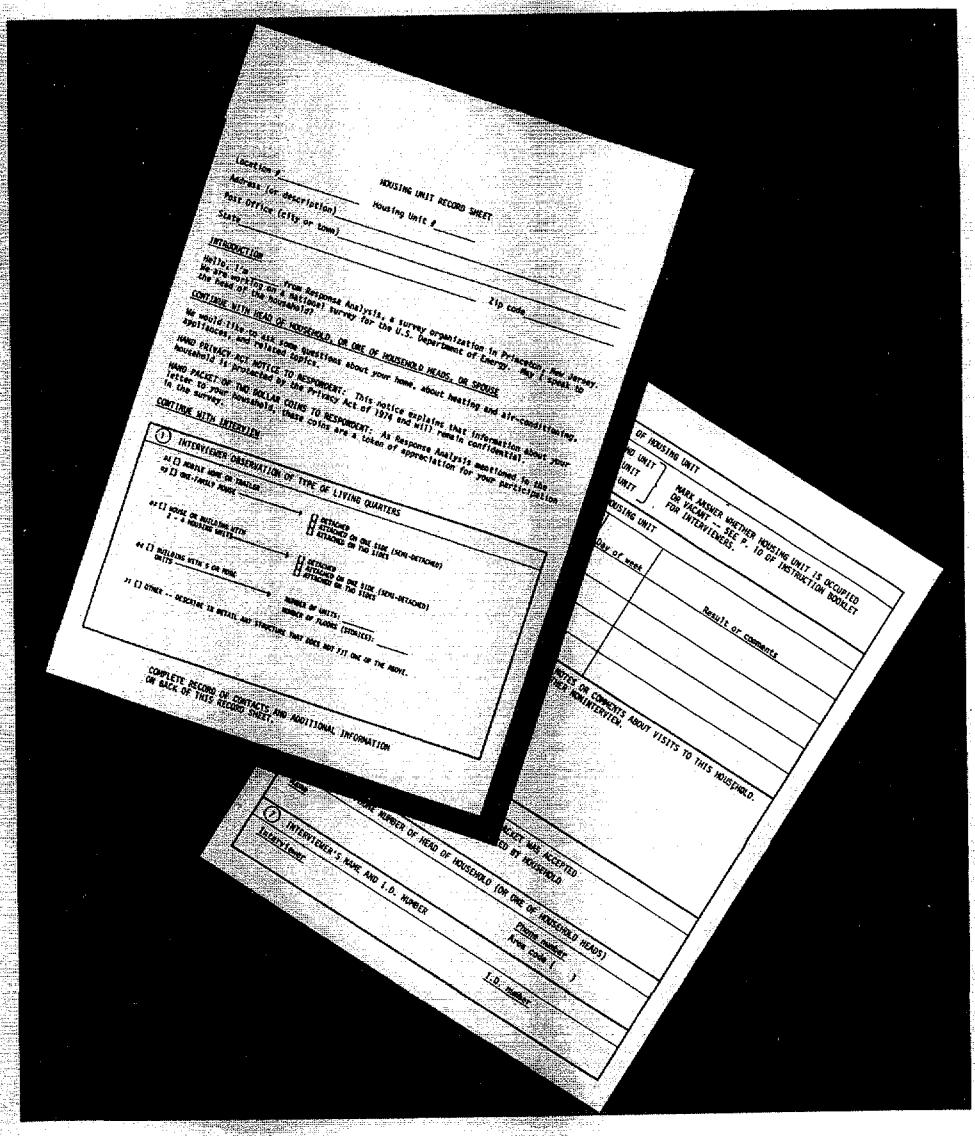
This procedure assumes the two statistics are not correlated. Using the above example, the standard error of the 16.6 million households is 0.99 million households. (The RSE is 5.99 percent.) The standard error of the 8.1 million households is 0.49 million households. (The RSE is 6.03 percent.) The difference between the number of households in the Midwest Region and the Northeast Region is 8.5 million households. The standard error of this difference is:

$$SE_{x_1-x_2} = \sqrt{1.00^2 + .50^2} = 1.10$$

If 1.96 times the standard error is greater than the difference between the statistics the difference is not statistically significant. In this example, 1.96 times the standard error equals 2.16 million households, while the difference is 8.5 million households. Therefore, it can be said that there is a statistically significant difference between the number of households that heat with electricity in the Midwest Census Regions and the number in the Northeast Census Region.

Appendix D

Survey Forms



Appendix D

Survey Forms

This Appendix contains copies of the following survey forms used in the Household Survey portion of the 1987 Residential Energy Consumption Survey.

- EIA-457A Housing Unit Record Sheet (actual form was pink).
- EIA-457B Household Questionnaire (actual form had a blue cover).
- EIA-457C Rental Agent Form (actual form was white).

Form Approved
OMB No. 1905-0092 • EIA 457A
(Expires May 31, 1990)

1987 Residential Energy Consumption Survey

HOUSING UNIT RECORD SHEET

Address (or description) _____

Post Office (city or town) _____ State _____ Zip _____

INTRODUCTION

Hello I'm _____ from Response Analysis, a survey organization in Princeton, New Jersey. We are working on a national survey for the U.S. Department of Energy. May I speak to the head of household, that is, the person in whose name the home is owned or rented?

CONTINUE WITH HOUSEHOLDER, ONE OF HOUSEHOLDERS, OR SPOUSE/PARTNER.

We would like to ask some questions about your home, about heating and air-conditioning, household vehicles, and related topics.

HAND PRIVACY ACT NOTICE TO RESPONDENT. This notice explains that information about your household is protected by the Privacy Act of 1974 and will remain confidential.

CONTINUE WITH INTERVIEW

(1) INTERVIEWER OBSERVATION OF TYPE OF LIVING QUARTERS

MARK BOX BELOW:

11[] MOBILE HOME OR TRAILER

21[] ONE-FAMILY HOUSE--DETACHED

22[] ONE-FAMILY HOUSE--ATTACHED ON ONE SIDE (SEMI-DETACHED)

23[] ONE-FAMILY HOUSE--ATTACHED ON TWO SIDES

31[] HOUSE OR BUILDING WITH 2-4 HOUSING UNITS--DETACHED

32[] HOUSE OR BUILDING WITH 2-4 HOUSING UNITS--ATTACHED ON ONE SIDE (SEMI-DETACHED)

33[] HOUSE OR BUILDING WITH 2-4 HOUSING UNITS--ATTACHED ON TWO SIDES

41[] BUILDING WITH 5 OR MORE HOUSING UNITS → MARK ANSWERS:
NUMBER OF HOUSING UNITS: _____
NUMBER OF FLOORS (STORIES): _____

51[] OTHER--DESCRIBE IN DETAIL ANY STRUCTURE THAT DOES NOT FIT ONE OF ABOVE. (INCLUDE NUMBER OF UNITS AND FLOORS)

_____

_____

COMPLETE RECORD OF CONTACTS AND ADDITIONAL INFORMATION ON BACK OF THIS RECORD SHEET.

(2) TYPE OF OCCUPANCY OF HOUSING UNIT

1 [] YEAR-ROUND UNIT
2 [] SEASONAL UNIT
3 [] MIGRATORY UNIT

MARK ANSWER WHETHER HOUSING UNIT IS OCCUPIED OR VACANT -- SEE P. 2-18 OF INSTRUCTIONS FOR INTERVIEWERS.

(3) RECORD OF VISITS TO HOUSING UNIT

Visit number	Time of day (include AM or PM	Date	Day of Week	Result or Comments

(4) USE THIS SPACE FOR ADDITIONAL NOTES OR COMMENTS ABOUT VISITS TO THIS HOUSEHOLD. DESCRIBE FULLY IF REFUSAL OR OTHER NONINTERVIEW.

(5) NAME AND PHONE NUMBER OF HOUSEHOLDER (OR ONE OF HOUSEHOLDERS)

Name

Phone number

Area Code ( )

(6) INTERVIEWER'S NAME AND I.D. NUMBER

Interviewer

I.D. number

Form Approved
OMB No. 1905-0092. EIA 457B
(Expires May 31, 1990.)

This survey is voluntary and authorized under the Federal Energy Administration Act of 1974 (Public Law 93-275) as amended. Information about specific households will be kept strictly confidential. The data will be summarized within large groupings for statistical purposes.

1987 Residential Energy Consumption Survey

Energy Information Administration
U.S. Department of Energy

Location # _____	111-116
Housing Unit # _____	117-118

TIME INTERVIEW STARTED [ ] AM [ ] PM

1. In what year did your family move into this (house/apartment)?

01 [ ] Before 1940	07 [ ] 1980-1983		
02 [ ] 1940-1949	08 [ ] 1984		121-122
03 [ ] 1950-1959	09 [ ] 1985		
04 [ ] 1960-1969	10 [ ] 1986	--ASK Q. 2	
05 [ ] 1970-1974	11 [ ] 1987		
06 [ ] 1975-1979	12 [ ] 1988		

IF "1985" OR LATER, ASK:

2. In which month did you move in? (SPECIFY MONTH AND ENTER LAST DIGIT OF YEAR.)

MONTH: [ ] 123-124

YEAR: 198 [ ]

3. In what year was this (house/building) built? Just your estimate.

01 [ ] BEFORE 1940	07 [ ] 1980-1983		
02 [ ] 1940-1949	08 [ ] 1984		
03 [ ] 1950-1959	09 [ ] 1985		125-126
04 [ ] 1960-1969	10 [ ] 1986		
05 [ ] 1970-1974	11 [ ] 1987		
06 [ ] 1975-1979	12 [ ] 1988		

4. Altogether (counting all areas that are used as year-round living space), how many rooms do you have in your living quarters? Do not count bathrooms, unheated porches, foyers, or hallways. (SEE INSTRUCTION BELOW.)

NUMBER OF ROOMS: [ ] 127-128

5. How many complete bathrooms and how many half-bathrooms do you have? (A complete bathroom is a room with a flush toilet, bathtub or shower, and a sink/washbasin with running water. A half-bath has at least a flush toilet or bathtub or shower, but does not have all the facilities for a complete bathroom.)

NUMBER OF COMPLETE BATHROOMS: [ ] 129
[] NONE

NUMBER OF HALF BATHROOMS: [ ] 130
[] NONE

INTERVIEWER INSTRUCTIONS:

Q. 4 -- Generally count any room as long as it is a comfortable place to rest, read, study, etc., year-round.

Do not count laundry rooms, unfinished attics or basements, open porches, or unfinished space used for storage.

HAND RESPONDENT EXHIBIT 6/7/10

6. What is the main fuel used for heating your home? (SEE INSTRUCTIONS BELOW.)

	Q. 6 MAIN FUEL (MARK ONLY ONE)	Q. 7 MARK ALL THAT APPLY	131-132
GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD	01 []	[]	133
LPG GAS (BOTTLED OR TANK GAS)	02 []	[]	134
FUEL OIL	03 []	[]	135
KEROSENE OR COAL OIL	04 []	[]	136
ELECTRICITY	05 []	[]	137
COAL OR COKE	06 []	[]	138
WOOD	07 []	[]	139
SOLAR COLLECTORS	08 []	[]	140
OTHER (SPECIFY): _____	21 []	[]	141
DON'T KNOW	96 []	[]	142
NO HEATING FUEL USED -- TAKE BACK EXHIBIT 6/7/10; SKIP TO Q. 32.	00 []		
NO ADDITIONAL FUEL -- SKIP TO Q. 9		[]	143

7. What other fuels, if any, are used to heat your home -- including those that are used to provide heat just occasionally?

MARK ALL THAT APPLY
(IF NONE, MARK "NO ADDITIONAL FUEL")

IF ONE OR MORE ADDITIONAL FUELS MENTIONED IN Q. 7, ASK:

8. Does your main heating fuel -- (FUEL NAMED IN Q. 6) -- provide almost all of the heat for your home, about three-fourths, or closer to half of the heat for your home?

1 [] ALMOST ALL (MORE THAN 95%)
2 [] ABOUT THREE-FOURTHS (67-94%) 144
3 [] CLOSER TO HALF (66% OR LESS)

INTERVIEWER INSTRUCTIONS:

Q. 6 -- If two or more heating fuels are used, the main heating fuel is the one that provides most of the heat for the home.

Q. 6-7 -- If household recently converted to a different fuel, or is in the process of conversion, mark answer for fuel(s) in use during January of 1987.

9. In November of 1984 was the main fuel used to heat this (house/apartment) the same as it is now?

1 [] YES -- SKIP TO Q. 12 *145*
0 [] NO -- ASK Q. 10
5 [] NO FUEL USED IN 1984 -- SKIP TO Q. 12
6 [] DON'T KNOW -- SKIP TO Q. 12

IF "NO," ASK:

10. What was the main fuel used to heat this (house/apartment) in November of 1984?

01 [] GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
02 [] LPG GAS (BOTTLED OR TANK GAS)
03 [] FUEL OIL
04 [] KEROSENE OR COAL OIL
05 [] ELECTRICITY *146-147*
06 [] COAL OR COKE
07 [] WOOD
08 [] SOLAR COLLECTORS
21 [] OTHER (SPECIFY): _____
_____
95 [] NO FUEL USED
96 [] DON'T KNOW

11. In what month and year was the main heating fuel changed?

MONTH: _____ *148-149*
YEAR: 198 _____ *150-151*

TURN TO EXHIBIT 12/13

12. What is the main heating equipment used with your main heating fuel?	Q.12 MAIN EQUIPMENT (MARK ONLY ONE)	Q. 13 MARK ALL THAT APPLY	152-153
HOT WATER PIPES RUNNING THROUGH A SLAB FLOOR (RADIANT HEATING) . .	01 []	[]	154
STEAM OR HOT WATER SYSTEM WITH RADIATORS OR CONVECTORS	02 []	[]	155
CENTRAL WARM-AIR FURNACE WITH DUCTS TO INDIVIDUAL ROOMS (DO NOT COUNT HEAT PUMP HERE).	03 []	[]	156
HEAT PUMP.	04 []	[]	157
BUILT-IN ELECTRIC UNITS (PERMANENTLY INSTALLED IN WALL, CEILING, OR BASEBOARD).	05 []	[]	158
FLOOR, WALL, OR PIPELESS FURNACE	06 []	[]	159
ROOM HEATER BURNING GAS, OIL, KEROSENE (NOT PORTABLE).	07 []	[]	160
HEATING STOVE BURNING WOOD, COAL, COKE	08 []	[]	161
FIREPLACE(S)	09 []	[]	162
PORTABLE ELECTRIC HEATER(S).	10 []	[]	163
PORTABLE KEROSENE HEATER(S).	11 []	[]	164
COOKING STOVE, RANGE, OR OVEN (USED TO HEAT HOME, AS WELL AS FOR COOKING)	12 []	[]	165
OTHER (SPECIFY): _____	21 []	[]	166
DON'T KNOW	96 []	[]	167
NO ADDITIONAL EQUIPMENT		[]	168

13. What other types of equipment, if any, are used to heat your home -- including those that are used to provide heat just occasionally? MARK ALL THAT APPLY (IF NONE, MARK "NO ADDITIONAL EQUIPMENT".)

TAKE BACK EXHIBIT 12/13

IF "CENTRAL WARM-AIR FURNACE" MENTIONED IN Q. 12 OR Q. 13, ASK:

14. For the central warm-air furnace, is the warm air forced through the ducts by a fan?

1 [] YES
0 [] NO
6 [] DON'T KNOW

169

IF "HEATING STOVE BURNING WOOD, COAL, COKE" MENTIONED IN Q. 12 OR Q. 13, ASK:

15. Is the heating stove airtight?

1 [] YES
0 [] NO
6 [] DON'T KNOW

170

IF SINGLE FAMILY HOME OR MOBILE HOME, ASK Q. 16. OTHERWISE SKIP TO Q. 17

16. How old is your main heating equipment, just approximately? (INTERVIEWER: PROBE FOR BEST GUESS.)

1 [] LESS THAN 2 YEARS OLD
2 [] 2-4 YEARS OLD
3 [] 5-9 YEARS OLD
4 [] 10-14 YEARS OLD
5 [] 15 YEARS OLD OR OLDER
6 [] DON'T KNOW

171

IF 2 OR MORE HOUSING UNITS IN BUILDING, ASK Q. 17. OTHERWISE SKIP TO Q. 18

17. Does the main equipment for heating your home also heat one or more other apartments, households or businesses?

0 [] NO, HOME HEATING EQUIPMENT IS FOR RESPONDENT'S HOME ONLY
1 [] YES, HOME HEATING EQUIPMENT IS FOR ONE OR MORE OTHER APARTMENTS, HOUSES, OR BUSINESSES
6 [] DON'T KNOW

172

18. At what temperature do you usually keep your home during the day in the wintertime when someone is at home? (SEE INSTRUCTION BELOW.)

DEGREES FAHRENHEIT: [ ] 173-174

[ ] HEAT TURNED OFF

19. At what temperature do you usually keep your home during the day in the wintertime when no one is at home? (SEE INSTRUCTION BELOW.)

DEGREES FAHRENHEIT: [ ] 175-176

[ ] HEAT TURNED OFF

20. At what temperature do you usually keep your home during sleeping hours in the wintertime? (SEE INSTRUCTION BELOW.)

DEGREES FAHRENHEIT: [ ] 177-178

[ ] HEAT TURNED OFF

HAND RESPONDENT EXHIBIT 21

21. Please look at this list and tell me the ways, if any, you use to adjust the temperature in your home during the heating season. (MARK ALL THAT APPLY.) 207-208:02

THERMOSTAT FOR MAIN HEATING EQUIPMENT	[ ]	211
THERMOSTAT FOR SUPPLEMENTAL HEATING EQUIPMENT . .	[ ]	212
OPENING AND CLOSING WINDOWS OR DOORS	[ ]	213
OPENING AND CLOSING HOT AIR VENTS	[ ]	214
TURN HEATER ON OR OFF (UP OR DOWN)	[ ]	215
TURN RADIATORS OR CONVECTORS ON OR OFF	[ ]	216
ADJUST DRAFT OR AMOUNT OF FUEL FOR WOOD OR COAL FIRE	[ ]	217
USE COOKING STOVE, OVEN, OR RANGE TO HEAT HOME	[ ]	218
OTHER (SPECIFY): _____	[ ]	219
NO WAY TO ADJUST THE TEMPERATURE	[ ]	220

INTERVIEWER INSTRUCTIONS:

Q. 18-20 -- If respondent keeps different sections of the house at different temperatures, we want to know the temperature in the part of the house where the people are. If, for example, the heat is turned off upstairs during the day because the family is downstairs, we want the downstairs temperature.

If the respondent doesn't know temperature, but does know thermostat setting, record thermostat setting. Otherwise, probe for best estimate.

TURN TO EXHIBIT 22/25

22. During the last winter -- from October 1986 to April 1987 -- was there any period of 2 hours or more when you wanted to use your main source of heat but could not use it for any of these reasons?

(INTERVIEWER: READ AND MARK "YES" OR "NO" FOR EACH ITEM. SEE INSTRUCTION BELOW IF RESPONDENT) REPORTS LIVING AT ANOTHER ADDRESS DURING ALL OR PART OF THE OCTOBER 1986 TO APRIL 1987 PERIOD.

22a. A utility company shut off either your heating fuel or electricity needed to run your heating system . . . . . 1 [ ] YES 0 [ ] NO -- GO TO Q. 23a — 221

IF "YES," ON Q. 22a, ASK:

22b. Was this because you forgot to pay, you could not pay, or was there some other reason? (CHOOSE MOST IMPORTANT REASON IF MORE THAN ONE APPLIES.)
1 [ ] FORGOT TO PAY
2 [ ] COULD NOT PAY
5 [ ] OTHER: (SPECIFY): _____ — 222

22c. Thinking of all the times you were without heat because your fuel or electricity was shut off, altogether about how many hours or days were you without heat?
[ ] HOURS _____ OR [ ] DAYS _____ — 223-225

23a. You ran out of coal, wood, fuel oil or other bulk fuel . . . . . 1 [ ] YES 0 [ ] NO -- GO TO Q. 24a — 226

IF "YES," ON Q. 23a, ASK:

23b. Was this because you forgot to pay for or order fuel, because you could not pay for the fuel, or was there some other reason? (CHOOSE MOST IMPORTANT REASON IF MORE THAN ONE APPLIES.)
1 [ ] FORGOT TO PAY
2 [ ] COULD NOT PAY
5 [ ] OTHER: (SPECIFY:) _____ — 227

23c. Thinking of all the times you were without heat because you ran out of coal, fuel oil, or other bulk fuel, altogether about how many hours or days were you without heat? . . . . . [ ] HOURS _____ OR [ ] DAYS _____ — 228-230

24a. Your landlord did not provide heat . . . . . 1 [ ] YES 0 [ ] NO -- GO TO Q. 25a — 231

IF "YES," ON Q. 24a, ASK:

24b. Did the landlord fail to provide heat because you forgot to pay the rent, because you could not pay the rent, or was there some other reason? (CHOOSE MOST IMPORTANT REASON IF MORE THAN ONE APPLIES.)
1 [ ] FORGOT TO PAY
2 [ ] COULD NOT PAY
5 [ ] OTHER: (SPECIFY:) _____ — 232

24c. Thinking of all the times you were without heat because the landlord did not provide heat, altogether about how many hours or days were you without heat? . . . . . [ ] HOURS _____ OR [ ] DAYS _____ — 233-235

25a. Your heating system was broken . . . . . 1 [ ] YES 0 [ ] NO -- GO TO Q. 26a. — 236

IF "YES," ON Q. 25a, ASK:

25b. Did you have to delay repairing or replacing your heating system because you could not pay for the repair or replacement? . . . . . 1 [ ] YES 0 [ ] NO — 237

25c. Thinking of all the times you were without heat because your heating system was broken, altogether about how many hours or days were you without heat? . . . . . [ ] HOURS _____ OR [ ] DAYS _____ — 238-240

INTERVIEWER INSTRUCTIONS:

All questions on this page -- Assure the respondent that these questions apply to all permanent residences of the household from October 1986 to April 1987.

IF "YES," TO 22a OR 23a OR 24a OR 25a, ASK:

26a. How many different times were you without your main source of heat during the last winter -- from October 1986 to April 1987? TIMES WITHOUT MAIN SOURCE OF HEAT: [ ] *241-242*

26b. During the time your home was without your main source of heat, were you able to heat your home in some other way? *243*
1 [ ] YES
2 [ ] NO -- SKIP TO Q. 27
5 [ ] OTHER (SPECIFY:) _____

IF "YES," OR "OTHER," TO 26b, ASK:

26c. How were you able to heat your home? (INTERVIEWER. WRITE DOWN WHATEVER RESPONDENT REPORTS.) *244-245 246-247*

27. Has any wood been burned in your home in the past 12 months? *248*
1 [] YES
0 [] NO -- SKIP TO Q. 32

IF "YES" HAND RESPONDENT EXHIBIT 28, AND ASK:

28. This exhibit illustrates about one cord of wood. Did your household burn less than this amount, or about this amount or more? *249*
1 [] LESS THAN ONE CORD -- ASK Q. 29
2 [] ONE CORD OR MORE -- SKIP TO Q. 30

IF "LESS THAN ONE CORD," ON Q. 28, TURN TO EXHIBIT 29 AND ASK:

29. Which of these is most nearly the amount of wood burned in your household in the past 12 months? *250*
1 [] A FEW LOGS OR SCRAPS OF WOOD
2 [] 1/4 TO 1/3 OF A CORD
3 [] 1/2 CORD (ABOUT ONE PICK-UP TRUCK OF WOOD)
4 [] OVER 1/2 CORD BUT LESS THAN A FULL CORD

TAKE BACK EXHIBIT 29; SKIP TO Q. 31

IF "ONE CORD OR MORE" ON Q. 28, TURN TO EXHIBIT 30 AND ASK:

30. This exhibit shows wood piles of different sizes. Just using these as general reference points, about how many cords of wood did you burn in your household in the past 12 months? (SEE INSTRUCTION BELOW.) NUMBER OF CORDS: [ ] *251-253*

TAKE BACK EXHIBIT 30; ASK Q. 31

31. Did you purchase any wood to burn in your home in the last 12 months? *254*
1 [] YES
0 [] NO

INTERVIEWER INSTRUCTIONS:

Q. 30 -- Exhibit 30 is intended only for general reference. Probe for respondent's best estimate of number of cords burned -- this, of course, will ordinarily be a number different from the specific quantities shown on the exhibit. Record answer to nearest cord, or cord plus fraction, as given by respondent (for example: 1, 1-1/2, 4, 10, 12, and so on).

8

HAND RESPONDENT EXHIBIT 32/34

32. Which fuel is used most for heating water (other than just for cooking purposes)?

01 [] GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
02 [] LPG GAS (BOTTLED OR TANK GAS)
03 [] FUEL OIL
04 [] KEROSENE OR COAL OIL
05 [] ELECTRICITY
06 [] COAL OR COKE
07 [] WOOD
08 [] SOLAR COLLECTORS
21 [] OTHER (SPECIFY): _____
00 [] NO FUEL USED -- TAKE BACK EXHIBIT 32/34 SKIP TO Q. 38
96 [] DON'T KNOW

255-256

33. In addition to your main fuel, do you use any other fuel for heating water (other than just for cooking purposes)?

1 [] YES
0 [] NO -- TAKE BACK EXHIBIT 32/34 SKIP TO Q. 35

257

IF "YES," ASK:

34. What is the additional fuel?

01 [] GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
02 [] LPG GAS (BOTTLED OR TANK GAS)
03 [] FUEL OIL
04 [] KEROSENE OR COAL OIL
05 [] ELECTRICITY
06 [] COAL OR COKE
07 [] WOOD
08 [] SOLAR COLLECTORS
21 [] OTHER (SPECIFY): _____
96 [] DON'T KNOW

258-259

TAKE BACK EXHIBIT 32/34

35. Do you have hot running water in your home?

1 [] YES
0 [] NO

260

IF ONE-FAMILY HOUSE OR MOBILE HOME, ASK:

36. About how old is your water heater, just approximately? (INTERVIEWER: PROBE FOR BEST GUESS.)

1 [] LESS THAN 2 YEARS
2 [] 2 - 4 YEARS
3 [] 5 - 9 YEARS
4 [] 10 - 14 YEARS *261*
5 [] 15 YEARS OR MORE
6 [] DON'T KNOW
0 [] DO NOT HAVE A HOT WATER HEATER

IF 2 OR MORE UNITS IN BUILDING, ASK Q. 37.
OTHERWISE SKIP TO Q. 38 *262*

37. Does the equipment for heating water for your home also heat water for one or more other apartments, houses, or businesses?

0[] NO, HOT WATER EQUIPMENT IS FOR RESPONDENT'S HOME ONLY
1[] YES, HOT WATER EQUIPMENT HEATS WATER FOR ONE OR MORE OTHER APARTMENTS, HOUSES, OR BUSINESSES
6[] DON'T KNOW

38. Do you have air-conditioning equipment, either a central system or individual window or wall units? (MARK ALL THAT APPLY.)

[] YES, CENTRAL SYSTEM 263
[] YES, INDIVIDUAL (WINDOW/WALL) UNITS 264
[] NO -- SKIP TO Q. 45

IF "INDIVIDUAL (WINDOW/WALL) UNITS" ON Q. 38, ASK:

39. How many individual window or wall units do you have?

NUMBER OF UNITS: [ ] 265-266

IF "CENTRAL SYSTEM" ON Q. 38, ASK:

40. Does the central air-conditioning system use electricity, gas from underground pipes, or LPG?

3 [] ELECTRICITY 267
1 [] GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
2 [] LPG GAS (BOTTLED OR TANK GAS)
6 [] DON'T KNOW

IF 2 OR MORE HOUSING UNITS IN BUILDING, ASK Q. 41, OTHERWISE SKIP TO Q. 42

41. Does the air-conditioning equipment that cools your home also cool other apartments, houses, or businesses?

0 [] NO, A/C IS FOR RESPONDENT'S HOME ONLY
1 [] YES, A/C COOLS ONE OR MORE OTHER APARTMENTS, HOUSES, OR BUSINESSES
6 [] DON'T KNOW 268

42. How many rooms in your (house/apartment) can be cooled by your air conditioning? Do not count bathrooms, hallways, foyers, or enclosed porches.

NUMBER OF ROOMS: [ ] 269-270
95 [] ENTIRE HOUSE OR APARTMENT

HAND RESPONDENT EXHIBIT 43

43. Which of the statements on this exhibit best describes the way you used your air conditioner(s) last summer? (MARK ONLY ONE.)

0 [] DID NOT USE AT ALL 271
1 [] TURNED ON ONLY A FEW DAYS OR NIGHTS WHEN REALLY NEEDED
2 [] TURNED ON QUITE A BIT
3 [] TURNED ON JUST ABOUT ALL SUMMER
5 [] OTHER (SPECIFY): _____

TAKE BACK EXHIBIT 43

44. When you are using your air conditioning, about what temperature do you usually keep the cooled area? (SEE INSTRUCTION BELOW.)

DEGREES FAHRENHEIT: [ ] 272-273

INTERVIEWER INSTRUCTIONS:

Q. 44 -- If respondent keeps different sections of the house at different temperatures, we want to know the temperature in the part of the house where the people are. If, for example, the air conditioning is turned off upstairs during the day because the family is downstairs, we want the downstairs temperature.

If the respondent doesn't know temperature, but does know thermostat setting, record thermostat setting. Otherwise, probe for best estimate.

307-308:03

45. How many doors do you have in your home that go from a heated area to the outside or to an unheated area? (SEE INSTRUCTION BELOW.)

NUMBER OF DOORS: [ ] 311-312

[] NONE -- SKIP TO Q. 50

HAND RESPONDENT EXHIBIT 46

46. Please look at this exhibit of different kinds of doors. How many of each of these types of doors do you have?

	Q. 46 NUMBER OF DOORS	Q. 47 NUMBER WITH STORM DOOR OR INSULATING GLASS	Q. 48 NUMBER OF STORM/ INSULATING DOORS PUT IN SINCE SEPT. 1, 1985	Q. 49
a.	Sliding glass doors _____ [] NONE 313	_____ [] NONE 314	_____ [] NONE 315	MONTH: _____ YEAR: 198 ____ [] IN PROCESS 316-319
b.	Other doors to the outside _____ [] NONE 320	_____ [] NONE 321	_____ [] NONE 322	MONTH: _____ YEAR: 198 ____ [] IN PROCESS 323-326

TAKE BACK EXHIBIT 46

FOR EACH TYPE OF DOOR FOR WHICH ANSWER IS "ONE OR MORE," ASK:

47. (Does/How many of) the door(s) have (a storm door/ storm doors) or insulating glass?

FOR EACH TYPE OF STORM DOOR OR DOOR WITH INSULATING GLASS, ASK:

48. How many of the (storm/insulated glass) doors were put in your home since September 1, 1985?

IF ONE OR MORE, ASK:

49. In what month and year (was it/were they) installed?

INTERVIEWER INSTRUCTIONS:

Q. 45-46 -- Count each pair of sliding glass doors as one door. Include doors that go to an unheated porch or garage. Do not include doors to a heated hallway in an apartment building, doors that are permanently sealed shut, or doors to an unheated attic or basement.

Q. 48 -- Count as "In Process" any work started but not yet completed. Do not count work done before this household moved in.

50. How many windows do you have in your home? Please include basement, attic, garage, and porch windows only if these areas are heated. (SEE INSTRUCTION BELOW.)

Q. 50 NUMBER OF WINDOWS	Q. 51 NUMBER WITH STORM WINDOWS OR INSULATING GLASS	Q. 52 NUMBER STORM WINDOWS PUT IN SINCE SEPT. 1, 1985	Q. 53
_____	_____	_____	MONTH: _____
[] NONE 327-328	[] NONE 329-330	[] NONE 331-332	YEAR: 198 _____
			[] IN PROCESS 333-336

51. How many of the windows have storm windows or insulating glass? (SEE INSTRUCTION BELOW.)

IF ONE OR MORE WINDOWS WITH STORM WINDOWS OR INSULATING GLASS, ASK:

52. How many of the storm windows or windows with insulating glass were put in your home since September 1, 1985?

IF ONE OR MORE ASK:

53. In what month and year were they put in?

IF THE NUMBER OF WINDOWS IN Q. 50 IS GREATER THAN THE NUMBER OF WINDOWS WITH STORM WINDOWS OR INSULATING GLASS IN Q. 51, ASK:

54. You have mentioned that one or more of your windows does not have a storm window or insulating glass. For any of these windows without storm windows or insulating glass, do you use insulating drapes, plastic sheets or other protection? 337

1 [] YES
0 [] NO -- SKIP TO Q. 56

IF "YES," ASK:

55. Thinking now only of your windows without storm windows or insulating glass, about how many windows have insulating drapes, plastic sheets or other protection?

NUMBER WITH PROTECTION: [ ] 338-339

INTERVIEWER INSTRUCTIONS:

Q. 50 -- Each window that opens separately should be counted as one window. Also count windows that are fixed in place. Do not include windows (glass panels) in doors.

Q. 51 -- Windows made of double glass and other types of insulating glass count the same as storm windows.

Q. 52 -- Count as "In Process" any work started but not yet completed. Do not count work done before this household moved in.

IF ONE-FAMILY HOUSE OR MOBILE HOME, ASK Q. 56ff. IF 2 OR MORE UNITS IN BUILDING, SKIP TO Q. 86 ON PAGE 13.

56. Do you have roof or ceiling insulation in your home?

1 [] YES
0 [] NO -- SKIP TO Q. 62
6 [] DON'T KNOW -- SKIP TO Q. 62

340

IF "YES," HAND RESPONDENT EXHIBIT 57 AND ASK:

57. About how much of the roof or ceiling area is insulated?

0 [] VERY LITTLE (LESS THAN 5%)
1 [] 1/4 (5 - 33%)
2 [] 1/2 (34 - 66%)
3 [] 3/4 (67 - 95%)
4 [] ALL (96 - 100%)

341

TURN TO EXHIBIT 58

58. This exhibit shows different kinds of insulation. Please tell me whether or not you have each one in your roof or ceiling area.

a. BATT/BLANKET	1 [] YES 0 [] NO 6 [] DON'T KNOW 342	_____ INCHES [] DON'T KNOW 343-344
b. LOOSE PARTICLES/ LOOSE FILL	1 [] YES 0 [] NO 6 [] DON'T KNOW 345	_____ INCHES [] DON'T KNOW 346-347
c. FIRM FOAM/ FIRM PLASTIC	1 [] YES 0 [] NO 6 [] DON'T KNOW 348	_____ INCHES [] DON'T KNOW 349-350
d. SPRAYED-IN FOAM	1 [] YES 0 [] NO 6 [] DON'T KNOW 351	_____ INCHES [] DON'T KNOW 352-353
e. OTHER (SPECIFY): _____ _____	1 [] YES 0 [] NO 6 [] DON'T KNOW 354	_____ INCHES [] DON'T KNOW 355-356

FOR EACH "YES," ASK:

59. About how many inches of (INSULATION TYPE) do you have in your roof or ceiling area?

TAKE BACK EXHIBIT 58

60. Was any of the roof or ceiling insulation added or installed in your home since September 1, 1985?

INTERVIEWER: COUNT AS "IN PROCESS" ANY WORK STARTED BUT NOT YET COMPLETED. DO NOT COUNT ANY CHANGES MADE BEFORE THIS HOUSEHOLD MOVED IN.

1 [] YES
0 [] NO -- SKIP TO Q. 62
2 [] IN PROCESS -- SKIP TO Q. 62

357

IF "YES," ASK:

61. In what month and year was the work completed?

MONTH: _____
YEAR: 198 _____
[] IN PROCESS

358-361

CONTINUE IF ONE-FAMILY HOUSE OR MOBILE HOME. IF 2 OR MORE UNITS IN BUILDING, SKIP TO Q.86

62. Do you have insulation in all, some, or none of the outside walls of your home?

1 [] ALL
2 [] SOME
0 [] NONE -- SKIP TO Q. 65
6 [] DON'T KNOW -- SKIP TO Q. 65

362

IF "ALL" OR "SOME," ASK:

63. Was any of the insulation in the outside walls added or installed in your home since September 1, 1985? (SEE INSTRUCTION AT BOTTOM OF FACING PAGE.)

1 [] YES
0 [] NO -- SKIP TO Q. 65
2 [] IN PROCESS -- SKIP TO Q. 65

363

IF "YES," ASK:

64. In what month and year was the work completed? (SEE INSTRUCTION AT BOTTOM OF FACING PAGE.)

MONTH: _____
YEAR: 198_
[] IN PROCESS

364-367

HAND RESPONDENT EXHBIT 65

65. Please look at this list and as I read each item, tell me which, if any, you have in your home:

	Q. 65 HAVE SOME IN HOME	Q. 66 INSTALLED SINCE SEPTEMBER 1, 1985	Q. 67 MONTH/YEAR INSTALLED
a. Insulation in the basement or crawl space below the floor of your home	1 [] YES 0 [] NO 6 [] DON'T KNOW 368	1 [] YES 0 [] NO 2 [] IN PROCESS 369	MONTH: _____ YEAR: 198_ [] IN PROCESS 370-373
b. Insulation around heating and/or cooling ducts	1 [] YES 0 [] NO 6 [] DON'T KNOW 374	1 [] YES 0 [] NO 2 [] IN PROCESS 375	MONTH: _____ YEAR: 198_ [] IN PROCESS 376-379
c. Insulation around the hot water and/or cooling pipes	1 [] YES 0 [] NO 6 [] DON'T KNOW 411	1 [] YES 0 [] NO 2 [] IN PROCESS 412	MONTH: _____ YEAR: 198_ [] IN PROCESS 413-416
d. Insulation around the hot water heater	1 [] YES 0 [] NO 6 [] DON'T KNOW 417	1 [] YES 0 [] NO 2 [] IN PROCESS 418	MONTH: _____ YEAR: 198_ [] IN PROCESS 419-422
e. Caulking	1 [] YES 0 [] NO 6 [] DON'T KNOW 423	1 [] YES 0 [] NO 2 [] IN PROCESS 424	MONTH: _____ YEAR: 198_ [] IN PROCESS 425-428
f. Weather stripping around any windows or doors to the outside	1 [] YES 0 [] NO 6 [] DON'T KNOW 429	1 [] YES 0 [] NO 2 [] IN PROCESS 430	MONTH: _____ YEAR: 198_ [] IN PROCESS 431-434

407-408: 04

FOR EACH "YES" ON Q. 65, ASK:

66. Was any of the -- (SPECIFIED ITEM) -- added or installed since September 1, 1985? (SEE INSTRUCTION AT BOTTOM OF FACING PAGE.)

IF "YES, ADDED OR INSTALLED SINCE SEPTEMBER 1, 1985", ASK:

67. In what month and year was the work completed? (SEE INSTRUCTION AT BOTTOM OF FACING PAGE.)

CONTINUE IF ONE-FAMILY HOUSE OR MOBILE HOME. IF 2 OR MORE UNITS IN BUILDING, SKIP TO Q. 86

TURN TO EXHIBIT 68

68. Please look at this list and as I read each item tell me which, if any, have been added or installed in your home since September 1, 1985. (SEE INSTRUCTION AT BOTTOM OF PAGE.)

	Q. 68	Q. 69
a. An automatic set-back or clock thermostat	1 [] YES 0 [] NO 2 [] IN PROCESS 435	MONTH: ____ YEAR: 198____ [] IN PROCESS 436-439
b. Flame retention head burner for furnace (fuel oil)	1 [] YES 0 [] NO 2 [] IN PROCESS 440	MONTH: ____ YEAR: 198____ [] IN PROCESS 441-444
c. Automatic flue door (vent damper)	1 [] YES 0 [] NO 2 [] IN PROCESS 445	MONTH: ____ YEAR: 198____ [] IN PROCESS 446-449
d. Electrical or mechanical furnace ignition system (spark ignition)	1 [] YES 0 [] NO 2 [] IN PROCESS 450	MONTH: ____ YEAR: 198____ [] IN PROCESS 451-454
e. Closeable shutters, insulating drapes, reflective film	1 [] YES 0 [] NO 2 [] IN PROCESS 455	MONTH: ____ YEAR: 198____ [] IN PROCESS 456-459
f. Plastic sheets (over windows or other openings)	1 [] YES 0 [] NO 2 [] IN PROCESS 460	MONTH: ____ YEAR: 198____ [] IN PROCESS 461-464
g. Heat pump	1 [] YES 0 [] NO 2 [] IN PROCESS 465	MONTH: ____ YEAR: 198____ [] IN PROCESS 466-469
h. Wood-burning stove	1 [] YES 0 [] NO 2 [] IN PROCESS 470	MONTH: ____ YEAR: 198____ [] IN PROCESS 471-474

FOR EACH "YES," ASK:

69. In what month and year was the work completed? (SEE INSTRUCTION BELOW.)

TAKE BACK EXHIBIT 68

INTERVIEWER INSTRUCTIONS:

Was item added or installed since September 1, 1985 (Q. 63,66,68) -- Mark "Yes," "No," or "In Process" for each item. Count as "In Process" any work started but not yet completed. Do not count any changes made before this household moved in.

Month/year installed (Q. 64,67,69) -- If household has done item more than once, write down the most recent date.

507-
508:05

CONTINUE IF ONE-FAMILY HOUSE OR MOBILE HOME. IF 2 OR MORE UNITS IN BUILDING, SKIP TO Q.86

511-513

70. Do you have a heated swimming pool, hot tub or jacuzzi? (DO NOT COUNT A CHILDREN'S WADING POOL AS A SWIMMING POOL.)

HEATED SWIMMING POOL 1 [] YES 0 [] NO
HOT TUB 1 [] YES 0 [] NO
JACUZZI 1 [] YES 0 [] NO

IF "YES" ON HEATED SWIMMING POOL, HOT TUB OR JACUZZI, ASK:

HAND RESPONDENT EXHIBIT 71

71. What fuel is used to heat the water? (IF MORE THAN ONE FUEL IS USED, CHECK FUEL USED MOST.)

01 [] GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
02 [] LPG GAS (BOTTLED OR TANK GAS)
03 [] FUEL OIL
04 [] KEROSENE OR COAL OIL
05 [] ELECTRICITY
06 [] COAL OR COKE
07 [] WOOD
08 [] SOLAR COLLECTORS
21 [] OTHER (SPECIFY): _____
_____
96 [] DON'T KNOW

514-
515

TAKE BACK EXHIBIT 71

INTERVIEWER:

THIS IS A BLANK PAGE.

THERE ARE NO QUESTIONS 72-85.

GO TO NEXT PAGE.

These next questions are about household appliances.

86. Do you have a refrigerator in your home that you use regularly or occasionally?

1 [] YES
0 [] NO -- SKIP TO Q. 89

657

IF "YES," ASK:

87. Do you have one refrigerator or more than one that is presently in use? (How many altogether?)

1 [] ONE
2 [] TWO
3 [] THREE OR MORE

658

ASK ABOUT EACH REFRIGERATOR -- FIRST ASK ABOUT REFRIGERATOR USED MOST: (SEE INSTRUCTION BELOW.)

HAND RESPONDENT EXHIBIT 88

88. Which of these best describes your refrigerator? (MARK ONE)

- Freezer section (or ice cube section) must be defrosted periodically
- Freezer section defrosts automatically after frost builds up (catch pan must be emptied)
- Full frost-free (frost does not build up)
- No working freezer section

REFRIGERATOR #1	REFRIGERATOR #2
659	660
1 []	1 []
2 []	2 []
3 []	3 []
4 []	4 []

TAKE BACK EXHIBIT 88

INTERVIEWER INSTRUCTIONS:

Q. 88 -- If respondent has more than two refrigerators, ask about two used most.

HAND RESPONDENT EXHIBIT 89

89. Thinking of all the different kinds of cooking done here, including cooking in the oven, on a range, and with small appliances, which fuel is used most?

01 [] GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
02 [] LPG GAS (BOTTLED OR TANK GAS)
03 [] FUEL OIL
04 [] KEROSENE OR COAL OIL
05 [] ELECTRICITY — *661-662*
06 [] COAL OR COKE
07 [] WOOD
21 [] OTHER (SPECIFY): _____

00 [] NO COOKING DONE -- SKIP TO Q. 91

TURN TO EXHIBIT 90

90. Which of these are used for cooking here in your (house/apartment)?

ELECTRIC STOVE-TOP OR ELECTRIC BURNERS	*1* [] YES *0* [] NO	*663*
GAS STOVE-TOP OR GAS BURNERS	*1* [] YES *0* [] NO	*664*
MICROWAVE OVEN	*1* [] YES *0* [] NO	*665*
ELECTRIC OVEN OTHER THAN MICROWAVE	*1* [] YES *0* [] NO	*666*
GAS OVEN	*1* [] YES *0* [] NO	*667*
OUTDOOR GAS GRILL (USING GAS FROM UNDERGROUND PIPES)	*1* [] YES *0* [] NO	*668*
OUTDOOR GAS GRILL (USING LPG-BOTTLED OR TANK GAS)	*1* [] YES *0* [] NO	*669*

TURN TO EXHIBIT 91

91. Please look at this list and, as I read each item, tell me which of these you use here in your (house/apartment)? (INTERVIEWER: READ AND MARK "YES" or "NO" FOR EACH ITEM).

AUTOMATIC CLOTHES WASHER	1 [] YES	0 [] NO	670
WRINGER WASHING MACHINE (ELECTRIC)	1 [] YES	0 [] NO	671
ELECTRIC DISHWASHER	1 [] YES	0 [] NO	672
ELECTRIC CLOTHES DRYER	1 [] YES	0 [] NO	673
GAS CLOTHES DRYER	1 [] YES	0 [] NO	674
OUTDOOR GAS LIGHT	1 [] YES	0 [] NO	675
ELECTRIC DEHUMIDIFIER	1 [] YES	0 [] NO	676
ELECTRIC HUMIDIFIER	1 [] YES	0 [] NO	677
EVAPORATIVE COOLER (SWAMP COOLER)	1 [] YES	0 [] NO	678
"WHOLE HOUSE" COOLING FAN (IN ATTIC OR ENTRANCE TO ATTIC)	1 [] YES	0 [] NO	679
WINDOW OR CEILING FAN	1 [] YES	0 [] NO	680
ELECTRIC BLANKET	1 [] YES	0 [] NO	707-708,07 711
WATER BED WITH HEATER	1 [] YES	0 [] NO	712
FROST FREE FREEZER (SEPARATE APPLIANCE FROM REFRIGERATOR)	1 [] YES	0 [] NO	713
MANUAL DEFROST FREEZER (SEPARATE APPLIANCE FROM REFRIGERATOR)	1 [] YES	0 [] NO	714
BLACK AND WHITE TELEVISION SET	[] YES	0 [] NO	NUMBER: 715 [ ]
COLOR TELEVISION SET	[] YES	0 [] NO	NUMBER: 716 [ ]

IF "YES," FOR BLACK AND WHITE TV SET, ASK:

92. How many black and white television sets do you use here in your home?

IF "YES," FOR COLOR TV SET, ASK:

93. How many color television sets do you use here in your home?

TAKE BACK EXHIBIT 91. HAND RESPONDENT EXHIBIT 94.

94. Do you have any other kinds of equipment that use a lot of energy that we have not mentioned? 1 [] YES 0 [] NO — 717

IF "YES" ON Q. 94, ASK:

95. Please describe the equipment and how you use it.

TAKE BACK EXHIBIT 94 — 718-720

96. Now I have some questions about the people who live here. Please tell me who they are, just in relation to (HOUSEHOLDER). I would also like to know their ages on their last birthdays. Please begin with (HOUSEHOLDER). (SEE INSTRUCTIONS BELOW.)

PERSON NUMBER	WHO IS RESPON-DENT?	RELATIONSHIP TO HOUSEHOLDER	SEX		AGE	Q. 101 - EMPLOYMENT (AGE 14+)			
			FEMALE	MALE		FULL TIME	PART TIME	NOT EMPLOYED	
1		HOUSEHOLDER	1[]	2[]		1[]	2[]	0[]	721-727
2			1[]	2[]		1[]	2[]	0[]	731-737
3			1[]	2[]		1[]	2[]	0[]	741-747
4			1[]	2[]		1[]	2[]	0[]	751-757
5			1[]	2[]		1[]	2[]	0[]	761-767
6			1[]	2[]		1[]	2[]	0[]	771-777
7			1[]	2[]		1[]	2[]	0[]	807-808:08 811-817
8			1[]	2[]		1[]	2[]	0[]	821-827
9			1[]	2[]		1[]	2[]	0[]	831-837
10			1[]	2[]		1[]	2[]	0[]	841-847
11			1[]	2[]		1[]	2[]	0[]	851-857
12			1[]	2[]		1[]	2[]	0[]	861-867

I have listed (READ RELATIONSHIPS FROM Q. 96 ABOVE). Have I missed . . . . .

97. Any babies or small children? [] YES (ADD TO LISTING) [] NO

98. Any lodgers, boarders, or persons in your employ who live here? [] YES (ADD TO LISTING) [] NO

99. Anyone who usually lives here but is away traveling or in the hospital? (SEE INSTRUCTION BELOW.) [] YES (ADD TO LISTING) [] NO

100. Anyone else staying here who does not have a regular residence elsewhere? [] YES (ADD TO LISTING) [] NO

FOR OFFICE USE ONLY:

868-869

FOR EACH PERSON AGED 14 YEARS OR OLDER, ASK:

101. Is he/she employed full-time (30 hours or more per week), part-time, or not employed?

INTERVIEWER INSTRUCTIONS:

In general, the householder is the person (or one of the persons) in whose name the home is owned or rented.

For questions on this and the following pages, where the term "HOUSEHOLDER" is inserted, use the appropriate designation -- you, your husband, wife, partner -- depending on who is the householder and whom you are interviewing.

Q. 96 -- Be sure to list relationships, not names. Include members of a second family that share the housing unit. Check box to indicate which household member is the respondent.

Q. 99 -- Persons who are normally members of the household but who are now living away from home (e.g., college students or members of the Armed Forces) should not be listed.

102. Does another family share your home with you?

1 [] YES (SEE INSTRUCTION BELOW.)
0 [] NO

870

INTERVIEWER: MARK ANSWER. ASK, IF NECESSARY.

HOUSEHOLDER'S MARITAL STATUS

103. Which of the following best describes (HOUSEHOLDER): now married, widowed, divorced or separated, or never married?

1 [] NOW MARRIED
2 [] WIDOWED
3 [] DIVORCED OR SEPARATED
4 [] NEVER MARRIED

871

HAND RESPONDENT EXHIBIT 104

104. Which of the groups on this exhibit best describes (HOUSEHOLDER)?

1 [] WHITE
2 [] BLACK OR NEGRO
3 [] AMERICAN INDIAN, ALASKAN NATIVE
4 [] ASIAN, PACIFIC ISLANDER
5 [] OTHER (SPECIFY): _____

872

TAKE BACK EXHIBIT 104

105. Is (HOUSEHOLDER) of Spanish or Hispanic origin or descent?

1 [] YES
0 [] NO

873

INTERVIEWER INSTRUCTIONS:

Q. 102 -- If answer is "YES," check whether the additional family (or unrelated individual) has a separate room or apartment that is defined by our rules as separate living quarters. Separate living quarters are those in which the occupants (1) live and eat separately from other persons in building, and (2) have direct access from outside the building or through a common hall.

Separate living quarters should be listed separately on your housing unit address list for this location. See sampling instructions as to whether an additional interview should be completed.

If the second family's space does meet the rules for separate living quarters, that space should be excluded from the information obtained in this interview. Go back over this interview to make corrections if necessary.

If the second family's space does not meet the definition of separate living quarters, be sure that the members of the second family are included in the list of household members in Q. 96

I have just a few questions for background statistical purposes.

106. What is the highest grade (or year) (HOUSEHOLDER) attended in school?

00 [] NEVER ATTENDED SCHOOL
SKIP TO Q. 108

01 [] FIRST		07 [] SEVENTH		
02 [] SECOND		08 [] EIGHTH		
03 [] THIRD		09 [] NINTH		
04 [] FOURTH		10 [] TENTH		
05 [] FIFTH		11 [] ELEVENTH		
06 [] SIXTH		12 [] TWELFTH		874-875

COLLEGE (ACADEMIC YEARS)

13 [] C1	16 [] C4
14 [] C2	17 [] C5
15 [] C3	18 [] C6 OR MORE

107. Did (HOUSEHOLDER) finish that grade (or year)?

1 [] YES
0 [] NO — 876

HAND RESPONDENT EXHIBIT 108

108. In the past 12 months, did you or any member of your family living here receive any income or benefits from: (INTERVIEWER: READ AND MARK "YES" OR "NO" FOR EACH ITEM.) — 907-908:09

a. Wages or salaries.	1 [] YES	0 [] NO	911
b. Self-employment from business or farm. . . .	1 [] YES	0 [] NO	912
c. Aid to Families with Dependent Children (AFDC).	1 [] YES	0 [] NO	913
d. Supplemental Security Income (SSI)	1 [] YES	0 [] NO	914
e. General Assistance or other public assistance	1 [] YES	0 [] NO	915
f. Food Stamps.	1 [] YES	0 [] NO	916
g. Social Security or Railroad Retirement . . .	1 [] YES	0 [] NO	917
h. Unemployment compensation	1 [] YES	0 [] NO	918

TURN TO EXHIBIT 109

109. Now let's look at this list of income groups. Please tell me which group letter best describes the total combined income in the last 12 months of all members of your family living here, from all sources -- wages, dividends, Social Security, and so forth -- before taxes and deductions. (Family includes all related persons living in this household.)

CIRCLE LETTER FOR INCOME GROUP *919-920*

01 A	LESS THAN $ 3,000	*10* I	$11,000 - $12,499	*19* Q	$27,500 - $29,999
02 B	$ 3,000 - $ 3,999	*12* J	$12,500 - $13,999	*20* R	$30,000 - $32,499
03 C	$ 4,000 - $ 4,999	*13* K	$14,000 - $14,999	*21* S	$32,500 - $34,999
04 D	$ 5,000 - $ 5,999	*14* L	$15,000 - $17,499	*22* T	$35,000 - $39,999
05 E	$ 6,000 - $ 7,499	*15* M	$17,500 - $19,999	*23* U	$40,000 - $49,999
07 F	$ 7,500 - $ 8,999	*16* N	$20,000 - $22,499	*24* V	$50,000 - $74,999
08 G	$ 9,000 - $ 9,999	*17* O	$22,500 - $24,999	*25* W	$75,000 OR OVER
09 H	$10,000 - $10,999	*18* P	$25,000 - $27,499		

96 [] DON'T KNOW

97 [] REFUSED

TAKE BACK EXHIBIT 109

IF ANSWER TO Q.109 IS GROUP R THROUGH W (INCOME $30,000 OR OVER), SKIP TO Q. 115 ON PAGE 26.
IF ANSWER TO Q.109 IS GROUP A THROUGH Q (INCOME UNDER $30,000), "DON'T KNOW", OR "REFUSED", CONTINUE WITH Q. 110.

HAND RESPONDENT EXHIBIT 110

110. Between October 1, 1986, and September 30, 1987, did your household receive any of the following services free or at reduced cost from the federal, state, or local government? (INTERVIEWER: READ AND MARK "YES" OR "NO" FOR EACH ITEM.)

a. Insulation in the attic, outside wall, or basement/crawl space below the floor of the house	*1* [] YES	*0* [] NO	*921*
b. Insulation around the hot water heater.	*1* [] YES	*0* [] NO	*922*
c. Repair of broken windows or doors to keep out the cold or hot weather	*1* [] YES	*0* [] NO	*923*
d. Weather stripping or caulking around any windows or doors to the outside	*1* [] YES	*0* [] NO	*924*
e. Storm doors or windows added.	*1* [] YES	*0* [] NO	*925*
f. Repair of broken furnace	*1* [] YES	*0* [] NO	*926*
g. Furnace tuneup and/or modifications	*1* [] YES	*0* [] NO	*927*
h. Other home energy-saving devices (Specify): _____	*1* [] YES	*0* [] NO	*928*

TURN TO EXHIBIT I11

111. The government has a home energy assistance program that helps pay heating and cooling costs. This assistance can be received directly by the household or it can be paid directly to the electric or gas company or fuel dealer.

Between October 1, 1986 and September 30, 1987 did your household receive government energy assistance (either directly or through the utility company or fuel dealer) for any of the following: (INTERVIEWER: READ AND MARK "YES" OR "NO" FOR EACH ITEM).

111a. Help in paying home heating costs	1 [] YES	0 [] NO	929
111b. Help in paying home cooling costs	1 [] YES	0 [] NO	930
111c. Help in paying other home energy costs.	1 [] YES	0 [] NO	931

IF "YES" ON Q. 111c, ASK:

112. Please describe this other assistance.

IF "YES" ON Q. 111a (ASSISTANCE TO HELP PAY HOME HEATING COSTS), TURN TO EXHIBIT 113 AND ASK:

113. Were heating assistance payments made in the form of checks, coupons, or vouchers sent to this household or were the payments sent directly to the utility company or fuel dealer? (INTERVIEWER: READ AND MARK "YES" OR "NO" FOR EACH ITEM).

a. Check to household	1 [] YES	0 [] NO	932
b. Coupon/voucher to household.	1 [] YES	0 [] NO	933
c. Assistance sent directly to electric or gas company, or fuel dealer	1 [] YES	0 [] NO	934

114. Altogether, how much government energy assistance to help pay heating costs has been provided directly to this household and/or provided on behalf of this household to a utility company or fuel dealer, between October 1, 1986 and September 30, 1987? (PROBE FOR BEST ESTIMATE). NUMBER OF DOLLARS $_____.00

935-938

TAKE BACK EXHIBITS

ASK EVERYONE

115. Do you or members of your household own your home or do you rent?

1 [] OWN (BUYING) *939*
2 [] RENT -- SKIP TO Q. 118
3 [] OCCUPIED WITHOUT PAYMENT OF RENT -- SKIP TO Q. 120

IF "OWN (BUYING)," ASK:

116. Is this (house/apartment) part of a condominium or cooperative? *940*

1 [] YES, CONDOMINIUM
2 [] YES, COOPERATIVE
0 [] NO
---- SKIP TO Q. 120

INTERVIEWER: THERE IS NO QUESTION 117

IF "RENT," ASK:

118. Is this residence in a public housing project -- that is, is it owned by a local housing authority?

1 [] YES -- SKIP TO Q. 120
0 [] NO *945*
6 [] DON'T KNOW

IF "NO" OR "DON'T KNOW," ASK:

119. Are you paying lower rent because the federal, state, or local government is paying part of the cost?

1 [] YES
0 [] NO *946*
6 [] DON'T KNOW

HAND RESPONDENT EXHIBIT 120

120. We may have covered some of these points before, but just to be sure, please look at this exhibit and tell me whether these fuels are used for these purposes in your household.

	USED	NOT USED	PAID BY HOUSEHOLD	INCLUDED IN RENT	OTHER (SPECIFY)	
ELECTRICITY						
a. FOR HOT WATER	1 []	0 []	1 []	2 []	5 [] _____	947-948
b. FOR HEATING YOUR HOME	1 []	0 []	1 []	2 []	5 [] _____	949-950
c. FOR AIR-CONDITIONING (CENTRAL OR WINDOW/WALL UNITS)	1 []	0 []	1 []	2 []	5 [] _____	951-952
d. FOR COOKING	1 []	0 []	1 []	2 []	5 [] _____	953-954
e. FOR LIGHTING AND OTHER APPLIANCES	1 []	0 []	1 []	2 []	5 [] _____	955-956
GAS FROM UNDERGROUND PIPES SERVING YOUR NEIGHBORHOOD						
f. FOR HOT WATER	1 []	0 []	1 []	2 []	5 [] _____	957-958
g. FOR HEATING YOUR HOME	1 []	0 []	1 []	2 []	5 [] _____	959-960
h. FOR CENTRAL AIR-CONDITIONING	1 []	0 []	1 []	2 []	5 [] _____	961-962
i. FOR COOKING INSIDE HOME	1 []	0 []	1 []	2 []	5 [] _____	963-964
j. FOR COOKING ON OUTDOOR GRILL	1 []	0 []	1 []	2 []	5 [] _____	965-966
k. FOR OTHER APPLIANCES (INCLUDE OUTSIDE GAS LIGHT HERE)	1 []	0 []	1 []	2 []	5 [] _____	967-968
LPG GAS (BOTTLED OR TANK GAS)						
l. FOR HOT WATER	1 []	0 []	1 []	2 []	5 [] _____	969-970
m. FOR HEATING YOUR HOME	1 []	0 []	1 []	2 []	5 [] _____	971-972
n. FOR CENTRAL AIR-CONDITIONING	1 []	0 []	1 []	2 []	5 [] _____	973-974
o. FOR COOKING INSIDE HOME	1 []	0 []	1 []	2 []	5 [] _____	975-976
p. FOR COOKING ON OUTDOOR GRILL	1 []	0 []	1 []	2 []	5 [] _____	977-978
q. FOR OTHER APPLIANCES (INCLUDE OUTSIDE GAS LIGHT HERE)	1 []	0 []	1 []	2 []	5 [] _____	979-980
						1007-1008:10
FUEL OIL						
r. FOR HOT WATER	1 []	0 []	1 []	2 []	5 [] _____	1011-1012
s. FOR HEATING YOUR HOME	1 []	0 []	1 []	2 []	5 [] _____	1013-1014
t. FOR COOKING AND OTHER USES	1 []	0 []	1 []	2 []	5 [] _____	1015-1016
KEROSENE						
u. FOR HOT WATER	1 []	0 []	1 []	2 []	5 [] _____	1017-1018
v. FOR HEATING YOUR HOME	1 []	0 []	1 []	2 []	5 [] _____	1019-1020
w. FOR COOKING AND OTHER USES	1 []	0 []	1 []	2 []	5 [] _____	1021-1022

FOR EACH USE OF EACH FUEL, ASK:

121. Is that paid for by your household, included in your rent, or do you get it some other way?

TAKE BACK EXHIBIT 120

IF GAS FROM UNDERGROUND PIPES IS NOT USED, ASK Q. 122. OTHERWISE, SKIP TO INSTRUCTION AT TOP OF NEXT PAGE.

122. Is gas from underground pipes available in this neighborhood?

1 [] YES
0 [] NO
6 [] DON'T KNOW

1023

INTERVIEWER: IF USE OF ANY FUEL IS "PAID BY HOUSEHOLD" IN QUESTIONS ON PRECEDING PAGE, CONTINUE BELOW. OTHERWISE, SKIP TO INSTRUCTION FOR Q. 147 ON PAGE 35.

1024

123. A budget plan is a plan under which the utility company or fuel dealer and household agree that the household will pay the same amount for fuel each month for a number of months. Is your household on a budget plan for the main fuel used to heat your home?

1 [] YES
0 [] NO

(INTERVIEWER: THERE IS NO QUESTION 124.)

TURN TO EXHIBIT 125/126

1030

125. Do any of your household fuel bills include costs of fuel used for purposes other than for your own living quarters, such as farm buildings or machinery, the house or apartment of another household, a business or office, or anything else?

1 [] YES
0 [] NO -- TAKE BACK EXHIBIT 125/126 -- SKIP TO INSTRUCTIONS FOR Q. 133 ON PAGE 30.

IF "YES," ASK:

126. For which of the purposes listed on the exhibit are costs of fuel included in your household fuel bills? (INTERVIEWER: MARK ALL THAT APPLY.)

[] FARM BUILDINGS OR MACHINERY *1031*
[] THE HOUSE OR APARTMENT OF ANOTHER HOUSEHOLD *1032*
[] A BUSINESS OR OFFICE *1033*
[] OTHER PURPOSES (SPECIFY): _____ *1034*

_____

IF "YES" ON Q. 125, CONTINUE BELOW

127. Which fuel bills include costs of fuel used for purposes other than your own living quarters? (MARK AS MANY AS APPLY.)

[] ELECTRICITY 1035
[] GAS FROM UNDERGROUND PIPES 1036
[] LPG GAS (BOTTLED OR TANK GAS) 1037
[] FUEL OIL 1038
[] KEROSENE 1039

TURN TO EXHIBIT 128/132

IF "ELECTRICITY" ON Q. 127, ASK:

128. Over the period of a year, about how much of your household's electricity bill is used for non-household uses such as farm buildings or machinery, the house or apartment of another household, a business or office, or anything else?

0 [] VERY LITTLE (LESS THAN 5%)
1 [] 1/4 (5 - 33%)
2 [] 1/2 (34 - 66%) 1040
3 [] 3/4 (67 - 95%)

IF "GAS FROM UNDERGROUND PIPES" ON Q. 127, ASK:

129. Over the period of a year, about how much of your household's gas bill is used for non-household uses such as farm buildings or machinery, the house or apartment of another household, a business or office, or anything else?

0 [] VERY LITTLE (LESS THAN 5%)
1 [] 1/4 (5 - 33%)
2 [] 1/2 (34 - 66%) 1041
3 [] 3/4 (67 - 95%)

IF "LPG GAS" ON Q. 127, ASK:

130. Over the period of a year, about how much of your household's LPG bill is used for non-household uses such as farm buildings or machinery, the house or apartment of another household, a business or office, or anything else?

0 [] VERY LITTLE (LESS THAN 5%)
1 [] 1/4 (5 - 33%)
2 [] 1/2 (34 - 66%) 1042
3 [] 3/4 (67 - 95%)

IF "FUEL OIL" ON Q. 127, ASK:

131. Over the period of a year, about how much of your household's fuel oil bill is used for non-household uses such as farm buildings or machinery, the house or apartment of another household, a business or office, or anything else?

0 [] VERY LITTLE (LESS THAN 5%)
1 [] 1/4 (5 - 33%)
2 [] 1/2 (34 - 66%) 1043
3 [] 3/4 (67 - 95%)

IF "KEROSENE" ON Q. 127, ASK:

132. Over the period of a year, about how much of your household's kerosene bill is used for non-household uses, such as farm buildings or machinery, the house or apartment of another household, a business or office, or anything else?

0 [] VERY LITTLE (LESS THAN 5%)
1 [] 1/4 (5 - 33%)
2 [] 1/2 (34 - 66%) 1044
3 [] 3/4 (67 - 95%)

TAKE BACK EXHIBIT 128/132

IF HOUSEHOLD USES AND PAYS FOR LPG GAS (SEE QUESTIONS 120-121 PARTS l-q), ASK Q. 133ff., OTHERWISE, SKIP TO INSTRUCTION FOR Q. 136.

133. About how many deliveries of LPG does your household usually get in a year?

NUMBER OF DELIVERIES: [ ] 1045-1046

94 [ ] CASH AND CARRY, PICK UP AT STORE
95 [ ] LIVED HERE LESS THAN 1 YEAR

134. Did you buy LPG for this (house/apartment) in the past 12 months from one company or from more than one company?

1 [ ] ONE COMPANY
2 [ ] MORE THAN ONE COMPANY

1047

IF "MORE THAN ONE COMPANY," ASK:

135. How many different companies?

2 [ ] TWO
3 [ ] THREE
4 [ ] FOUR OR MORE

1048

IF HOUSEHOLD USES AND PAYS FOR FUEL OIL (SEE QUESTIONS 120-121 PARTS r-t), ASK Q. 136, OTHERWISE, SKIP TO INSTRUCTION FOR Q. 140.

136. About how many deliveries of fuel oil does your household usually get in a year?

NUMBER OF DELIVERIES: [ ] 1049-1050

94 [ ] CASH AND CARRY, PICK UP AT STORE
95 [ ] LIVED HERE LESS THAN 1 YEAR

137. Did you buy fuel oil for this (house/apartment) in the past 12 months from one company or from more than one company?

1 [ ] ONE COMPANY
2 [ ] MORE THAN ONE COMPANY

1051

IF "MORE THAN ONE," ASK:

138. How many different companies?

2 [ ] TWO
3 [ ] THREE
4 [ ] FOUR OR MORE

1052

HAND RESPONDENT EXHIBIT 139

139. About how much fuel oil does household use in a year -- which of these groups would it be, just approximately? PROBE FOR BEST ESTIMATE.

1 [ ] LESS THAN 100 GALLONS PER YEAR
2 [ ] 100-499 GALLONS PER YEAR
3 [ ] 500-999 GALLONS PER YEAR
4 [ ] 1000 OR MORE GALLONS PER YEAR

1053

TAKE BACK EXHIBIT 139

IF HOUSEHOLD USES AND PAYS FOR KEROSENE (SEE QUESTIONS 120-121 PARTS u-w), ASK Q. 140ff. OTHERWISE, SKIP TO INSTRUCTION FOR Q. 144.

140. During the past 12 months, did you have kerosene delivered to your home, did you buy it and bring it home, or did you get kerosene both ways? (MARK ALL THAT APPLY).

1 [] DELIVERED -- GO TO Q. 140a
2 [] BOUGHT AND BROUGHT HOME -- GO TO Q. 140b
0 [] NO KEROSENE DELIVERED OR BOUGHT IN PAST 12 MONTHS -- SKIP TO INSTRUCTION FOR Q. 144

1562

IF "DELIVERED," ASK:

140a. How many different companies or stores delivered kerosene to your home in the past 12 months?

1 [] ONE
2 [] TWO
3 [] THREE
4 [] FOUR OR MORE

1563

IF "BOUGHT AND BROUGHT HOME," ASK:

140b. About how much per gallon did you pay for kerosene, on the average?

IF "DON'T KNOW," PROBE: About how much did you pay in total each time you bought kerosene?

PRICE PER GALLON: $___.___ 1564-1566
[] DON'T KNOW

PAYMENT: $_____ 1567-1570

141. How many times in the past 12 months did you (have kerosene delivered/buy kerosene)?

TOTAL NUMBER OF DELIVERIES/ PURCHASES FOR PAST 12 MONTHS: [ ] [] DON'T KNOW 1571-1572

IF TOTAL NUMBER GIVEN ON Q. 141, ASK:

142. On the average, about how many gallons of kerosene did you (have delivered/buy) each time?

NUMBER OF GALLONS: [ ] [] DON'T KNOW 1573-1575

IF "DON'T KNOW" ON Q. 141, ASK:

143. Altogether, about how many gallons of kerosene did you (have delivered/buy) during the past 12 months?

NUMBER OF GALLONS: [ ] [] DON'T KNOW 1576-1579

IF "DON'T KNOW" ON Q.143, HAND RESPONDENT EXHIBIT 143.

143a. Using this card, can you tell me which group best describes the amount of kerosene your household used in the past 12 months? PROBE FOR BEST ESTIMATE.

1 [] LESS THAN 25 GALLONS
2 [] 25 - 49 GALLONS
3 [] 50 - 99 GALLONS
4 [] 100 - 499 GALLONS
5 [] 500 - 999 GALLONS
6 [] 1,000 OR MORE GALLONS

1580

TAKE BACK EXHIBIT 143

CONTINUE IF ANY ELECTRIC, GAS (FROM UNDERGROUND PIPES OR LPG), FUEL OIL, OR KEROSENE BILLS ARE PAID BY HOUSEHOLD. OTHERWISE, SKIP TO INSTRUCTION FOR Q. 147.

144. In addition to the types of fuel you use, we are interested in the quantities used and in the amount that people pay for electricity, gas, fuel oil, or kerosene in different parts of the United States.

I have a form that would authorize the companies that supply your household to provide that information to Response Analysis Corporation. The authorization applies to the period from September 1986 through December 1990.

Since this study is being done nationwide, it will give a good picture of the differences in fuel cost and usage all over the country. The information is needed to help establish important national energy policies.

INTERVIEWER: REMOVE THE AUTHORIZATION FORM FROM THE QUESTIONNAIRE AND HAND TO RESPONDENT. EITHER YOU OR RESPONDENT SHOULD FILL IN THE NAME(S) OF COMPANIES. IF MORE THAN ONE LPG OR FUEL OIL OR KEROSENE COMPANY HAS BEEN USED SINCE SEPTEMBER 1, 1986, FILL IN ADDITIONAL COMPANY NAMES ON OTHER SIDE OF FORM. PLEASE PRINT.

1 [] AUTHORIZATION FORM SIGNED

0 [] AUTHORIZATION FORM NOT SIGNED -- INTERVIEWER, EXPLAIN BELOW: *1059*

_____

_____

IF AUTHORIZATION FORM IS SIGNED, ASK Q. 145ff, OTHERWISE, SKIP TO INSTRUCTION FOR Q. 147

145. Do your fuel bills come addressed to (NAME OF SIGNATURE ON AUTHORIZATION FORM), or are they in another name?

1[] SAME NAME -- SKIP TO Q. 146

2[] ANOTHER NAME *1060*

IF BILL IS IN ANOTHER NAME, ASK:

145a. What is that name and address:

BILLING NAME: _____

STREET ADDRESS: _____

CITY AND STATE: _____

ZIP CODE: _____

146. Would it be possible for you to give me your customer number at your electric/gas company? This number is on your bills from the company.

ELECTRIC COMPANY -- CUSTOMER NUMBER: _____ *1061*

[] NOT AVAILABLE/REFUSED

GAS (FROM UNDERGROUND PIPES) -- CUSTOMER NUMBER: _____ *1062*

[] NOT AVAILABLE/REFUSED

INTERVIEWER

THE AUTHORIZATION FORM IS TO BE FILLED OUT AT THIS POINT IN THE INTERVIEW. USE THE SEPARATE FORM THAT IS INSERTED IN THE QUESTIONNAIRE.

34

IF HOUSEHOLD HAS ONE OR MORE FUELS "INCLUDED IN RENT" OR "OTHER" (SEE Q. 121), ASK Q. 147
OTHERWISE, SKIP TO Q. 148.

147. We may be needing some additional information about fuels used in this building (house). May I have the name of the person or company to whom you pay rent or who is responsible for paying the fuel bills for this building (house)?

1063

NAME: _____

TELEPHONE NUMBER: (AREA CODE: _____) _____

STREET ADDRESS: _____

CITY OR TOWN/STATE/ZIP CODE: _____

ASK EVERYONE

148. For interview verification purposes, may I have your name, phone number, and mailing address please?

RESPONDENT'S NAME: _____

TELEPHONE NUMBER: (AREA CODE: _____) _____

STREET ADDRESS: _____

CITY OR TOWN/STATE/ZIP CODE: _____

IF APARTMENT, MOBILE HOME/TRAILER COMPLEX AND THE NAME OF THE COMPLEX IS NOT INCLUDED IN THE ADDRESS ABOVE, ASK:

149. Does this (building/development/complex/park) have a name? [] YES [] NO

IF "YES," ASK:

150. What is the name?

NAME: _____

ASK EVERYONE

Now some questions about cars.

151. How many members of your household can drive a car?

NUMBER OF DRIVERS: [ ] 525-526

[] NONE

HAND RESPONDENT EXHIBIT 152

152. Do you or other members of your household own or have the regular use of any cars, trucks, vans, or similar vehicles? (DO NOT INCLUDE MOTORCYCLES OR MOPEDS. SEE INSTRUCTION BELOW.)

1 [] YES 527

0 [] NO -- TAKE BACK EXHIBIT 152 AND SKIP TO Q. 165

IF "YES," ASK:

153. How many do you have?

NUMBER OF VEHICLES: [ ] 528-529

ASK ABOUT EACH VEHICLE.

607-608:06

154. Which type(s) do you have? (SEE INSTRUCTION BELOW.)

	VEHICLE NUMBER 1	2	3	4
STANDARD PASSENGER CAR	01 [] 530-531	01 [] 553-554	01 [] 611-612	01 [] 634-635
2-SEAT CAR	02 []	02 []	02 []	02 []
STATION WAGON	03 []	03 []	03 []	03 []
LARGE VAN	04 []	04 []	04 []	04 []
MINI VAN	05 []	05 []	05 []	05 []
PICKUP TRUCK	06 []	06 []	06 []	06 []
JEEP OR SIMILAR VEHICLE	07 []	07 []	07 []	07 []
OTHER (SPECIFY:)	21 []	21 []	21 []	21 []

TAKE BACK EXHIBIT 152

155. Please tell me the make and model name (of each one). (SEE INSTRUCTION BELOW.)

	1	2	3	4
	532-533	555-556	613-614	636-637
MAKE				
	534-535	557-558	615-616	638-639
MODEL NAME				
	536-537	559-560	617-618	640-641

156. What is the model year (of each one)? (ENTER LAST 2 DIGITS OF MODEL YEAR)

	1	2	3	4
MODEL YEAR	19	19	19	19

INTERVIEWER INSTRUCTIONS:

Q. 152 -- "Regular use" means keeping the vehicle at home.

Q. 154 -- If household has more than four vehicles, mark answers for the four vehicles used most.

Q. 155 -- A model name may consist of several parts -- be sure to get the complete model name. Here are some examples, where the complete model name is in parentheses: Ford (Galaxie), Chevrolet (V10 Surburban), GMC (V15 Gimmy), Toyota (2WD Cargo Van). If respondent does not know the model name of a truck, probe for size (1/2 ton, 3/4 ton, etc.)

CONTINUE IF ONE OR MORE VEHICLES ON Q. 153; OTHERWISE SKIP TO Q. 165

ASK Q's. 157-164 FIRST ABOUT FIRST VEHICLE, THEN SECOND VEHICLE, THIRD, AND FOURTH; REPEAT MAKE AND MODEL OF EACH VEHICLE.

USE COLUMNS FOR VEHICLE NUMBERS CORRESPONDING TO THOSE ON PRECEDING PAGE

These next questions are about your (MAKE & MODEL 1/ MAKE & MODEL 2/ MAKE & MODEL 3/ MAKE & MODEL 4.)

	VEHICLE NUMBER			
	1	2	3	4
	538	*561*	*619*	*642*
157. Did you get this vehicle within the past 12 months or did you have it before that?				
WITHIN PAST 12 MONTHS ASK Q. 158	*1* []	*1* []	*1* []	*1* []
HAD IT MORE THAN 12 MONTHS SKIP TO Q. 160	*2* []	*2* []	*2* []	*2* []
IF "WITHIN PAST 12 MONTHS," ASK:	*539-542*	*562-565*	*620-623*	*643-646*
158. In what month and year did you get it? MONTH	_____	_____	_____	_____
YEAR	198 _____	198 _____	198 _____	198 _____
159. Approximately how many miles has it been driven since you have had it?	*543-547*	*566-570*	*624-628*	*647-651*
MILES	_____	_____	_____	_____
DON'T KNOW	[]	[]	[]	[]
IF "HAD IT MORE THAN 12 MONTHS" ON Q. 157, ASK:	*548-552*	*571-575*	*629-633*	*652-656*
160. Approximately how many miles was it driven during the past 12 months? MILES	_____	_____	_____	_____
DON'T KNOW	[]	[]	[]	[]
161. I would like to obtain the odometer reading and Vehicle Identification Number for this vehicle -- directly from the vehicle. Is the vehicle available right now so that we may get this information? YES	[]	[]	[]	[]
CHECK HERE AND ASK Q. 164				
NO	[]	[]	[]	[]
GO TO NEXT PAGE AND ASK Q's 162-163				

INSPECT EACH VEHICLE MARKED "YES" ON Q. 161 AFTER YOU COMPLETE HOUSE MEASUREMENTS IN Q's 180-184.

IF "NO" ON Q. 161 (THIS CAR IS NOT AVAILABLE) ASK Q. 162. IF "YES" ON Q.161, ASK Q. 157 FOR NEXT VEHICLE; IF NO OTHER VEHICLES, SKIP TO Q. 165.

162. Do you know approximately what the odometer reading is for this vehicle?

HAND RESPONDENT EXHIBIT 163.

163. I would still like to record the Vehicle Identification Number for this vehicle. Do you know what a Vehicle Identification Number is? (IF DON'T KNOW, EXPLAIN VIN.) What is the Vehicle Identification Number for this vehicle? (SEE INSTRUCTIONS BELOW.)

INTERVIEWER: REPORT HERE IF VIN REFUSED FOR ONE OR MORE VEHICLES. EXPLAIN RESPONDENT REACTION OR REASON FOR REFUSING VIN.

VEHICLE 1

Make _____ Model _____

[ ]1 ODOMETER KNOWN _____ (ESTIMATED ODOMETER READING) 1360

[ ]0 ODOMETER NOT KNOWN

VIN: 1362 — — — — — — — — — — — — — — — — —

[ ]1 VIN OBTAINED [ ]8 VIN NOT OBTAINED [ ]7 VIN REFUSED

VEHICLE 2

Make _____ Model _____

[ ]1 ODOMETER KNOWN _____ (ESTIMATED ODOMETER READING) 1418

[ ]0 ODOMETER NOT KNOWN

VIN: 1420 — — — — — — — — — — — — — — — — —

[ ]1 VIN OBTAINED [ ]8 VIN NOT OBTAINED [ ]7 VIN REFUSED

VEHICLE 3

Make _____ Model _____

[ ]1 ODOMETER KNOWN _____ (ESTIMATED ODOMETER READING) 1447

[ ]0 ODOMETER NOT KNOWN

VIN: 1449 — — — — — — — — — — — — — — — — —

[ ]1 VIN OBTAINED [ ]8 VIN NOT OBTAINED [ ]7 VIN REFUSED

VEHICLE 4

Make _____ Model _____

[ ]1 ODOMETER KNOWN _____ (ESTIMATED ODOMETER READING) 1625

[ ]0 ODOMETER NOT KNOWN

VIN: 1627 — — — — — — — — — — — — — — — — —

[ ]1 VIN OBTAINED [ ]8 VIN NOT OBTAINED [ ]7 VIN REFUSED

INTERVIEWER INSTRUCTIONS:

Q. 163 -- Explain what the VIN is if respondent does not know.

If respondent questions need for VIN, say:
"The VIN is a set of codes assigned to a vehicle at the factory that, when decoded, describes several of the vehicle's characteristics. These characteristics may then be used to calculate an estimated miles per gallon for that specific type of vehicle."

Review the exhibit card of possible VIN locations. Record the VIN and verify for correctness.

RECORD VEHICLE INSPECTION(S) BELOW.

IF "YES" ON Q. 161, SKIP THIS PAGE (Q. 164) FOR NOW. ASK Q. 157 FOR NEXT VEHICLE (IF NO OTHER VEHICLES, SKIP TO Q. 165).
AFTER COMPLETING Qs. 165-179 AND THE MEASUREMENT PROCEDURE IN Qs. 180-184, INSPECT ALL VEHICLES MARKED "YES" ON Q. 161. RECORD VEHICLE INSPECTION(S) BELOW.

164. (SEE INSTRUCTIONS BELOW.)

VEHICLE 1

Make _____ Model _____

[ ] ODOMETER OBTAINED _____ (ODOMETER READING FROM VEHICLE) 1353-1358
2 1360

[ ] ODOMETER NOT OBTAINED
8

[ ] ODOMETER REFUSED
7

VIN: _____ 1378
1362 1380

[ ] VIN OBTAINED [ ] VIN NOT OBTAINED [ ] VIN REFUSED
1 8 7

VEHICLE 2

Make _____ Model _____

[ ] ODOMETER OBTAINED _____ (ODOMETER READING FROM VEHICLE) 1411-1416
2 1418

[ ] ODOMETER NOT OBTAINED
8

[ ] ODOMETER REFUSED
7

VIN: _____ 1436
1420 1438

[ ] VIN OBTAINED [ ] VIN NOT OBTAINED [ ] VIN REFUSED
1 8 7

VEHICLE 3

Make _____ Model _____

[ ] ODOMETER OBTAINED _____ (ODOMETER READING FROM VEHICLE) 1440-1445
2 1447

[ ] ODOMETER NOT OBTAINED
8

[ ] ODOMETER REFUSED
7

VIN: _____ 1465
1449 1467

[ ] VIN OBTAINED [ ] VIN NOT OBTAINED [ ] VIN REFUSED
1 8 7

VEHICLE 4

Make _____ Model _____

[ ] ODOMETER OBTAINED _____ (ODOMETER READING FROM VEHICLE) 1618-1623
2 1625

[ ] ODOMETER NOT OBTAINED
8

[ ] ODOMETER REFUSED
7

VIN: _____ 1643
1627 1645

[ ] VIN OBTAINED [ ] VIN NOT OBTAINED [ ] VIN REFUSED
1 8 7

INTERVIEWER: REPORT HERE IF VIN REFUSED FOR ONE OR MORE VEHICLES. EXPLAIN RESPONDENT REACTION OR REASON FOR REFUSING VIN.

INTERVIEWER INSTRUCTIONS:

Q. 164 -- If respondent questions need for VIN, say:
"The VIN is a set of codes assigned to a vehicle at the factory that, when decoded, describes several of the vehicle's characteristics. These characteristics may then be used to calculate an estimated miles per gallon for that specific type of vehicle."

Record VIN from the vehicle itself whenever possible. If VIN cannot be found on the vehicle, show Exhibit 163 (VIN LOCATIONS CARD), and attempt to secure VIN from one of these document sources.

40

165. INTERVIWER: MARK TYPE OF HOUSING UNIT

1 [] MOBILE HOME OR TRAILER -- SKIP TO Q. 169 *1064-1065*

2 [] ONE-FAMILY HOUSE

IF ONE-FAMILY HOUSE, MARK STYLE BASED ON GENERAL APPEARANCE FROM OUTSIDE

1[] ONE STORY
2[] TWO STORY
3[] THREE STORY
4[] SPLIT-LEVEL
5[] OTHER (SPECIFY): _____

3 [] HOUSE OR BUILDING WITH 2 TO 4 UNITS -- SKIP TO Q. 172

4 [] APARTMENT BUILDING OR OTHER STRUCTURE WITH 5 OR MORE UNITS -- SKIP TO Q. 175

CONTINUE IF ONE-FAMILY HOUSE

166. Do you have a garage attached to your living space or under your house?

1 [] YES
0 [] NO -- SKIP TO Q. 169 *1066*

IF "YES" ON Q. 166, ASK:

167. Can the garage be heated during the winter months?

1 [] YES
0 [] NO -- SKIP TO Q. 169 *1067*

IF "YES" ON Q. 167, HAND RESPONDENT EXHIBIT 168 AND ASK:

168. How frequently is the garage heated during the winter months?

4 [] ALWAYS
3 [] USUALLY
2 [] OCCASIONALLY *1068*
1 [] ALMOST NEVER
0 [] NEVER
5 [] OTHER (SPECIFY): _____

TAKE BACK EXHIBIT 168

CONTINUE WITH Q. 169 ON NEXT PAGE

IF ONE-FAMILY HOUSE OR MOBILE HOME, ASK Q. 169.

HAND RESPONDENT EXHIBIT 169

169. Does your home have a basement, an enclosed crawl space, a crawl space open to the outside, a concrete slab, or a combination of these?

1 [] BASEMENT *1069*
2 [] CRAWL SPACE -- ENCLOSED
3 [] CRAWL SPACE -- OPEN TO THE OUTSIDE
4 [] CONCRETE SLAB -- SKIP TO Q. 175
5 [] COMBINATION (MARK ALL THAT APPLY.)
[] BASEMENT *1070*
[] CRAWL SPACE -- ENCLOSED *1071*
[] CRAWL SPACE -- OPEN TO THE OUTSIDE *1072*
[] CONCRETE SLAB *1073*

TAKE BACK EXHIBIT 169

IF "BASEMENT," "CRAWL SPACE," ON "COMBINATION," ASK:

170. About how much of the basement or crawl space would you say is warm enough to sit, work or play in during the winter months -- all, part, or none?

1 [] ALL -- SKIP TO Q.175
2 [] PART *1074*
0 [] NONE

IF "PART," OR "NONE," HAND RESPONDENT EXHIBIT 171 AND ASK:

171. About how much of the floor area above the unheated basement or crawl space is insulated?

0 [] NONE, VERY LITTLE (LESS THAN 5%)
1 [] 1/4 (5 - 33%)
2 [] 1/2 (34 - 66%)
3 [] 3/4 (67 - 95%) *1075*
4 [] ALL (96 - 100%)
6 [] DON'T KNOW

TAKE BACK EXHIBIT 171 -- SKIP TO Q. 175

IF THIS IS A BUILDING WITH 2 TO 4 HOUSING UNITS, ASK Q. 172 OTHERWISE, SKIP TO Q.175.

172. Does this building have a basement?
1[] YES
0[] NO -- SKIP TO Q. 175
1076

IF "YES," ASK:

173. Is any part of the basement for the exclusive or primary use of your household?
1[] YES
0[] NO -- SKIP TO Q.175
1077

IF "YES," ASK:

174. Thinking of the basement space used by your household -- about how much of that space is warm enough to sit, work or play in during the winter months -- all, part, or none?
1[] ALL
2[] PART
0[] NONE
1078

ASK EVERYONE

1107-1108:11

HAND RESPONDENT EXHIBIT 175

175. Since September 1984, have any of the kinds of things listed on this exhibit been done to your home -- that is, anything that has either increased or decreased the total number of square feet of space, or that has changed the number of square feet of heated space?

1 [] YES
0 [] NO -- SKIP TO Q. 180

1111

IF "YES", ON Q. 175 ASK:

176. Did the total number of square feet of space increase, decrease, or remain the same?

1 [] INCREASED
2 [] DECREASED
3 [] REMAINED THE SAME

1112

177. Did the amount of heated space increase, decrease, or remain the same?

1 [] INCREASED
2 [] DECREASED
3 [] REMAINED THE SAME

1113

178. Please give me a description of the work that was done.

1114-1115

179. In what month and year was the work completed?

MONTH: _____
YEAR: 198 _____
[] IN PROCESS

TAKE BACK EXHIBIT 175

1116-1119

180. So far, we've been talking about things in your household that affect your energy use. What we need also is a measure of your year-round living space.

With your permission, I would like to measure your home. I can do it from the inside or the outside. With your home, I think it would be most accurate to do it on the (inside/outside).

INTERVIEWER INSTRUCTIONS:

In general, measure all parts of the housing unit enclosed from the weather.

Basements or cellars

Include basements or cellars in one-family houses.

Include basement space in buildings with 2 to 4 housing units, if it is for the exclusive or primary use of household for this interview. See Q. 173.

Exclude basements and cellars in buildings with 5 or more units.

Exclude crawl spaces.

Attics

Include attics if heated or finished.

Exclude attics if unheated and also unfinished.

Garages, sheds, or barns

Include garages if attached to house and enclosed from the weather.

Exclude garages, sheds, or barns if not attached to house or if open to the weather.

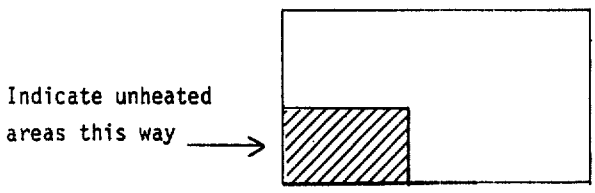
Porches

Include porches if enclosed from the weather.

Exclude porches if open to the weather.

Buildings with 2 or more housing units: Measure only the space used by household for this interview (do not measure the entire building).

Unheated areas: Within the housing unit that you measure, indicate unheated area(s) in the diagrams with lines. Give dimensions of unheated area(s).



USE BACKS OF MEASUREMENT PAGES FOR ADDITIONAL SPACE AS NEEDED, FOR SKETCHES AND MEASUREMENTS.

RECORD MEASUREMENTS ON DIAGRAM TO NEAREST FOOT

START HERE

if this household has a basement or cellar (see instruction on facing page for basements and cellars)

BASEMENT MEASUREMENTS [] FULL BASEMENT [] HALF BASEMENT

RECTANGULAR SHAPE	DRAW DIAGRAM, IF OTHER THAN RECTANGULAR
[ ] [ ]	

INTERVIEWER: HAVE YOU MARKED WITH LINES AND GIVEN DIMENSIONS OF UNHEATED AREAS IN DIAGRAM ABOVE?

START HERE

if this household does not have a basement or cellar

FIRST STORY MEASUREMENTS [] FULL STORY [] HALF STORY

RECTANGULAR SHAPE	DRAW DIAGRAM, IF OTHER THAN RECTANGULAR
[ ] [ ]	

INTERVIEWER: HAVE YOU MARKED WITH LINES AND GIVEN DIMENSIONS OF UNHEATED AREAS IN DIAGRAM ABOVE?

CONTINUE ON PAGE 47 FOR SECOND AND THIRD STORIES

FOR OFFICE USE ONLY

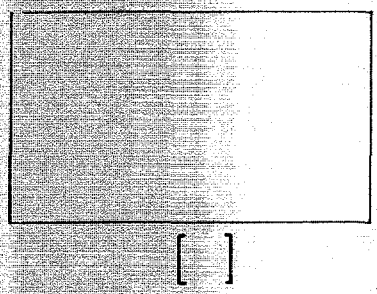
	Flr Codes			Unit A			Unit B			Unit C				Unit D		# of Units
	1120	21	22	23	24-25	26-27	28	29-30	31-32	33	34-35	36-37	38	39-40	41-42	43
B																
	1144	45	46	47	48-49	50-51	52	53-54	55-56	57	58-59	60-61	62	63-64	65-66	67
1																

46

IF NO SECOND OR THIRD STORY TO MEASURE, GO TO Q. 181

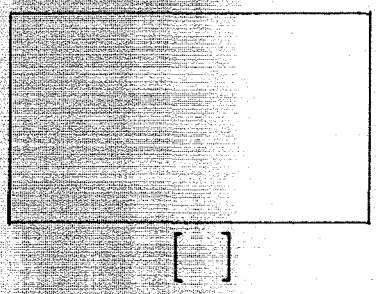
RECORD MEASUREMENTS ON DIAGRAM TO NEAREST FOOT

SECOND STORY MEASUREMENTS [] FULL STORY [] HALF STORY

RECTANGULAR SHAPE	DRAW DIAGRAM, IF OTHER THAN RECTANGULAR
	

INTERVIEWER: HAVE YOU MARKED WITH LINES AND GIVEN DIMENSIONS OF UNHEATED AREAS IN DIAGRAM ABOVE?

THIRD STORY MEASUREMENTS [] FULL STORY [] HALF STORY

RECTANGULAR SHAPE	DRAW DIAGRAM, IF OTHER THAN RECTANGULAR
	

INTERVIEWER: HAVE YOU MARKED WITH LINES AND GIVEN DIMENSIONS OF UNHEATED AREAS IN DIAGRAM ABOVE?

FOR OFFICE USE ONLY *1207-1208:12*

	Flr Codes			Unit A			Unit B			Unit C				Unit D		# of Units
	1168	*69*	*70*	*71*	*72-73*	*74-75*	*76*	*77-78*	*79-80*	*1211*	*12-13*	*14-15*	*16*	*17-18*	*19-20*	*21*
2																
	1222	*23*	*24*	*25*	*26-27*	*28-29*	*30*	*31-32*	*33-34*	*35*	*36-37*	*38-39*	*40*	*41-42*	*43-44*	*45*
3																

Heated	Unheated	DK Htd/Unhtd
1246-1250	*1251-1255*	*1256-1259*

48

181. One part of my task is to mark on my diagram any parts of your home that are not heated during the heating season.

TELL RESPONDENT WHAT PARTS OF HOME, IF ANY, YOU HAVE MARKED AS NOT HEATED DURING HEATING SEASON. THEN ASK:

Is that correct -- have I missed any unheated areas?

REVISE SKETCHES AS NECESSARY; THEN MARK APPROPRIATE BOX AT RIGHT.

0 [] NO UNHEATED AREAS 1260

1 [] ALL UNHEATED AREAS HAVE BEEN MARKED WITH LINES 

2 [] ENTIRE UNIT IS UNHEATED (NO HEATING EQUIPMENT)

INTERVIEWER INSTRUCTIONS:

DOUBLE-CHECK BASEMENTS AND GARAGES

- If the respondent reported an unheated basement (Q. 170 or 174), is it shaded in the drawing?
- If the respondent reported an unheated attached garage (Q. I67), is it shaded in the drawing?

182. INTERVIEWER: MARK BOX TO INDICATE HOW MEASUREMENTS WERE OBTAINED FOR (HOUSE/APARTMENT).

01 [] MEASURED INSIDE

02 [] MEASURED OUTSIDE 1261-1262

03 [] COMBINATION OF INSIDE AND OUTSIDE MEASUREMENTS

04 [] RESPONDENT GAVE TOTAL SQUARE FEET FROM PLAN

05 [] RESPONDENT'S ESTIMATES

21 [] OTHER MEASUREMENT PROCEDURE (SPECIFY): _____

INTERVIEWER INSTRUCTIONS:

DOUBLE-CHECK MEASUREMENTS OBTAINED FROM PLANS OR FROM RESPONDENT ESTIMATES.

ESTIMATES SHOULD INCLUDE:

- Basements
- Attached garages
- Finished or heated attics
- Enclosed porches

ESTIMATES SHOULD EXCLUDE:

- Detached garages
- Attics that are unfinished and unheated
- Porches that are not permanently enclosed
- Areas under construction

TURN PAGE TO COMPLETE INTERVIEW

FOR OFFICE USE ONLY

FL	LQT

1263-1265

50

INTERVIEWER REPORT ON MEASUREMENT OF YEAR-ROUND LIVING SPACE

183. *WHAT PROBLEMS, IF ANY, DID YOU HAVE IN MEASURING THIS (HOUSE/APARTMENT)?*

184. WHAT EFFECT, IF ANY, DID THESE PROBLEMS HAVE ON THE ACCURACY OF YOUR MEASUREMENTS?

PLEASE REMEMBER TO INSPECT

VEHICLES FOR VIN NUMBERS

1266-1268

TIME INTERVIEW COMPLETED: _____ AM PM LENGTH OF INTERVIEW: _____ MINUTES

INTERVIEWER'S SIGNATURE _____ DATE: _____

INTERVIEWER'S I.D. #: _____

1269-1274

OMB No. 1905-0092
Expires 5-31-90
EIA-457C

1987 RESIDENTIAL ENERGY CONSUMPTION SURVEY

RENTAL AGENTS, LANDLORDS, AND APARTMENT MANAGERS

Time Started
AM
PM

Hello, This is _____ from Response Analysis Corporation in Princeton, NJ. I'm calling about the Department of Energy study on residential energy uses that we wrote you about. Your answers are strictly confidential.

IF LETTER NOT RECEIVED: We will send you another copy and call back in a few days. *01-04*

VERIFY ADDRESS ON CONTROL CARD. *05*

1. I would like to get a brief description of the building at (GIVE ADDRESS, NOT NAME) as it was as of November 1987. *06:7*

07-08

10-15

16-17

18-19

2. Was there a group of five or more housing units in the same building, a group of two to four units in the same building, a single unit in a building by itself, or would you describe it in some other way?

[ ] 5 OR MORE UNITS IN BUILDING -- ASK Q. 3a and Q. 3b

[ ] 2 TO 4 UNITS IN BUILDING -- ASK Q. 3a

[ ] SINGLE UNIT IN BUILDING BY ITSELF -- NO INTERVIEW ON THIS UNIT: CHECK FOR OTHER UNITS ON CONTROL CARD.

[ ] OTHER (DESCRIBE) _____ *22*

_____

IF "2-4 UNITS" OR "5 OR MORE UNITS", ASK:

3a. How many residential units were in the building? NUMBER OF UNITS: _____ *23-25*

IF "5 OR MORE UNITS," ASK:

3b. How many floors (stories) were in the building? NUMBER OF FLOORS: _____ *26-27*

4. About when was the (house/building) built? (IF NOT KNOWN, ASK FOR "BEST ESTIMATE.") *28-29*

01 [ ] BEFORE 1940	*07* [ ] 1980 - 1983
02 [ ] 1940 - 1949	*08* [ ] 1984
03 [ ] 1950 - 1959	*09* [ ] 1985
04 [ ] 1960 - 1969	*10* [ ] 1986
05 [ ] 1970 - 1974	*11* [ ] 1987
06 [ ] 1975 - 1979	*12* [ ] 1988

(6/87)

5. These next questions are about (IDENTIFY SPECIFIC HOUSING UNIT). As of November 1987, what was the main fuel used for home heating?

01[ ] GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD -- SKIP TO Q. 7 30-31
02[ ] LP GAS (BOTTLED OR TANK GAS) -- SKIP TO Q. 7
03[ ] FUEL OIL -- SKIP TO Q. 7
04[ ] KEROSENE OR COAL OIL -- SKIP TO Q. 7
05[ ] ELECTRICITY -- GO TO Q. 6
06[ ] COAL OR COKE -- SKIP TO Q. 8
07[ ] WOOD -- SKIP TO Q. 8
08[ ] SOLAR COLLECTORS -- SKIP TO Q. 10
21[ ] OTHER (SPECIFY): _____ SKIP TO Q. 9
00[ ] NO SPACE HEATING FUEL USED -- SKIP TO Q. 12

IF ELECTRICITY USED FOR HOME HEATING, ASK:

6. What was the main heating equipment? Was it built-in electric units, heat pump, central warm-air furnace, portable heaters, or what?

05[ ] BUILT-IN ELECTRIC UNITS
04[ ] HEAT PUMP(S)
03[ ] CENTRAL WARM AIR-FURNACE (WITH DUCTS)
10[ ] PORTABLE HEATERS
21[ ] OTHER (SPECIFY): _____

SKIP TO Q. 9

IF UNDERGROUND GAS, LP GAS, FUEL OIL, KEROSENE OR COAL OIL USED FOR HOME HEATING, ASK: 32-33

7. What was the main heating equipment? Was it radiant heating (hot water running through a slab floor), steam or hot water system with radiators, a central warm-air furnace, a floor, wall or pipeless furnace, room heaters, or what?

01 [ ] HOT WATER PIPES IN SLAB FLOOR (RADIANT HEATING)
02 [ ] STEAM OR HOT WATER SYSTEM WITH RADIATORS OR CONVECTORS
03 [ ] CENTRAL WARM-AIR FURNACE (WITH DUCTS)
06 [ ] FLOOR, WALL, OR PIPELESS FURNACE
07 [ ] ROOM HEATERS BURNING GAS, OIL, KEROSENE (NON-PORTABLE)
11 [ ] PORTABLE KEROSENE HEATER(S)
12 [ ] COOKING STOVE, RANGE, OR OVEN (USED TO HEAT HOME, AS WELL AS FOR COOKING)
21 [ ] OTHER (SPECIFY): _____

SKIP TO Q. 9

IF WOOD, COAL, OR COKE USED FOR HOME HEATING, ASK:

8. What was the main heating equipment? Was it a steam or hot water system with radiators, a heating stove, a fireplace, or what?

02[ ] STEAM OR HOT WATER SYSTEM WITH RADIATORS OR CONVECTORS
08[ ] HEATING STOVE
09[ ] FIREPLACE(S)
21[ ] OTHER (SPECIFY): _____

9. As of November 1987, was the main heating fuel paid for by the tenant or by the landlord?

1 [ ] TENANT
2 [ ] LANDLORD 34
5 [ ] OTHER (SPECIFY): _____

10. You say that (SEE Q. 5) was the main fuel used for home heating. Was any other fuel used for heating at this apartment?

1 [ ] YES
0 [ ] NO -- SKIP TO Q. 12 — 35

IF "YES," ASK:

11. What was the other fuel used?

01 [ ] GAS FROM UNDERGROUND PIPES
02 [ ] LP GAS (BOTTLED OR TANK GAS)
03 [ ] FUEL OIL
04 [ ] KEROSENE OR COAL OIL
05 [ ] ELECTRICITY — 36-37
06 [ ] COAL OR COKE
07 [ ] WOOD
08 [ ] SOLAR COLLECTORS
21 [ ] OTHER (SPECIFY): _____

12. As of November 1987, what was the main fuel used for heating water?

01 [ ] GAS FROM UNDERGROUND PIPES
02 [ ] LP GAS (BOTTLED OR TANK GAS)
03 [ ] FUEL OIL
04 [ ] KEROSENE OR COAL OIL
05 [ ] ELECTRICITY — 38-39
06 [ ] COAL OR COKE
07 [ ] WOOD
08 [ ] SOLAR COLLECTORS
21 [ ] OTHER (SPECIFY): _____
00 [ ] NO WATER HEATING FUEL -- SKIP TO Q. 14

13. Was the main water heating fuel paid for by the tenant or by the landlord?

1 [ ] TENANT
2 [ ] LANDLORD — 40
5 [ ] OTHER (SPECIFY): _____

14. As of November 1987, what was the main fuel used for cooking?

01 [ ] GAS FROM UNDERGROUND PIPES
02 [ ] LP GAS (BOTTLED OR TANK GAS)
03 [ ] FUEL OIL
04 [ ] KEROSENE OR COAL OIL
05 [ ] ELECTRICITY — 41-42
06 [ ] COAL OR COKE
07 [ ] WOOD
21 [ ] OTHER (SPECIFY): _____
00 [ ] NO COOKING EQUIPMENT -- SKIP TO Q. 16

15. Was the main cooking fuel paid for by the tenant or by the landlord?

1 [ ] TENANT
2 [ ] LANDLORD — 43
5 [ ] OTHER (SPECIFY): _____

16. Last summer (1987), did the (apartment/other unit) have air conditioning, either from a central system for the whole building or housing unit, or from individual window or wall units? (MARK ALL THAT APPLY.)

[ ] YES, CENTRAL SYSTEM -- ASK QS. 17 & 18 — 44
[ ] YES, INDIVIDUAL (WINDOW/WALL) UNITS -- SKIP TO Q. 19 — 45
[ ] NO -- SKIP TO Q. 20

IF CENTRAL SYSTEM AIR CONDITIONING, ASK:

17. Did the central air-conditioning system use gas from underground pipes, LPG, or electricity?

1 [ ] GAS FROM UNDERGROUND PIPES
2 [ ] LP GAS (BOTTLED OR TANK GAS) — 46
3 [ ] ELECTRICITY

18. Was the air-conditioning fuel paid for by the tenant or by the landlord?

1 [ ] TENANT
2 [ ] LANDLORD
5 [ ] OTHER (SPECIFY): _____ — 47

IF WINDOW AIR CONDITIONING, ASK:

19. Was the air conditioning paid for by the tenant or the landlord?

1 [ ] TENANT
2 [ ] LANDLORD
5 [ ] OTHER (SPECIFY): _____ — 48

20. Was electricity for lighting within the apartment paid for by the tenant or by the landlord?

1 [ ] TENANT
2 [ ] LANDLORD
5 [ ] OTHER (SPECIFY): _____ — 49

IF OTHER UNITS ARE ON CONTROL CARD LIST, ASK ABOUT NEXT UNIT WITH NEXT QUESTIONNAIRE.

IF NOT --

Thank you very much for your time and help. We may be in touch with you again. Have a nice day!

NAME OF PERSON INTERVIEWED: _____

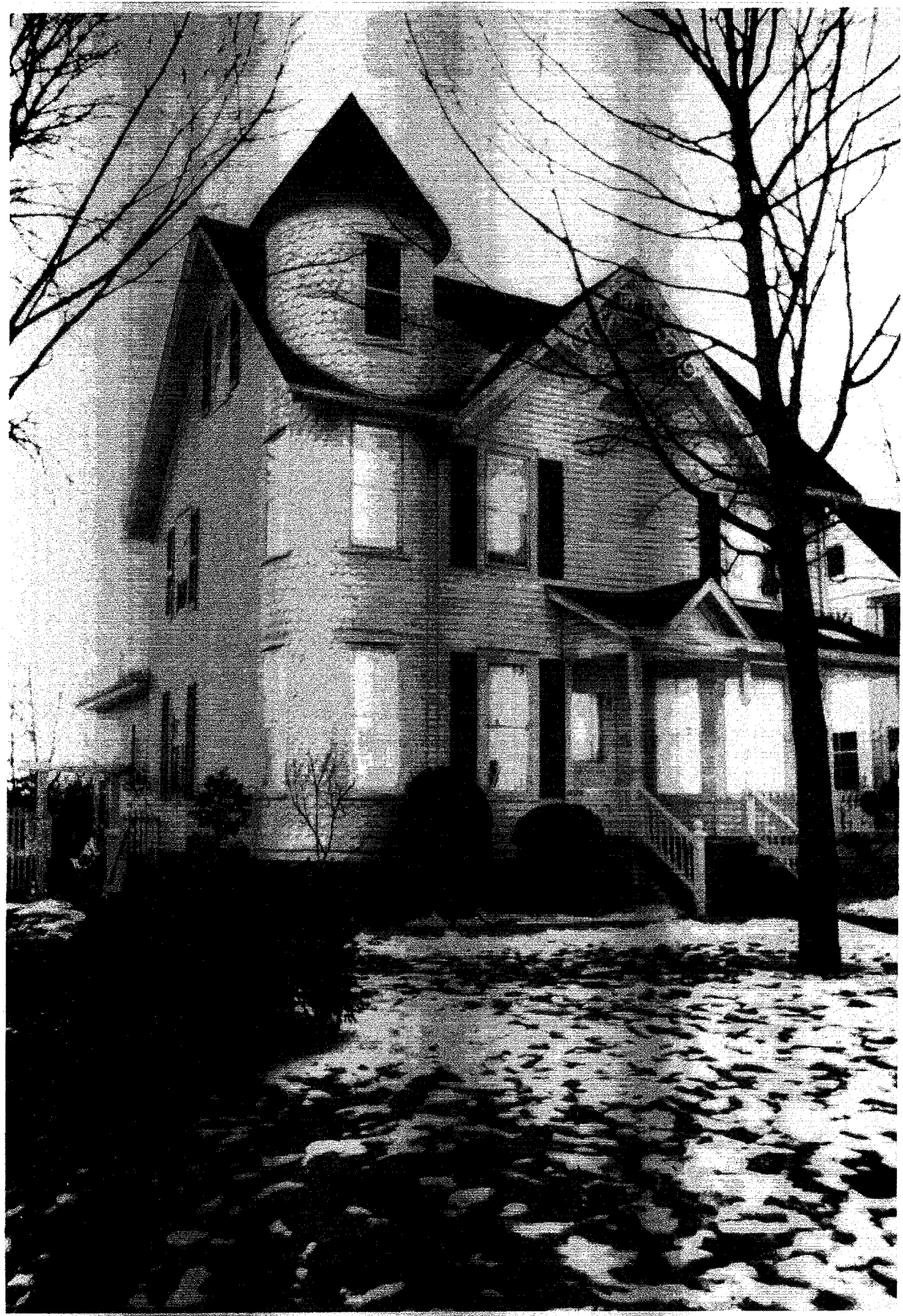
TITLE OR RELATION TO RENTAL AGENT: _____

INTERVIEWER: _____

TIME COMPLETED: _____ AM PM

DATE COMPETED: _____ — 51-54

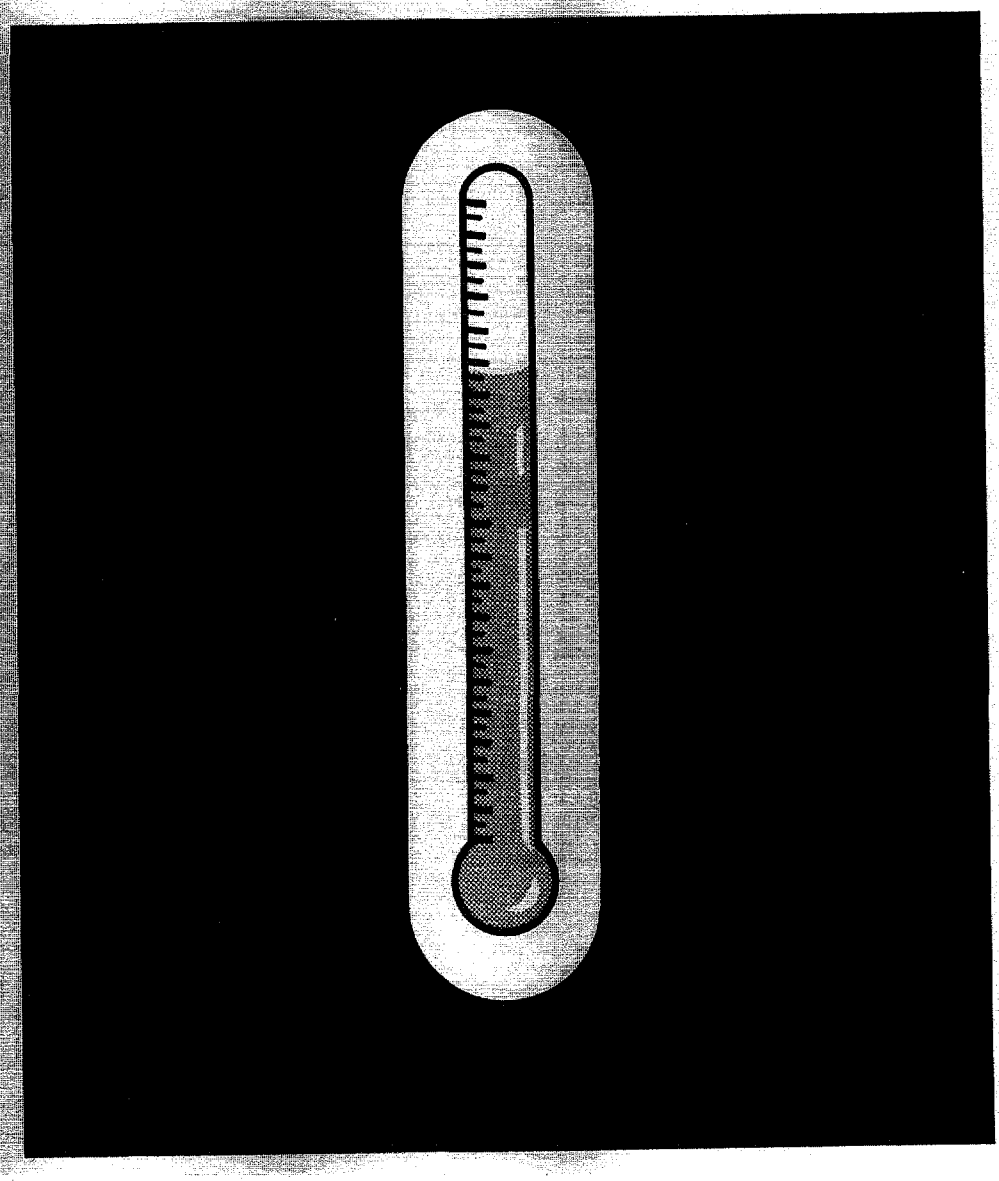
LENGTH OF INTERVIEW: _____ MINUTES — 56-57



A detached single-family home is an example of housing structures included in the Residential Energy Consumption Survey.

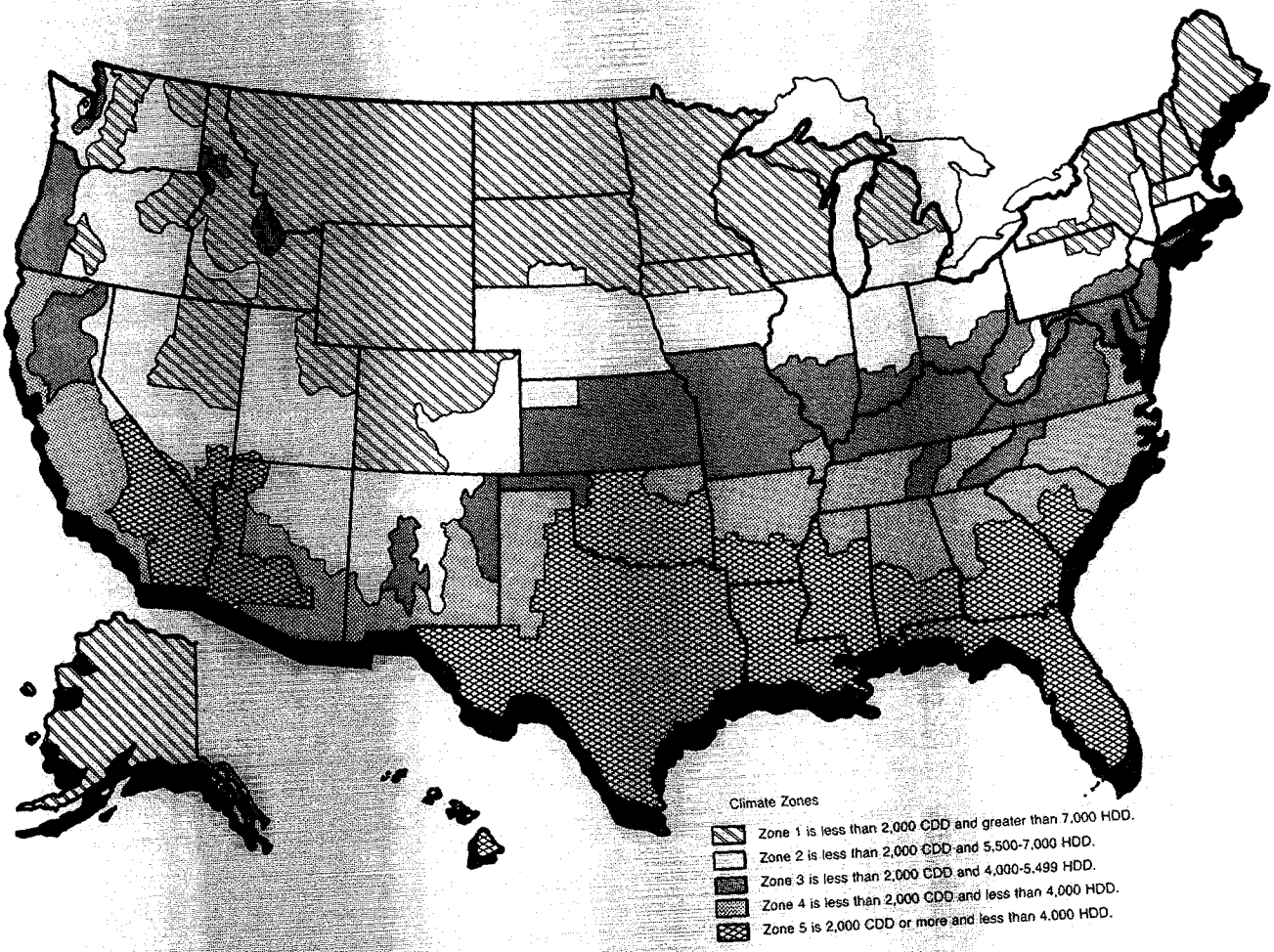
Appendix E

U.S. Climate Zone Map



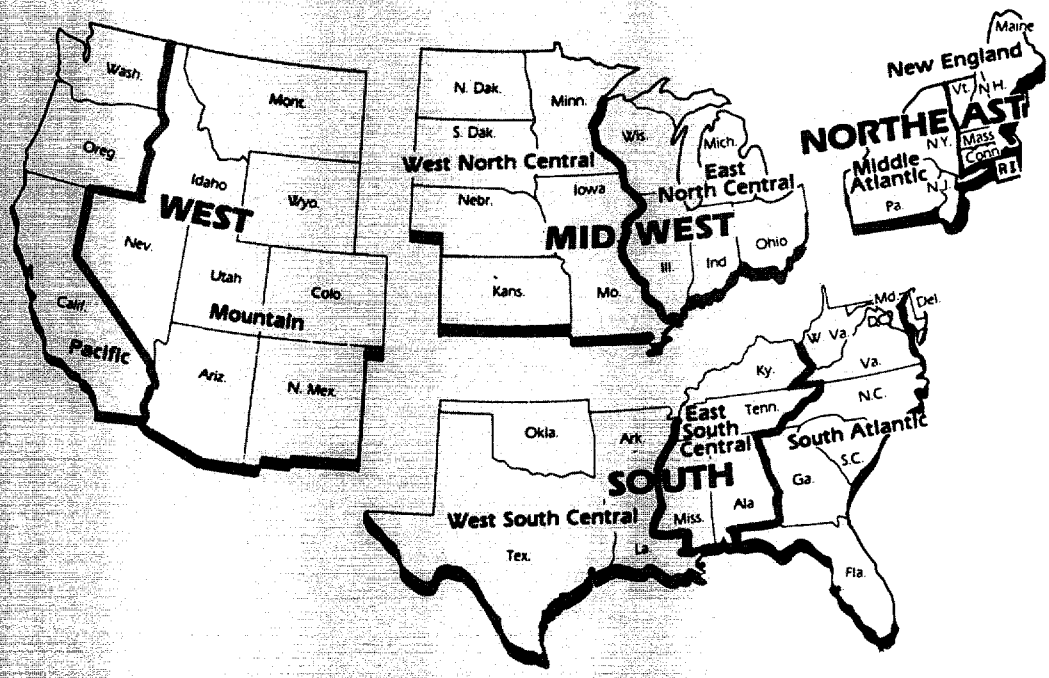
Appendix E

U.S. Climate Zone Map

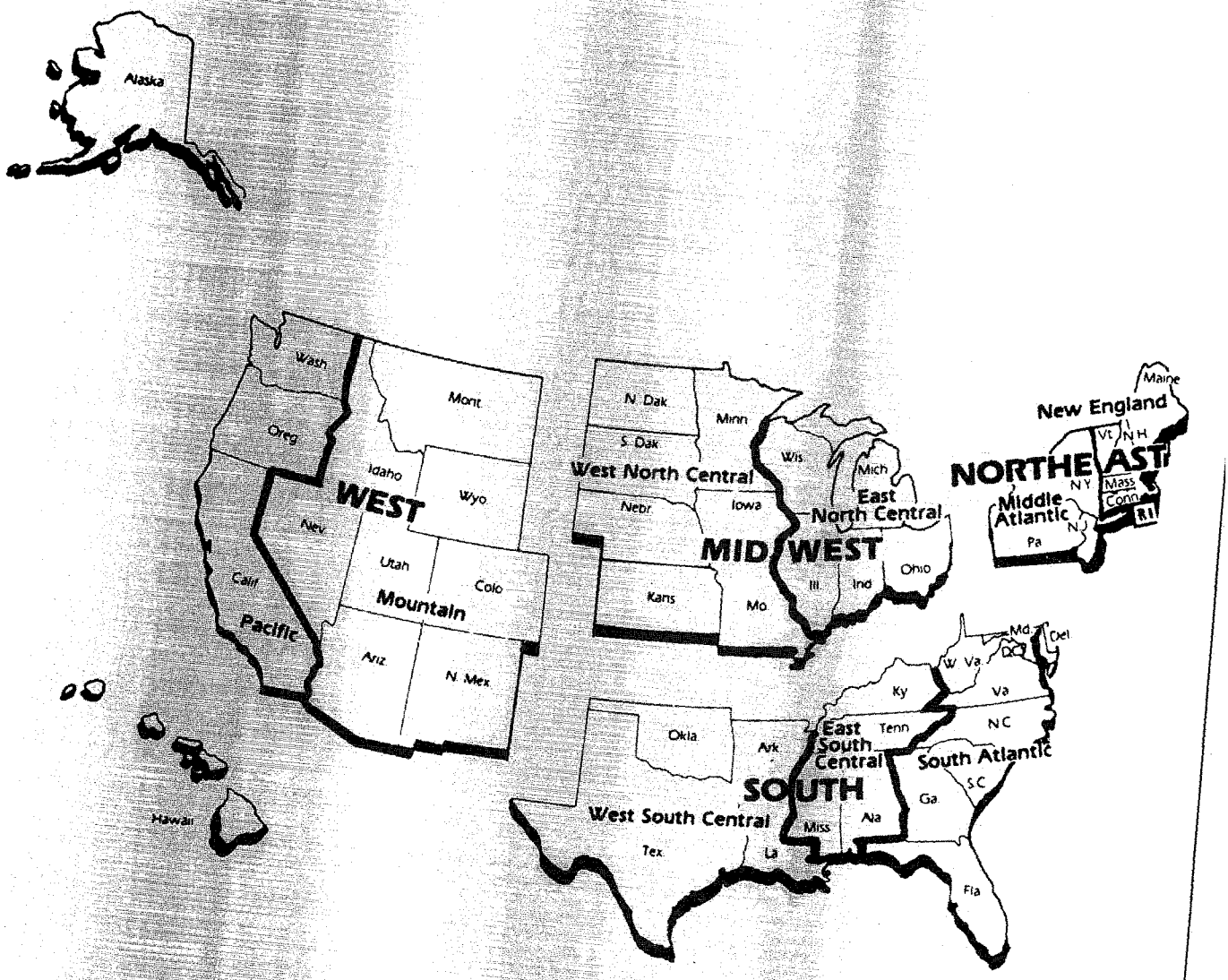


Appendix F

U.S. Census Regions and Divisions

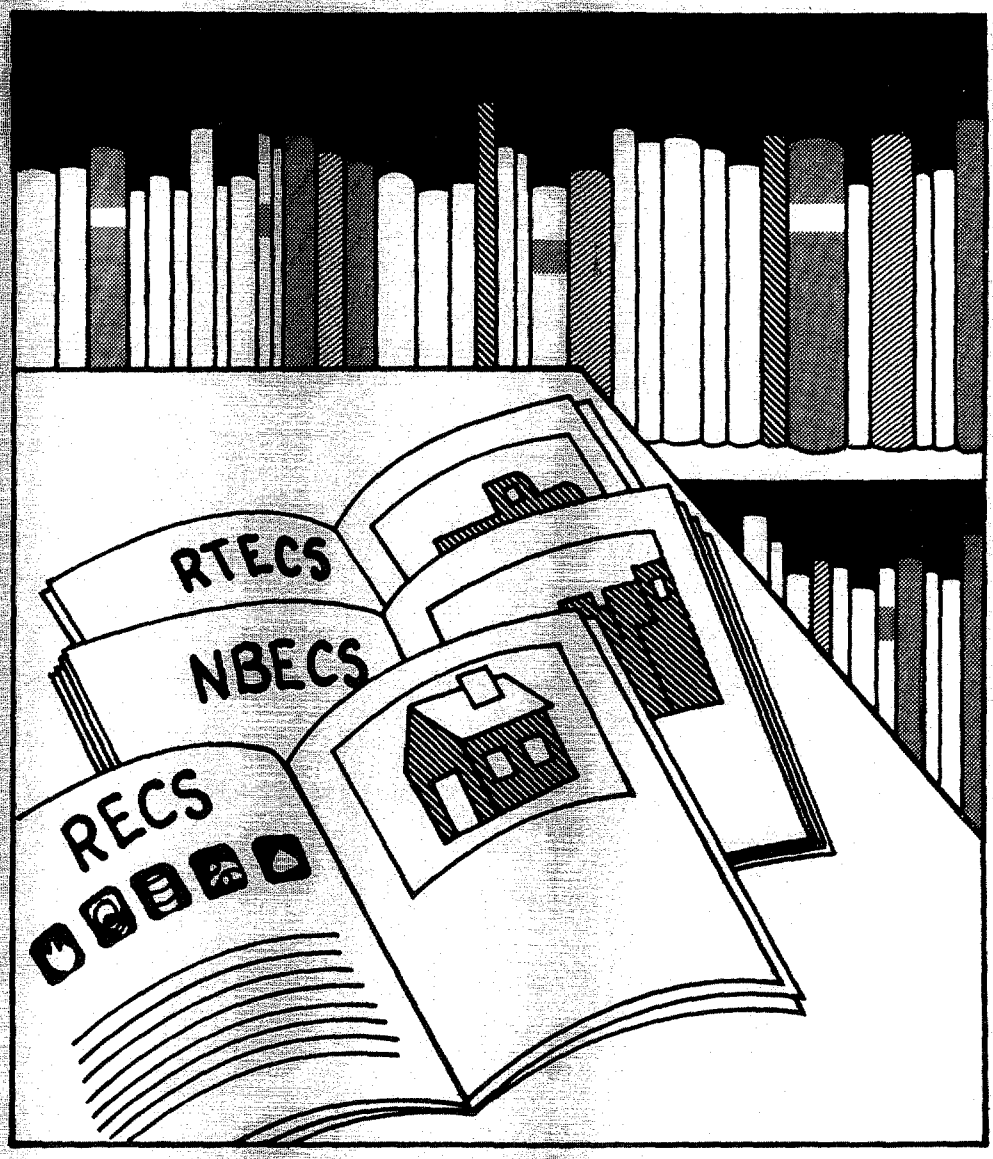


U.S. Census Regions and Divisions



Appendix G

Related Publications on Energy Consumption



Appendix G

Related Publications on Energy Consumption

These publications are available from the National Energy Information Center or the Superintendent of Documents. See the inside cover of this report on how to obtain copies of these publications. Please note that the prices quoted are subject to change.

In addition to the reports listed below, public use data tapes for the residential, residential transportation and commercial sectors are available from the National Technical Information Service (NTIS). To obtain information on how to order tapes, you may call NTIS at 703/487-4807.

Residential Sector

Housing Characteristics

Residential Energy Consumption Survey: Housing Characteristics 1984; October 1986, DOE/EIA-0314(84), GPO Stock No. 061-003-00499-7, $12.00.

Residential Energy Consumption Survey: Housing Characteristics, 1982; August 1984, DOE/EIA-0314(82), GPO Stock No. 061-003-00393-1, $7.00.

Residential Energy Consumption Survey: Housing Characteristics, 1981; August 1983, DOE/EIA-0314(81), GPO Stock No. 061-003-00330-3, $6.50.

Residential Energy Consumption Survey: Housing Characteristics, 1980; June 1982, DOE/EIA-0314, GPO Stock No. 061-003-00256-1, $11.00.

Residential Energy Consumption Survey: Characteristics of the Housing Stock and Households, 1978; February 1980, DOE/EIA-0207/2, GPO Stock No. 061-003-00093-2, $4.25.

Residential Energy Consumption Survey: Conservation; February 1980, DOE/EIA-0207/3, GPO Stock No. 061-003-00087-8, $6.00.

Preliminary Conservation Tables from the National Interim Energy Consumption Survey; August 1979, DOE/EIA-0193/P (no GPO Stock No.).

Characteristics of the Housing Stock and Households: Preliminary Findings from the National Interim Energy Consumption Survey; October 1979, DOE/EIA-0199/P (no GPO Stock No.).

Consumption and Expenditures

Residential Energy Consumption Survey: Consumption and Expenditures, April 1984 Through March 1985, Part 1: National Data; March 1987, DOE/EIA-0321/1(84).

Residential Energy Consumption Survey: Consumption and Expenditures, April 1984 Through March 1985, Part 2: Regional Data; May 1987, DOE/EIA-0321/2(84).

Residential Energy Consumption Survey: Consumption and Expenditures, April 1982 Through March 1983, Part 1: National Data; November 1984, DOE/EIA-0321/1(82), GPO Stock No. 061-003-00411-3, $7.00.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1982 Through March 1983, Part 2: Regional Data; December 1984, DOE/EIA-0321/2(82), GPO Stock No. 061-003-00414-8, $9.50.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 Through March 1982, Part 1: National Data; September 1983, DOE/EIA-0321/1(81), GPO Stock No. 061-003-00340-1, $6.00.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 Through March 1982, Part 2: Regional Data; October 1983, DOE/EIA-0321/2(81), GPO Stock No. 061-003-00357-5, $8.00.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, Part

1: National Data; September 1982, DOE/EIA-0321/1(80), GPO Stock No. 061-003-00278-1, $7.50.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, Part 2: Regional Data; June 1983, DOE/EIA-0321/2(80), GPO Stock No. 061-003-00319-2, $7.00.

Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures, Part 1: National Data (Including Conservation); April 1981, DOE/EIA-0262/1, GPO Stock No. 061-003-00191-2, $6.50.

Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures, Part II: Regional Data; May 1981, DOE/EIA-0262/2, GPO Stock No. 061-003-00189-1, $8.50.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1978 Through March 1979; July 1980, DOE/EIA-0207/5, GPO Stock No. 061-003-00131-9, $7.50.

Single-Family Households: Fuel Oil Inventories and Expenditures: National Interim Energy Consumption Survey; December 1979, DOE/EIA-0207/1, GPO Stock No. 061-003-00075-4, $3.50.

Other Publications on the Residential Sector

End-Use Consumption of Residential Energy (Article), pp. vii-xiv, *Monthly Energy Review,* July 1987, DOE/EIA-0035(87/07).

Residential Energy Consumption Survey: Trends in Consumption and Expenditures 1978-1984 June 1987, DOE/EIA-0482, GPO Stock No. 061-003-00535-7, $12.00.

Residential Conservation Measures; July 1986, SR/EEUD/86/01 (no GPO Stock No.).

An Economic Evaluation of Energy Conservation and Renewable Energy Tax Credits; October 1985, Service Report (no GPO Stock No.).

Residential Energy Consumption and Expenditures by End Use for 1978, 1980, and 1981; December 1984, DOE/EIA-0458, GPO Stock No. 061-003-00415-6, $4.50.

Weatherization Program Evaluation, SR-EEUD-84-1; August 1984 (available from the Office of the Assistant Secretary for Conservation and Renewable Energy, Department of Energy).

Residential Energy Consumption Survey: Regression Analysis of Energy Consumption by End Use; October 1983, DOE/EIA-0431, GPO Stock No. 061-003-00347-8, $5.00.

National Interim Energy Consumption Survey: Exploring the Variability In Energy Consumption; July 1981, DOE/EIA-0272, GPO Stock No. 061-003-00205-6, $5.00.

National Interim Energy Consumption Survey: Exploring the Variability in Energy Consumption--A Supplement; October 1981, DOE/EIA-0272/S, GPO Stock No. 061-003-00217-0, $4.50.

Energy Use by U.S. Households; November 1980, DOE/EIA-0248 (brochure, no GPO Stock No.).

Residential Transportation Sector

Residential Transportation Energy Consumption Survey: Consumption Patterns of Household Vehicles 1985; April 1987, DOE/EIA-0464(85), GPO Stock No. 061-003-00521-7, $8.50.

Residential Transportation Energy Consumption Survey: Consumption Patterns of Household Vehicles, 1983; January 1985, DOE/EIA-0464(83), GPO Stock No. 061-003-00420-2, $4.50.

Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, Supplement: January 1981 to September 1981; February 1983, DOE/EIA-0328, GPO Stock No. 061-003-00297-8, $4.75.

Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, June 1979 to December 1980; April 1982, DOE/EIA-0319 (no GPO Stock No.).

Commercial Sector

Characteristics of Buildings

Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings, 1986; September 1988, DOE/EIA-0246(86), GPO Stock No. 061-003-00580-2, $16.00.

Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings, 1983; July

1985, DOE/EIA-0246(83), GPO Stock No. 061-003-00439-3, $7.50.

Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings, 1983; A Supplemental Reference, DOE/EIA-M008, $22.95. Available from the National Technical Information Service (NTIS), Order No. DE-85015581.

Nonresidential Buildings Energy Consumption Survey: Fuel Characteristics and Conservation Practices; June 1981, DOE/EIA-0278, GPO Stock No. 061-003-00200-5, $9.00.

Nonresidential Buildings Energy Consumption Survey: Building Characteristics; March 1981, DOE/EIA-0246, GPO Stock No. 061-003-00171-8, $6.50.

Consumption and Expenditures

Nonresidential Buildings Energy Consumption Survey: Commercial Buildings Consumption and Expenditures 1986; May 1989, DOE/EIA-0318(86), GPO Stock No. 061-003-00613-2, $19.00.

Nonresidential Buildings Energy Consumption Survey: Commercial Buildings, Consumption and Expenditures 1983; September 1986, DOE/EIA-0318(83), GPO Stock No. 061-003-00496-2, $13.00.

Nonresidential Buildings Energy Consumption Survey: 1979 Consumption and Expenditures, Part 1: Natural Gas and Electricity; March 1983, DOE/EIA-0318/1, GPO Stock No. 061-003-00298-6, $9.50.

Nonresidential Buildings Energy Consumption Survey: 1979 Consumption and Expenditures, Part 2: Steam, Coal, Fuel Oil, LPG, and Total Fuels; December 1983, DOE/EIA-0318(79)/2, GPO Stock No. 061-003-00366-4, $6.00.

Industrial Sector

Manufacturing Energy Consumption Survey: Fuel Switching Capability, 1985; December 1988, DOE/EIA-0515(85), GPO Stock No. 061-003-00601-9, $3.50.

Manufacturing Energy Consumption Survey: Methodological Report, 1985; November 1988, DOE/EIA-0514(85), GPO Stock No. 061-003-00595-1, $6.00.

Manufacturing Energy Consumption Survey: Consumption of Energy, 1985; November 1988, DOE/EIA-0512(85), GPO Stock No. 061-003-00594-2, $6.00.

Report on the 1980 Manufacturing Industries' Energy Consumption Study and Survey of Large Combustors; February 1983, DOE/EIA-0358, GPO Stock No. 061-003-00293-5, $5.00.

Industrial Energy Consumption, "Survey of Large Combustors: Report on Alternate Fuel-Burning Capabilities of Large Boilers in 1979" ; February 1982, DOE/EIA-0304, GPO Stock No. 061-003-0233-1, $2.50.

Methodological Report of the 1980 Manufacturing Industries Survey of Large Combustors (EIA-463); March 1982, DOE/EIA-0306 (no GPO Stock No.).

Cross-Sector

Natural Gas: Use and Expenditures; April 1983, DOE/EIA-0382, GPO Stock No. 061-003-00307-9, $5.50.

Planned Publications for 1989

Household Energy Consumption and Expenditures 1987, Part 1: National Data; planned for Oct. 1989.

Household Energy Consumption and Expenditures 1987, Part 2: Regional Data; planned for Nov. 1989.

Household Vehicles Energy Consumption 1988; planned for Dec. 1989.

Public Use Tapes

Residential and Residential Transportation Sectors

Residential Energy Consumption Survey: 1984 and Residential Transportation Energy Consumption Survey, 1985; Order No. PB87-186540/HAA.

Residential Energy Consumption Survey: 1982 and Residential Transportation Energy Consumption Survey, 1983; Order No. PB85-221760/HAA.

Residential Energy Consumption Survey: Housing Characteristics, 1981; Consumption and Expenditures,

1981-1982; Monthly Billing Data; Order No. PB84-120476/HAA.

Residential Energy Consumption Survey: Consumption and Expenditures, 1980-1981; Monthly Billing Data; Order No. PB84-166230/HAA.

Residential Energy Consumption Survey: Housing Characteristics, Annualized Consumption and Expenditures, 1980-1981; Order No. PB83-199554/HAA.

Residential Energy Consumption Survey: Household Transportation Panel Monthly Gas Purchases and Vehicle and Household Characteristics, 6/79-9/81; Order No. PB84-162452/HAA.

Residential Energy Consumption Survey: Household Screener Survey, 1979-1980; Order No. PB82-114877/HAA.

Residential Energy Consumption Survey: Household Monthly Energy Consumption and Expenditures, 1978-1979; Order No. PB82-114901/HAA.

National Interim Energy Consumption Survey (Residential), 1978; Order No. PB81-108714/HAA.

Commercial Sector

Nonresidential Buildings Energy Consumption Survey: 1979 and 1983 Data; Order No. PB88-245162.

Glossary

Active Solar: As an energy source, the use of mechanical pumps/fans to circulate heat-laden fluids or air between solar collectors and the building. Examples include the use of solar collectors for water or space heating. Data on the passive collection of solar energy, such as by trombe walls, were not collected on the 1987 RECS.

Aggregate Ratio: The ratio of two population aggregates (totals). For example, the aggregate expenditures per household is the ratio of the total expenditures in each category to the total number of households in the category. See **Mean**.

Air Conditioning: Cooling of the air in a building by a refrigeration unit driven by electricity or gas. This definition excludes fans, blowers, or evaporative cooling systems ("swamp coolers") that are not connected to a refrigeration unit. Air-conditioning units that are not currently in working condition or are not used are still included in this survey if they are in place in the housing unit. Air-conditioning categories are as follows:

All rooms air-conditioned--100 percent of the rooms are air-conditioned. "Some rooms air-conditioned" means that fewer than 100 percent are air-conditioned.

Central air-conditioning system--a system, with ducts, that air-conditions several rooms in a home. See also **Central System for the Building**. For a definition of rooms, see **Number of Rooms**.

Number of rooms that can be air-conditioned--the number of rooms the air-conditioning equipment is capable of cooling when the equipment is used. The question "How many rooms in your house (apartment) can be cooled by your air-conditioning?" refers to rooms that could be cooled if the air-conditioning equipment were used. There are, therefore, no cases in the data set of households with air-conditioning equipment that cooled zero rooms.

See **Refrigeration Unit**.

Appliances Used: Appliances possessed and used by the household during the year. Appliances possessed by the household but **not** used are not counted. Appliances loaned to the household for its regular use are included. Appliances temporarily not in working condition but generally used by the household are included only if a repair person has been called or the appliance has been taken to a repair shop. The following list of appliances were asked specifically in the RECS: refrigerator, swimming pool, hot tub, or jacuzzi heaters, stove top burners, ovens (excluding toaster ovens), microwave ovens, outdoor gas grills, clothes washers, dishwashers, clothes dryers, outdoor gas lights, dehumidifiers, humidifiers, evaporative coolers, fans, electric blankets, waterbed heaters, and television sets. Swimming pool, hot tub, or jacuzzi heaters are included only if they are for the exclusive use of the housing unit; swimming pool, hot tub, or jacuzzi heaters (such as those in apartment buildings, condominiums, or cooperatives) that are for the use of many resident households are excluded. The "range" (stove-top burners) and "oven" are considered two separate appliances, although they are often purchased as one appliance. See **Refrigerator** and **Evaporative Cooler**.

Automatic or Clock Thermostat: See **Conservation Improvements**.

Automatic Flue Door: See **Conservation Improvements**.

Availability of Natural Gas in the Neighborhood: Respondents who did not use natural gas were asked "Is gas from underground pipes available in this neighborhood?" Because respondents were not provided with a definition of "available" or "neighborhood," some variation is to be expected in what these concepts meant to each respondent. The intent of this question is to determine whether a residence could be hooked up to a gas line.

Average Number: See **Aggregate Ratio** and **Mean**.

Basement/Crawl Space: A basement is an enclosed space in which a person can walk upright under all or part of the building. A crawl space is the space between the ground and the floor of a house. An enclosed crawl space is one

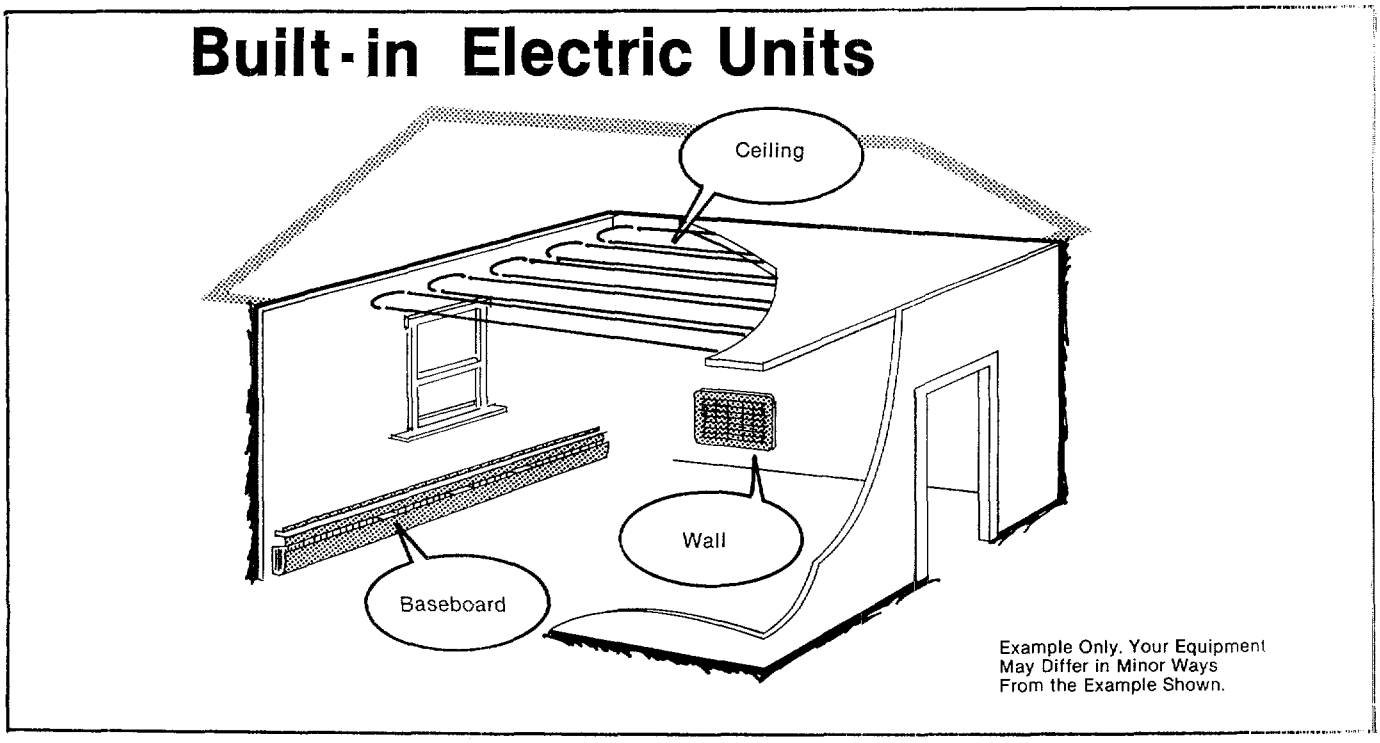
not accessible from the outside of the house because the walls of the space protect it from the weather. A crawl space "open to the outside" is one that is accessible from outside the house--even though it may be covered by a trellis or lathwork, or some kind of brickwork that leaves space for circulation of air.

Btu: The amount of energy required to raise the temperature of 1 pound of water by 1 degree Fahrenheit (F) at or near 39.2 degrees F and 1 atmosphere of pressure. One Btu is about equal to the heat given off by a blue-tip match.

Building of 2-4 Units: See **Housing Structure**.

Building of 5 or More Units: See **Housing Structure**.

Built-in Electric Units: An individual resistance electric heating unit that is permanently installed in the floors, walls, ceilings, or baseboards and is part of the electrical installation of the building. Electric heating devices that are plugged into an electric socket or outlet are not considered built in.



Caulking: See **Conservation Improvements**.

CDD: See **Cooling Degree-Days**.

Census Division: A geographic area consisting of several States defined by the U.S. Department of Commerce, Bureau of the Census. See the map in **Appendix F**, "U.S. Census Regions and Divisions." The States are grouped into nine divisions and four regions:

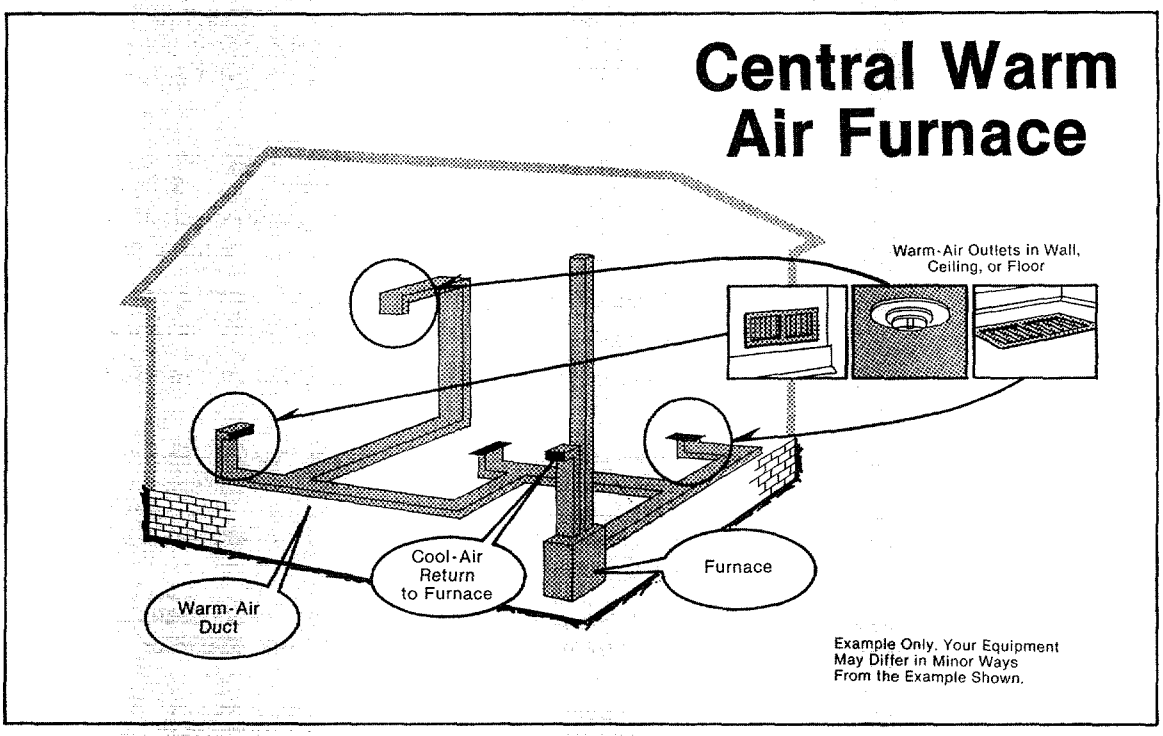
Region	Division	States
Northeast	New England	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont
	Middle Atlantic	New Jersey, New York, and Pennsylvania
Midwest	East North Central	Illinois, Indiana, Michigan, Ohio, and Wisconsin
	West North Central	Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota
South	South Atlantic	Delaware, the District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia
	East South Central	Alabama, Kentucky, Mississippi, and Tennessee
	West South Central	Arkansas, Louisiana, Oklahoma, and Texas
West	Mountain	Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming
	Pacific	Alaska, California, Hawaii, Oregon, and Washington

Census Region: See **Census Division** and the map in **Appendix F**, "U.S. Census Regions and Divisions."

Central City: Is usually one or more legally incorporated cities within the Metropolitan Statistical Area (MSA) that is significantly large by itself or large relative to the largest city in the MSA. Additional criteria for being classified central city include having at least 75 jobs for each 100 employed residents and having at least 40 percent of the resident workers employed within the city limits. Every MSA has at least one central city, which is usually the largest city. Central cities are commonly regarded as relatively large communities with a denser population and a higher concentration of economic activities than the outlying or suburban areas of the MSA. "Outside Central City" are those parts of the MSA that are not designated as central city. See **Metropolitan**.

Central System for the Building: A system providing the main space heating, water heating, or air conditioning for two or more housing units in the building. A system that is used only for the respondent's living quarters is not a central system for the building. Central System for the Building is applied, when appropriate, only for buildings containing two or more housing units.

Central Warm-Air Furnace: A central combustor or resistance unit--generally using gas, fuel oil, or electricity--that provides warm air through ducts leading to the various rooms. Heat pumps are not included in this category. A forced-air furnace is one in which a fan is used to force the air through the ducts. In a gravity furnace, air is circulated by gravity, relying on the natural flow of warm air up and cold air down. The warm air rises through ducts and the cold air falls through ducts that return it to the furnace to be reheated. This completes the circulation cycle.



Climate Zone: One of five climatically distinct areas, defined by long-term weather conditions affecting the heating and cooling loads in buildings. The zones were developed by the Energy End Use Division from seven distinct climate categories originally identified by the American Institute of Architects (AIA) for the U.S. Department of Energy and the U.S. Department of Housing and Urban Development. The zones were determined according to the 30-year average (1951-1980) of the annual heating and cooling degree-days (base 65 degrees F). The zones are defined as follows:

AIA Group	EEUD Climate Zone	Average Annual Cooling Degree-Days	Average Annual Heating Degree-Days
1	1	Under 2,000	Over 7,000
2	2	Under 2,000	5,500 to 7,000
3	3	Under 2,000	4,000 to 5,499
4	4	Under 2,000	2,000 to 3,999
5	4	Under 2,000	Under 2,000
6	5	2,000 or more	Under 2,000
7	5	2,000 or more	2,000 to 3,999

An individual household was assigned to a climate zone according to the 30-year average annual degree-days for an appropriate nearby weather station. See **Heating Degree-Days (HDD)**, **Cooling Degree-Days (CDD)**, and **NOAA Division**.

Closable Shutters: See **Conservation Improvements**.

Coal: A combustible mineral substance (carbonized vegetable matter); in this report, the term includes its derivative (formed by destructive distillation or imperfect combustion) coke. Only statistics on the number of households using coal are presented. See **Fuel**.

Conservation Improvements: Energy-saving items added to the housing unit the household now occupies. Items added to a previous place of residence and changes made by previous occupants of the housing unit are not counted. Changes made by a landlord are counted. The following items qualify as conservation measures:

Automatic or clock thermostat--a thermostat that can be set to turn the heating system off and on at certain predetermined times.

Automatic flue door (vent damper)--a mechanism that automatically closes the flue when the furnace goes off to prevent heat loss up the chimney.

Caulking around any windows or doors to the outside--moldable sealing material that (when put into cracks around the frames of windows or doors, or cracks in other stationary parts of a house) prevents drafts from coming into a house. Caulking comes in a tube and is claylike so it can be molded by hand to fit the space being treated. Caulking applied either to the inside or to the outside of the home qualifies as an energy-saving item.

Closable shutters, insulating drapes, reflective film--types of energy conservation for windows. This category is used if any one of these has been added to any door or window in the housing unit. Shutters that close to provide an insulating effect are counted, as well as insulated roller shades or "window quilts" whose sides ride in a channel attached to the window frame. Decorative shutters that do not close are not counted.

Electrical or mechanical furnace ignition system (spark ignition)--a mechanism for starting a furnace that ignites fuel from an electrically or mechanically produced spark rather than from a pilot light that burns continuously.

Flame-retention head burner of furnace (fuel oil)--a device that controls the pattern of flame in the combustion chamber of a boiler or furnace.

Insulation around heating and/or cooling ducts--extra insulation around the heating and/or cooling ducts intended to reduce the loss of hot or cold air as it travels to different parts of the residence.

Insulation around the hot-water and/or cooling pipes--wrapping of insulating material around hot-water and/or cooling pipes, to reduce the loss of heat or cold through the pipes.

Insulation around hot-water heater--blanket insulation wrapped around the hot-water heater to reduce loss of heat. To qualify under this definition, this wrapping must be in addition to any insulation provided by the manufacturer.

Plastic sheets--a generally transparent material used to cover a window or other opening in the housing unit in an attempt to reduce the loss of heat.

Weatherstripping around any windows or doors to the outside--any of several kinds of crack-filling material used to prevent drafts from coming into a house around movable parts of a door or window. Weather-stripping is available in strips or rolls of metal, vinyl, or foam rubber and can be applied on the inside or outside of a building.

Cooking Stove: A stove built for preparing food. In this survey it may be used as the main heating equipment. The range (stove top burners) and oven are considered two separate appliances in this survey. See **Main Heating Equipment** and **Appliances Used**.

Cooling Degree-Days (CDD): A quantity used to estimate the need for cooling systems in homes. Normally, cooling is not required in a building when the outdoor average daily temperature is below 65 degrees F. The average daily temperature is the mean of the maximum and minimum temperatures for a 24-hour period. Cooling degree-days are determined by subtracting 65 from the average daily temperature. For example, a day with an average temperature of 85 degrees F has 20 cooling degree-days (85 - 65 = 20), while a day with an average temperature of 65 degrees F or lower has none. After being calculated for each day, the number of cooling degree-days can be summed over a larger unit of time (a month, a year).

Cooling degree-days can also be calculated using a base temperature other than 65 degrees. The computation is performed in an analogous manner. This report uses cooling degree-days based at 65 degrees because that is the base most commonly reported.

In 1987, for the first time in the RECS, cooling degree-days for households were taken from records of an appropriate nearby weather station. In previous surveys, weather data were assigned to households according to the NOAA division in which the household was located. See **NOAA Division** and **Climate Zone**.

Door: A movable, usually solid barrier for opening and closing an entrance way. Outside doors lead from a heated area to the outside or to an unheated area, such as a porch or garage. Doors leading to a heated hallway in an apartment building, doors permanently sealed shut, and doors to an unheated attic or basement were not counted, because they are not usually fitted with storm doors. Double doors are counted as one door. A pair of sliding glass doors is counted as one door in this survey. An apartment with one door that opens into a heated hallway has zero doors. The definition of "standard" doors includes doors both with and without glass panels.

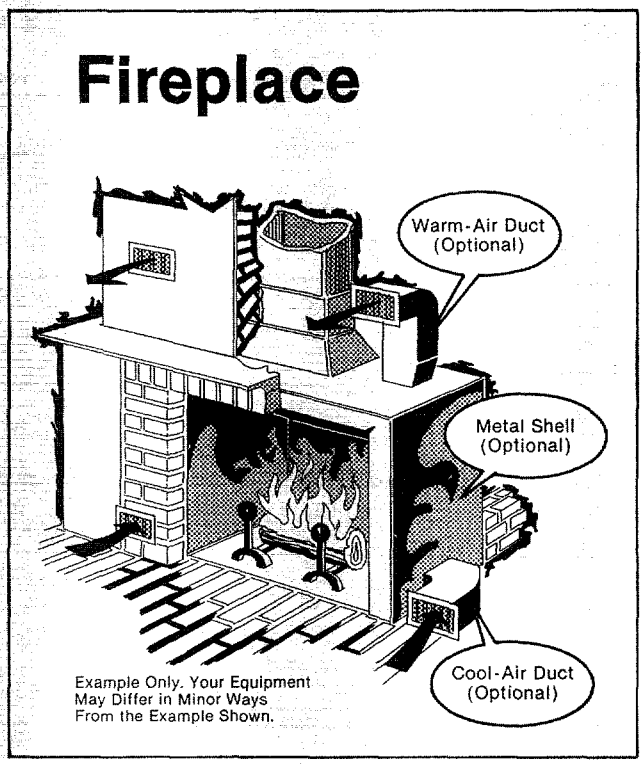
Electrical or Mechanical Furnace Ignition: See **Conservation Improvements**.

Electricity: Metered electric power supplied by a central utility company to a residence via underground or above-ground power lines. It does not refer to electricity generated on site for the exclusive use of a residence. When a residence has its own generating capability, the fuel used for the generator will be specified. See **Fuel**.

Evaporative Cooler (Swamp Cooler): An air-cooling unit that turns air into moist, cool air by saturating the air with water vapor. It does **not** cool air by use of a refrigeration unit, so it is not considered air conditioning equipment in this report. See **Appliances Used**.

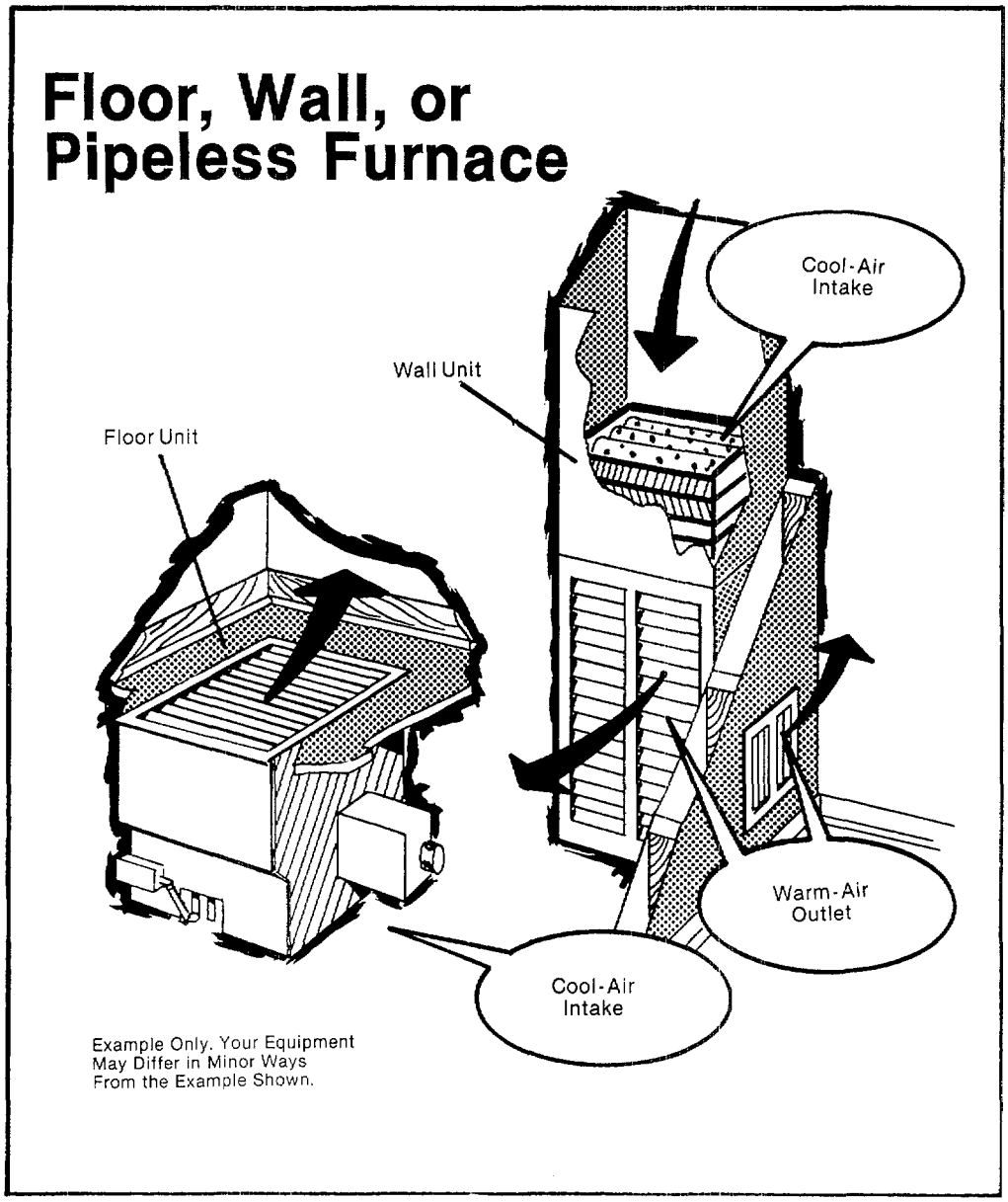
Family Income: The total combined income (before taxes and deductions) of all members of the family from all sources, for the 12 months before the interview. It includes wages, salaries, tips, commissions, and income from Social Security, pensions, interest, dividends, rent, public assistance, and unemployment insurance. This definition includes the total income of all family members who lived in the household during the 12 months before the interview, regardless of whether they were living there at the time of the interview. Income of nonfamily members of the household is not included. "Family" includes the following types of relationships: mother, father, sister, brother, son, daughter, father-in-law, uncle, aunt, niece, grandchild, foster child (and similar relationships).

Fireplace: Usually a masonry unit which burns wood, that is built into the wall of a house. Fireplaces in mobile homes are included. A fireplace must have a permanent chimney. Fireplaces may have glass doors or metal shields to cover the opening into the room. Accessories such as convective grates or radiant grates may be present to increase the efficiency of the fireplace. A free-standing fireplace that can be detached from its chimney is a heating stove. See **Heating Stove**.



Flame-Retention Head Burner: See **Conservation Improvements**.

Floor, Wall, or Pipeless Furnace: A ductless combustor or resistance unit, an enclosed chamber where fuel is burned or where electrical-resistance heat is generated to warm the rooms of a building. A floor furnace is located below the floor and delivers heated air to the room immediately above or (if under a partition) to the room on each side. A wall furnace is installed in a partition or in an outside wall and delivers heated air to the rooms on one or both sides of the wall. A pipeless furnace is installed in a basement and delivers heated air through a large register in the floor of the room or hallway immediately above.



Fuel: The primary fuel delivered to a residential site. It may be converted to some other form of energy at the site. In this report, electricity is included as a fuel. Other primary fuels are coal, fuel oil, kerosene, liquefied petroleum gas (LPG), natural gas, and solar collectors.

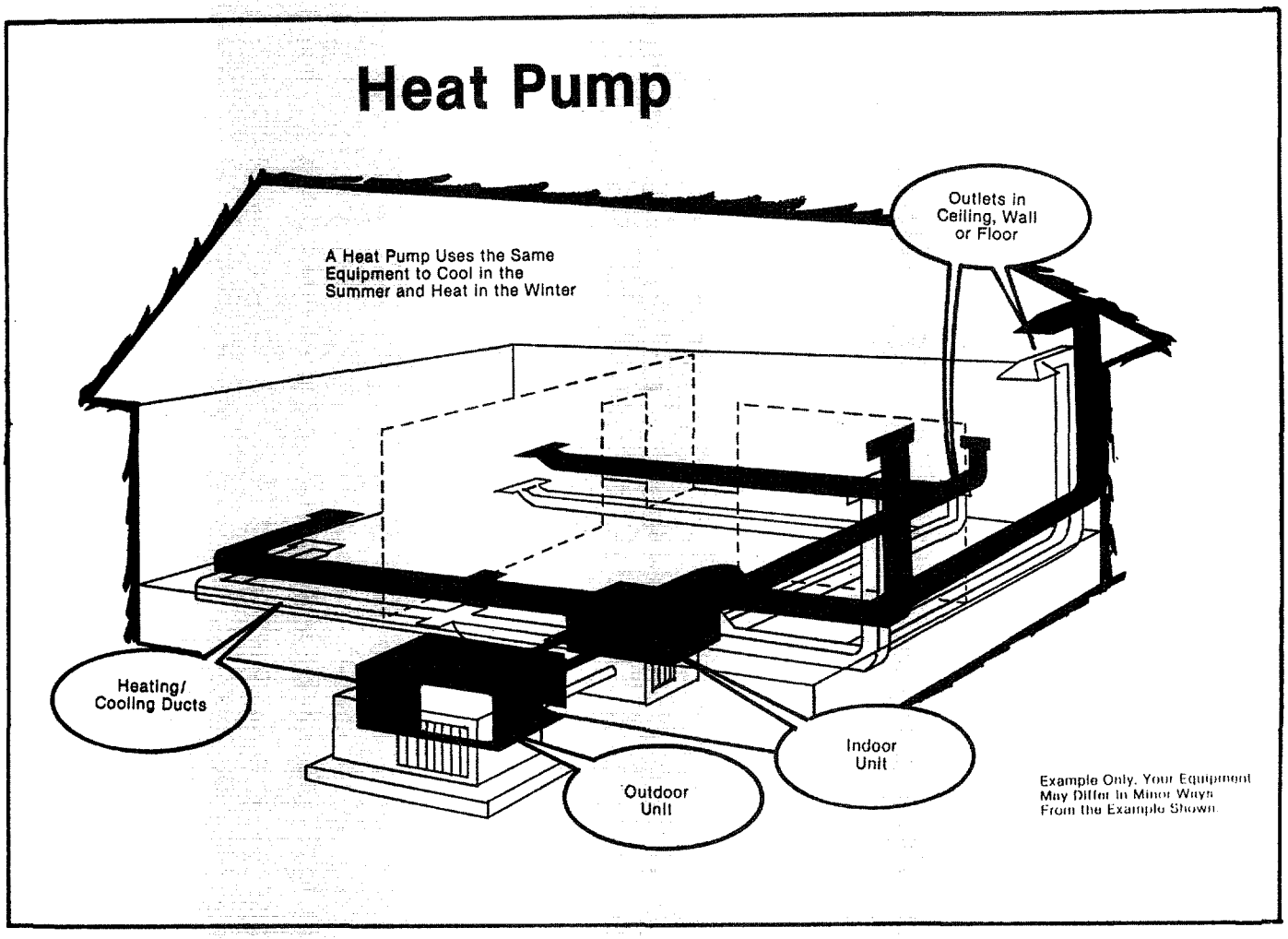
Fuel Oil: No. 1, No. 2, or No. 4 grade fuel oil or residual oil that is burned for space- or water-heating purposes. No. 1 distillate fuel oil is a form of heating oil used mostly as a blending stock to assure that heavier grades of fuel flow under severe cold weather conditions. No. 2 distillate collectively refers to No. 2 heating oil and No. 2 diesel fuel. Although these products are not precisely identical, they are essentially interchangeable in most applications. No. 2 fuel oil is the most common form of heating oil. No. 4 distillate is a blend of No. 2 and No. 5 or No. 6 residual fuel

oil, used in large stationary diesel engines and boilers equipped with fuel preheating equipment. Residual fuel oil refers to the heavier oils that remain after the distillate fuel oils and lighter hydrocarbons are boiled off in refinery operations. See **Fuel**.

HDD: See **Heating Degree-Days**.

Heat Pump (Reverse Cycle System): A year-round heating/air-conditioning system in which refrigeration equipment supplies both heating and cooling through ducts leading to individual rooms. A heat pump generally consists of a compressor, both indoor and outdoor coils, and a thermostat. In the RECS, only electricity was allowed as the power source.

The heat pump, when attached to a central furnace, is either the main or secondary heating equipment (depending on how often the heat pump operates). It if operates for a short time and then the furnace comes on, the heat pump is secondary (or additional) heating equipment. If the heat pump is sufficient to provide the desired warmth, the heat pump is cited as the main heating equipment.



Heated Area of Residence: See **Square Feet**.

Heating Controls: Refers to a thermostat for the main or secondary heating equipment.

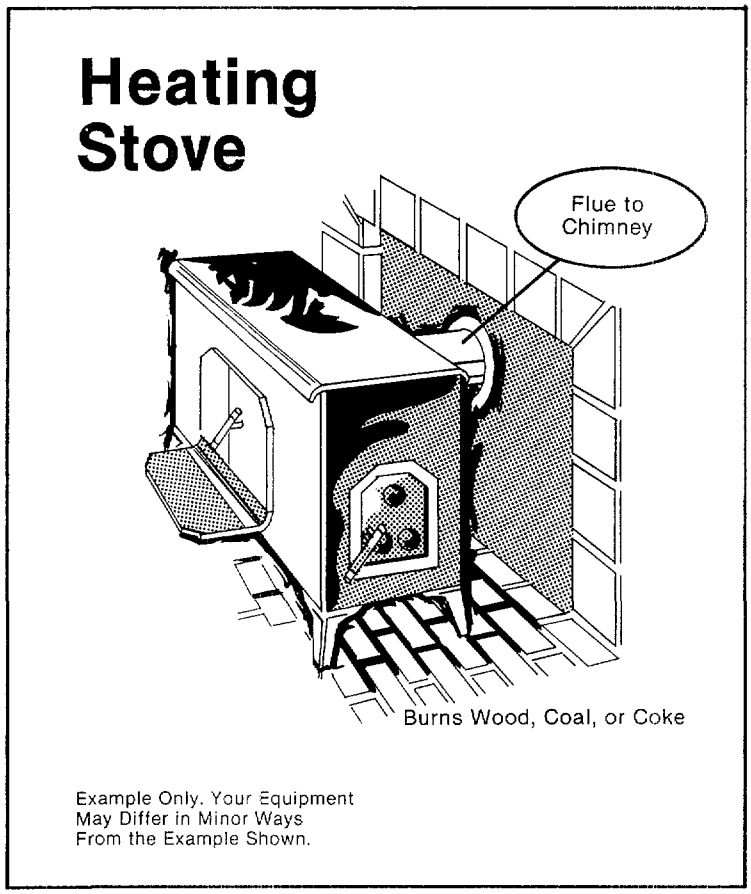
Heating Degree-Days(HDD): A quantity used to estimate the need for heating systems in homes. Normally, heating is not required in a building when the outdoor average daily temperature is above 65 degrees F. The average daily

temperature is the mean of the maximum and minimum temperature for a 24-hour period. Heating degree-days are determined by subtracting the average daily temperature below 65 degrees F from the base 65. For example, a day with an average temperature of 50 degrees F has 15 heating degree-days (65 - 50 = 15), while one with an average temperature of 65 or higher has none.

Heating degree-days can also be calculated using a base temperature other than 65 degrees. The computation is performed in an analogous manner. This report uses heating degree-days based at 65 degrees because that is the base most commonly reported.

In 1987, for the first time in the RECS, heating degree-days for households were taken from records of an appropriate nearby weather station . In previous surveys, weather data were assigned to households according to the NOAA division in which the household was located. See **NOAA Division** and **Climate Zone**.

Heating Stove Burning Wood, Coal, and Coke: Any free-standing box or controlled-draft stove; or a stove installed in a fireplace opening, using the chimney of the fireplace. Stoves are made of cast iron, sheet metal, or plate steel. Free-standing fireplaces that can be detached from their chimneys are considered heating stoves. "Airtight" stoves allow the user to control the amount of air in the stove to regulate the rate of combustion. The doors fit tightly so that the air flow can be controlled. Many airtight stoves have a gasket around the door of the stove. "Nonairtight" stoves are those lacking gaskets around their door openings.



Hispanic Descent: This, as the question on origin, was self-determined by the respondent. The respondent was asked, "Is the householder of Spanish or Hispanic origin or descent?" and the respondent's answer was recorded. See **Origin**.

Hot-Deck Imputation: A statistical procedure for deriving a probable response to a questionnaire item concerning a household or vehicle, where no response was given during the survey. To perform the procedure, an analyst sorts the households or vehicles by variables related to the missing item. Thus, a series of sort categories are formed

which are internally homogeneous with respect to the sort variables. Within each category, households or vehicles for which the questionnaire item is not missing are randomly selected to serve as "donors" to supply values for the missing item of "recipient" households or vehicles. See **Imputation** and **Appendix A**, "How the Survey Was Conducted."

Household: A family, an individual, or a group of up to nine unrelated persons occupying the same housing unit. "Occupy" means the housing unit was the person's usual or permanent place of residence at the time of the first field contact. The household includes babies, lodgers, boarders, employed persons who live in the housing unit, and persons who usually live in the household but are away traveling or in a hospital. The household does not include persons who are normally members of the household but who were away from home as college students or members of the armed forces at the time of the contact. The household does not include persons temporarily visiting with the household if they have a place of residence elsewhere, persons who take their meals with the household but usually lodge or sleep elsewhere, domestic employees or other persons employed by the household who do **not** sleep in the same housing unit, or persons who are former members of the household, but have since become inmates of correction or penal institutions, mental institutions, homes for the aged or needy, homes or hospitals for the chronically ill or handicapped, nursing homes, convents or monasteries, or other places in which residents may remain for long periods of time. By definition, the number of households is the same as the number of occupied housing units.

Householder: The person (or one of the people) in whose name the home is owned or rented. If there is no lease or similar agreement, or if the person who owns the home or pays the rent does not live in the housing unit, the householder is the person responsible for paying the household bills, or whoever is generally in charge.

Housing Structure: One of four structural types used to categorize the building in which the housing unit was located. The types of structure are as follows:

> Single-family housing unit--a structure that provides living space for one household or family. The structure may be detached, attached on one side (semidetached), or attached on two sides. Attached houses are considered single-family houses as long as the house itself is not divided into more than one housing unit and has an independent outside entrance. A single-family house is contained within walls that go from the basement (or the ground floor, if there is no basement) to the roof. (A mobile home with one or more rooms added is classified as a single-family home.)
>
> House or building with two to four housing units--a structure that is divided into living quarters for two, three, or four families or households. This category also includes houses originally intended for occupancy by one family (or for some other use) that have since been converted to separate dwellings for two to four families. Typical arrangements in these types of living quarters are separate apartments downstairs and upstairs, or one apartment on each of three or four floors.
>
> Building with five or more housing units--a structure that contains living quarters for five or more households or families.
>
> Mobile home or trailer--a structure that has all the facilities of a dwelling unit but is built on a movable chassis. It may be placed on a permanent or temporary foundation and may contain one room or more. If rooms are added to the structure, it is considered a single-family housing unit.

Housing Unit: A structure or part of a structure where a household lives. It has direct access from the outside of the building either directly or through a common hall. Housing units do not include group quarters such as prisons or nursing homes where 10 or more unrelated persons live. Hotel and motel rooms are considered housing units if occupied as the usual or permanent place of residence.

Imputation: A statistical method used to fill in values for missing items, designed to minimize the bias of estimates based on the filled-in data set. See **Hot-Deck Imputation** and **Appendix A**, "How the Survey Was Conducted."

Insulating Drapes: See **Conservation Improvements**.

Insulation: Any material that when placed between the interior of the dwelling and the outdoor environment, reduces the rate of heat loss to the environment in winter or heat gain from the environment in summer. Floor insulation is defined as insulation between the bottom floor and the unheated basement or crawl space; carpeting or carpeting pads do not qualify as insulation. The four forms of insulation illustrated in a drawing shown to respondents are listed below.

> Blankets or batts--rolls or pieces of insulation that are nailed or stapled between the rafters or wall joists (beams). Such insulation is usually made of fiberglass or rock wool.

Loose particles or loose fill--loose insulation (supplied in a bag) that is poured between joists (beams). Loose insulation can also be blown into open spaces. Loose fill can be glass fiber, rock-wool fibers, cellulose fiber, or vermiculite.

Firm foam or firm plastic--rigid boards (such as styrofoam) that can be cut to size and either edged, nailed, or glued into place.

Sprayed-in foam--foam that solidifies after being sprayed on a surface or poured into a cavity to be insulated.

See **Conservation Improvements**.

Insulation Around Heating/Cooling Ducts: See **Conservation Improvements**.

Insulation Around Hot-Water/Cooling Pipes: See **Conservation Improvements**.

Insulation Around Hot-Water Heater: See **Conservation Improvements**.

Kerosene: A distilled product of oil or coal with the generic name kerosene, having properties similar to those of No. 1 fuel oil. Kerosene is used for cooking stoves or for space heating or water heating or for lighting equipment that uses wicks. It is sometimes sold under the names "range oil," "stove oil," or "coal oil." See **Fuel**.

kWh (kilowatthour): A unit of work or energy, measured as 1 kilowatt (1,000 watts) of power expended for 1 hour. One kWh is equivalent to 3,412 Btu. See **Btu**.

Liquefied Petroleum Gas or LPG: Any fuel gas supplied to a residence in liquid form, such as propane or butane. It is usually delivered by tank truck and stored near the residence in a tank or cylinder until used. Propane was the most common liquefied petroleum gas supplied to RECS households. Household use of LPG solely for outdoor gas grills or in recreational vehicles is not considered sufficient use to mark the household as a user of LPG. See **Fuel**.

LPG: See **Liquefied Petroleum Gas**.

Main Cooking Fuel: The answer to the question, "Thinking of all the different kinds of cooking done here, including cooking in the oven, on a range, and with small appliances, which fuel is used most?"

Main Heating Equipment: The equipment primarily used for heating ambient air in the housing unit. The main heating equipment is reported as such even if it is temporarily out of order. If two types of heating equipment are used, the main equipment is the one that is used more. If both are used equally, the main equipment is the one that appears first on the list in the question. A "cooking stove" may be used as the main heating equipment even though it was built for preparing food. See also description of specific types of heating equipment, such as **Central Warm-Air Furnace, Heat Pump, Built-In Electric Units, Steam or Hot-Water System, Floor, Wall or Pipeless Furnace, Heating Stove, Room Heater.**

Main Heating Fuel: The fuel named by the respondent in response to the question "What is the main fuel used for heating your home?" If two or more heating fuels are used, the main heating fuel is the one that provides most of the heat for the home. See **Secondary Heating Fuel**.

Mean: The simple arithmetic average for a population; that is, the sum of all the values in a population divided by the size of the population. For this report, population means are estimated by computing the weighted sum of the sample values, then dividing by the sum of the sample weights. The mean is, thus, an aggregate ratio whose denominator is the total number of households or vehicles. See **Aggregate Ratio** and **Weight**.

Mean Indoor Temperature: Is the "usual" temperature. If different sections of the house are kept at different temperatures, the reported temperature is for the section where the people are. A thermostat setting is accepted if the temperature is not known.

Measured Heated Area of Residence : See **Square Feet.**

Mechanical Furnace Ignition: See **Conservation Improvements**.

Metropolitan: A group of households located within Metropolitan Statistical Areas (MSA's) as defined by the U.S. Office of Management and Budget. Except in New England, an MSA is (1) a county or group of contiguous counties that contain at least one city of 50,000 inhabitants or more, or (2) an urbanized area of at least 50,000 inhabitants and

a total MSA population of at least 100,000 (75,000 in New England). The contiguous counties are included in an MSA if, according to certain criteria, they are essentially metropolitan in character and are socially and economically integrated with the central city. In New England, MSA's consist of towns and cities, rather than counties. See **Nonmetropolitan** and **Central City**.

Metropolitan Status: Refers to geographic location of the households in relationship to Metropolitan Statistical Areas (MSA's). See **Metropolitan, Nonmetropolitan**, and **Central City**.

Mobile Home: See **Housing Structure**.

MSA: See **Metropolitan**.

Multistage Area Probability Sample: A sample design executed in stages with geographic "clusters" of sampling units selected at each stage. This procedure reduces survey expense while maintaining national coverage. See **Appendix A**, "How the Survey Was Conducted."

Natural Gas: Utility gas supplied by underground pipeline to individual housing units by a central utility company. It does not refer to privately-owned gas wells operated by the household, nor to LPG. See **Fuel**.

NIECS: The National Interim Energy Consumption Survey, the first developmental survey in the planned series of Residential Energy Consumption Surveys. The NIECS contacted 4,081 households in October and November 1978. Fuel suppliers provided data on consumption and expenditures for the period April 1978 through March 1979.

NOAA Division: One of the 345 weather divisions designated by the National Oceanic and Atmospheric Administration (NOAA) encompassing the 48 contiguous States. These divisions usually follow county borders to encompass counties with similar weather conditions. The NOAA division does not follow county borders when weather conditions vary considerably within a county such as is likely to happen when the county borders the ocean or contains high mountains. A State contains an average of seven NOAA divisions; a NOAA division contains an average of nine counties.

Nonmetropolitan: Households not located within Metropolitan Statistical Areas as defined by the U.S. Office of Management and Budget. See **Metropolitan**.

Number of Rooms: Subdivisions of a living unit. Whole rooms are rooms such as living rooms, dining rooms, bedrooms, kitchens, lodgers' rooms, finished basements or attic rooms, recreation rooms, and permanently enclosed sun porches that are used year-round. Rooms used for offices by a person living in the unit are included in this survey. "Finished" means that the ceiling and walls are covered with finishing materials.

Not considered to be rooms in this survey, are bathrooms, halls, foyers, or vestibules, balconies, closets, alcoves, pantries, strip or pullman kitchens, laundry or furnace rooms, unfinished attics or basements, open porches, and unfinished space used for storage.

A partially divided room, such as a dinette next to a kitchen or a living room, is considered a separate room only if there is a partition from floor to ceiling--but not if the partition consists solely of shelves or cabinets. If a room is used by occupants of more than one unit, the room is included with the unit from which it is most easily reached.

Occupied Housing Unit: A unit someone was living in as his or her usual or permanent place of residence when the first field contact was made. See **Housing Unit**.

Origin: The primary ethnic background of the person considered to be the householder as determined by the respondent. Each respondent was asked, "Which of the groups on this exhibit best describes the householder?" The groups included: white, black or Negro, American Indian, Alaskan native, Asian, and Pacific Islander. The word "race" was not used in either the questionnaire or the instructions. See **Hispanic Descent**.

Outside Central City: See **Central City**.

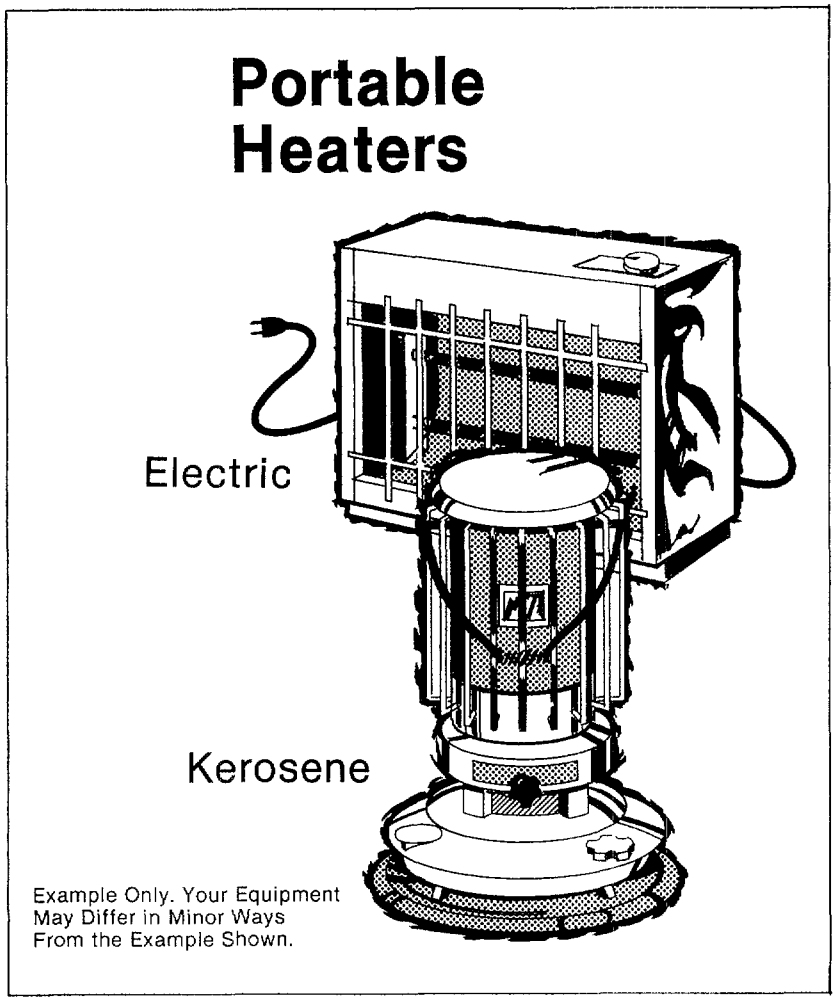
Oven: An appliance which is an enclosed compartment supplied with heat and used for cooking food. Toaster ovens are not considered ovens for this survey. The range (stove top burners) and oven are considered two separate appliances, although they are often purchased as one appliance. See **Appliances Used**.

Owned/Rented: The relationship of its occupants to the structure itself, not the land on which it is located. "Owned" means the owner or co-owner is a member of the household. The housing unit is owned if it is mortgaged and not fully paid for. A household is classified "rented" even if the rent is paid by someone not living in the unit. "Rent-free" means the unit is not owned or being bought and no money is paid or contracted for rent. Such units are usually provided in exchange for services rendered or as an allowance or favor from a relative or friend not living in the unit. Unless shown separately, rent-free households are grouped with rented households.

Payment Method for Utilities: Method by which fuel suppliers or utility companies were paid for **all** electricity, natural gas, fuel oil, kerosene, or liquefied petroleum gas used by a household. Households that paid the utility company directly were classified in this survey as "all paid by household." Households that paid directly for at least one but not all of their fuels used and that has at least one fuel charge included in the rent were classified as "some paid, some included in rent." Households for which all fuels used were included in rent were classified as "all included in rent." Some households were classified as "other method," if they did not fall into any of those three categories. These are households for which fuel bills were paid by a social services agency or a relative, and households that paid for some of their fuels used but paid for other fuels through another arrangement.

Plastic Sheets: See **Conservation Improvements.**

Portable Electric Heater: A heater that uses electricity and that can be picked up and moved.



Portable Kerosene Heater: A heater that uses kerosene and that can be picked up and moved.

Poverty: Low-income classifications to which certain households are assigned. "Below 100 percent of poverty" encompasses a group of households with incomes below the poverty level as defined by the U.S. Bureau of the Census. "Below 125 percent of poverty" includes a group of households with incomes below 125 percent of the poverty level. These groups of the poor and near-poor represent alternative levels for defining poverty. The definitions of "poor" are based on the number of family members in the household and the income of the entire family See **Table C3**.

Primary Sampling Unit (PSU): A sampling unit selected at the first stage in multistage area probability sampling. A PSU typically consists of one to several contiguous counties--for example, a metropolitan area with surrounding suburban counties. The approximately 3,100 counties and independent cities of the contiguous United States were grouped into about 1,800 PSU's by a procedure similar to the one used by the Census Bureau for its Current Population Survey. PSU's can be composed of one or more MSA's or can be composed of rural counties. See **Metropolitan** and **Appendix A**, "How the Survey Was Conducted."

Propane: See **Liquefied Petroleum Gas or LPG**.

PSU: See **Primary Sampling Unit (PSU)**.

Race: See **Origin**.

Range: See **Appliances Used**.

Reflective Film: See **Conservation Improvements**.

Refrigeration Unit: Lowers the temperature through a mechanical process. In a typical refrigeration unit, electricity powers a motor that runs a pump to compress the refrigerant into a liquid. (A "refrigerant" is a substance that changes between liquid and gaseous states under desirable temperature and pressure conditions.) Heat from the compressed liquid is removed and discharged from the unit and the refrigerant then evaporates when pressure is reduced. The refrigerant picks up heat as it evaporates and it returns to the compressor to repeat the cycle.

A few refrigeration units use gas (either natural gas or LPG) in an absorption process than does not use a compressor. The gas is burned to heat a chemical solution in which the refrigerant has been absorbed. Heating drives off the refrigerant which is later condensed. The condensed refrigerant evaporates by a release of pressure, and it picks up heat as it evaporates. The evaporated refrigerant is then absorbed back into the chemical solution, the heat is removed from the solution and discharged as waste heat, and the process repeats itself. By definition, refrigerators, freezers, and air-conditioning equipment all contain refrigeration units.

Refrigerator: A cabinet or box for keeping food cool, usually powered by electricity. Those few refrigerators with no freezer sections are included in the nonfrost-free category. "Frost-free" means that frost does not build up on the insides of the freezer section or the ice-cube section. All home refrigerators are assumed to have electric refrigeration units. Gas refrigeration units are not being manufactured in the United States for use in the home. Gas refrigerators (using LPG) are being manufactured for use in recreational vehicles, but LPG used in recreational vehicles is not included in the RECS. See **Appendix C**, "Quality of the Data," **Refrigeration Unit**, and **Appliances Used**.

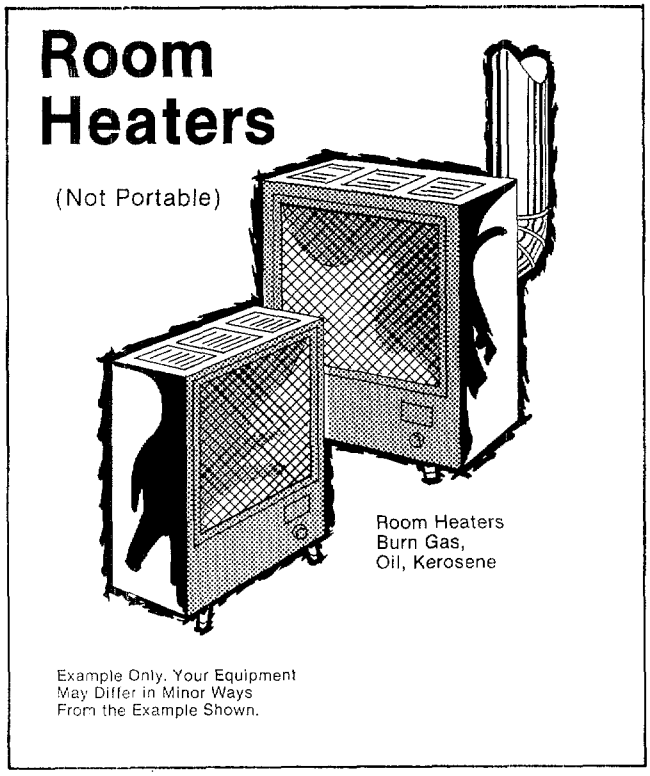
Regression Imputation: A statistical technique for predicting the value of a numerical variable that is missing. The technique involves developing a regression equation that predicts the value of the missing variable based upon variables that are not missing or have already been imputed. A random error is usually added to the predicted value. The sum of the predicted value and the random error is used as the imputed value for the missing variable. See **Imputation**.

Relative Standard Error: See **RSE or Relative Standard Error**.

Rent: See **Owned/Rented**.

Residential: Occupied housing units, including mobile homes, single-family housing units (attached and detached), and apartments. The definition of "occupied housing units" is the same as that used by the U.S. Bureau of the Census. See **Household** and **Housing Unit** for further definition.

Room Heater Burning Gas, Oil, Kerosene: Any of the following structures: circulating heaters, convectors, radiant gas heater, space heaters, or other **nonportable** room heaters that may or may not be connected to a flue, vent, or chimney.



Rooms: See **Number of Rooms**.

RSE or Relative Standard Error: A measure of the reliability or precision of a survey statistic. Variability occurs in survey statistics because the different samples that could be drawn would each produce different values for the survey statistics. Relative Standard Error, or RSE, is a measure of precision on a percentage scale. The RSE is defined as the standard error of a survey estimate, divided by the survey estimate and multiplied by 100. (Standard error is the square root of the variance.) For example, an RSE of 50 percent means that the standard error is half as large as the survey estimate. See **Appendix C**, "Quality of the Data," for a discussion of sampling errors.

RSE Column Factor: An adjustment factor that appears above each column of the tables and is used to compute RSE's. For a survey estimate in a particular row and column of a table (that is, a particular "cell"), the approximate RSE is obtained by multiplying the RSE row factor by the RSE column factor for that cell. See **RSE, RSE Row Factor**, and the "Generalized Variances" section of **Appendix C**, "Quality of the Data."

RSE Row Factor: A factor that appears to the right of each row of the tables, and is used to compute RSE's. For a survey estimate in a particular row and column of a table (that is, a particular "cell"), the approximate RSE is obtained by multiplying the RSE row factor by the RSE column factor for that particular cell. The row factor is equal to the geometric mean of the RSE's in a particular row of the tables. See **RSE, RSE Column Factor**, and the "Generalized Variances" section of **Appendix C**, "Quality of the Data."

Sampling: The procedure used to select housing units for interview from the population of residential housing units in the United States. See **Multistage Area Probability Sample** and **Appendix A**, "How the Survey Was Conducted."

Secondary Heating Equipment: Equipment used less often than the main equipment. See **Main Heating Equipment**.

Secondary Heating Fuel: Fuels used in secondary heating equipment. When no secondary heating equipment is used, a secondary heating fuel that is used in the main heating equipment is not included in the tabulations. This occurs when, for example, wood and coal are both used in a furnace but wood is named the main heating fuel. Coal, in this case, is not tabulated. See **Main Heating Fuel**.

Single-Family: See **Housing Structure**.

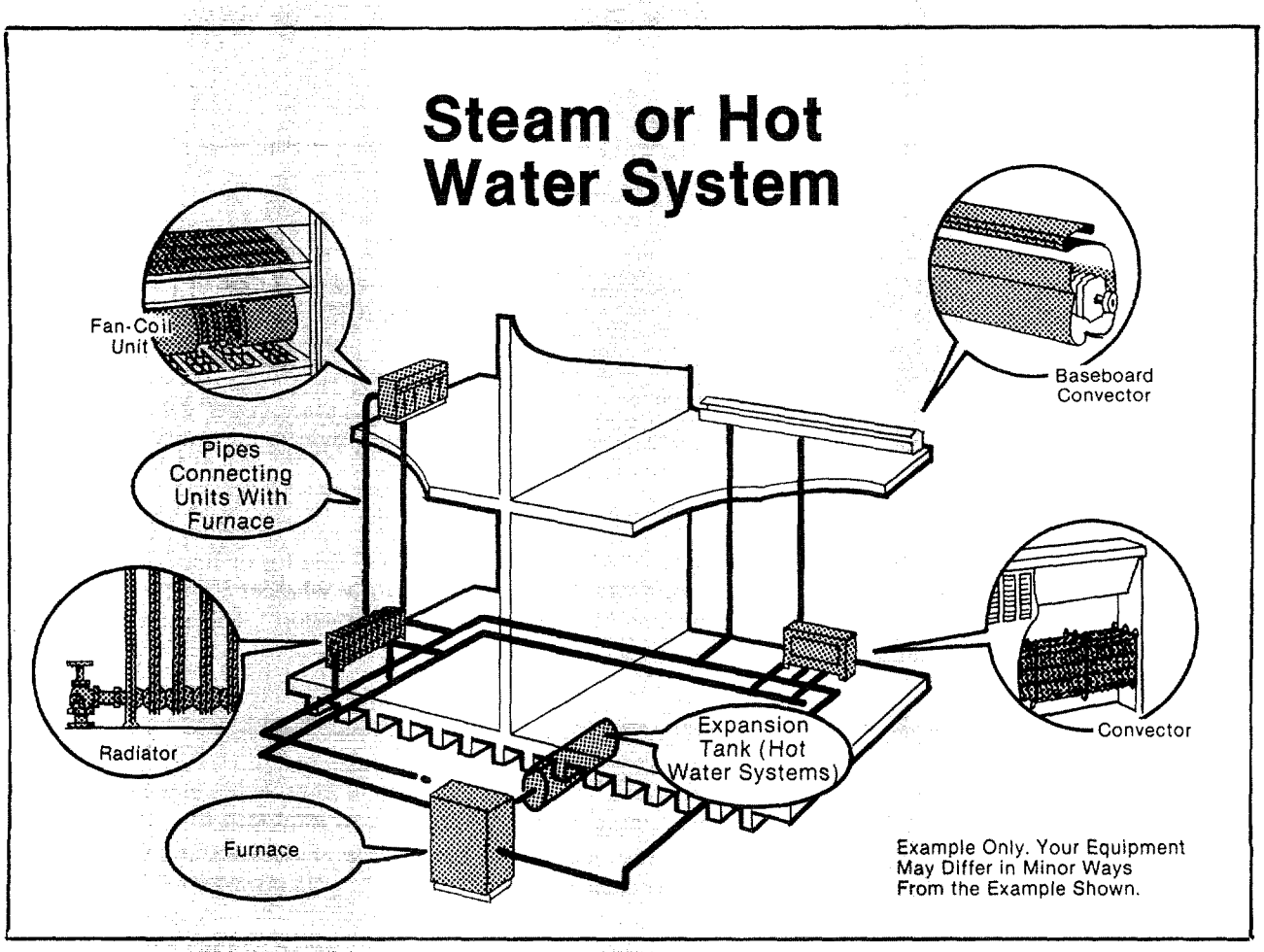
Solar Collector: Equipment that actively concentrates thermal energy from the sun. The energy is usually used for space heating, for water heating, or for heating swimming pools. Either air or liquid is the working fluid. Passive collection of solar thermal energy does not qualify for inclusion. See **Fuel** and **Active Solar**.

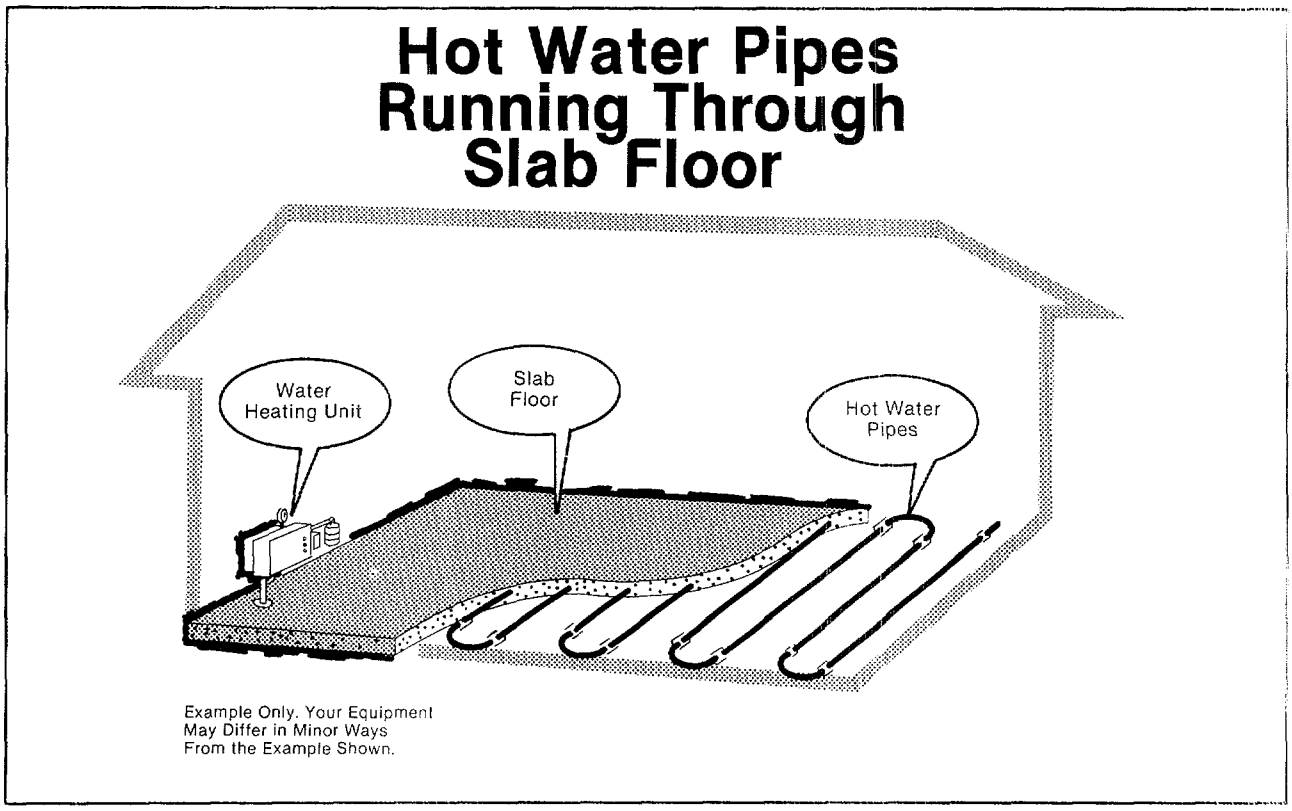
Square Feet: The floor area of the housing unit that is enclosed from the weather. Basements are included, whether or not they contain finished space. Garages are included if they have a wall in common with the house. Attics that have finished space and attics that have some heated space are included. Crawl spaces are not included, even if they are enclosed from the weather. Sheds and other buildings that are not attached to the house are not included.

"Heated area" is the portion of the measured square feet that is heated during most of the winter season. Rooms that are shut off during the heating season to save fuel are not counted as heated square footage. Attached garages that are unheated, and unheated areas in basements and attics, are not counted as heated square feet. "Measured Square Feet" means that the measurement of the dimensions of the home did not rely on the respondent's reports but was an actual measurement made by the interviewer using a metallic, retractable, 50-foot tape measure. For details on how the measurement was made and how the data were treated, see **Appendix B**, "Estimates of the Size of U.S. Housing Units in Square Feet."

Status of Unit: See **Owned/Rented**.

Steam or Hot-Water System: Either of two types of central heating system that supplies steam or hot water to radiators, convectors, or pipes. The more common type supplies either steam or hot water to conventional radiators, baseboard radiators, convectors, heating pipes embedded in the walls or ceilings, or heating coils or equipment that are part of a combined heating/ventilating or heating/air-conditioning system. The other type supplies radiant heat through pipes that carry hot water and are inlaid in a concrete slab floor.





Storm Doors and Windows: Doors made of double or insulating glass such as thermopane. Glass or plexiglass placed over a sliding glass door on either the exterior or interior is counted as a storm door. A plastic sheet covering the door is not counted as a storm door.

Windows made of double or insulating glass, such as thermopane. Glass or plexiglass placed over windows on either the interior or exterior side are counted as storm windows. Plastic sheets covering windows are counted only if they can be used year after year.

> Note: Responses of "don't know" for storm doors, storm windows, and/or roof or ceiling insulation were treated the same as "do not have." For example, a respondent who indicated that his or her house had storm windows (some or all) and storm doors (some or all), but who did not know whether it had roof or ceiling insulation, was not counted in the category "units with some or all storm windows, and some or all storm doors, and roof or ceiling insulation."

Stove: See **Heating Stove** and **Cooking Stove.**

Total Square Footage: Square footage of floorspace summed or aggregated over all households in a category (such as all households in the United States). In this survey, aggregate square footage was estimated by multiplying each household's square footage by its weight, then summing over all sample households of interest to represent nationwide totals. See **Square Feet** and **Weight**.

Vacant Housing Unit: A housing unit not occupied when the first field contact was made. An occupied seasonal or migratory housing unit is classified as vacant at the time of the first contact if all of its occupants had a usual place of residence elsewhere.

Vehicles: Motorized vehicles used by U.S. households for personal transportation. Excluded are: motorcycles, mopeds, large trucks, and buses. Included are: automobiles, station wagons, passenger vans, cargo vans, motor homes, pickup trucks, and jeeps or similar vehicles. In order to be included, vehicles must be: (1) owned by members of the household, or (2) company cars not owned by household members but regularly available to household members for their personal use and ordinarily kept at home, or (3) rented or leased for 1 month or more. See **Vehicle Used on the Job**.

Vehicle Used on the Job: Refers to a vehicle used by anyone in the household for job-related activities, excluding commuting to and from work.

Water-Heating Fuel: The fuel used to heat bath and wash water. Households that did not have running water in the home were also asked what fuel was used for heating water. The hot water may have been available anywhere in the same building as the respondent's living quarters--in a hallway, in a room used by several units in the building, in the basement, or in an enclosed porch--provided the respondent's household had access to it.

Weatherstripping: See **Conservation Improvements**.

Weight: The number of households in the United States that a particular sample unit represents. To estimate the total value of an attribute (such as square footage) in the U.S. residential population as a whole, each sample household's value is multiplied by the household's weight. Summing the weighted sample values provides an estimate of the nationwide total. See **Multistage Area Probability Sample, Total Square Footage,** and **Appendix C**, "Quality of the Data."

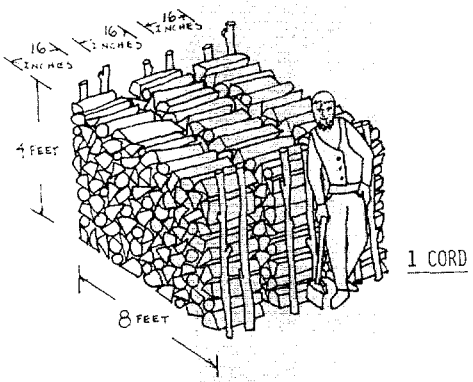
Whole-House Cooling Fan: A large fan located in the attic or entrance to the attic and cools the whole house by drawing air through lower level windows. See **Appliance Used**.

Window or Ceiling Fan: Fans located in the window or installed on the ceiling. Portable or floor fans that are not used in a window are not counted. See **Appliances Used**.

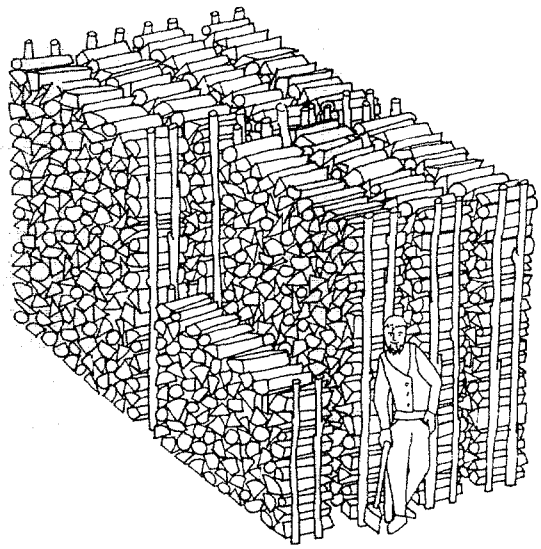
Windows: All windows in the year-round living space. Windows in the basement, attic, garage, and porch are counted only if these areas are heated. Windows in doors are not counted. Each window that opens separately is counted as one window. Windows fixed in place are also counted. Panes of glass in a large window are **not** counted individually unless they open separately. Skylights and stained-glass windows are counted as windows.

Wood Consumption: The amount of wood burned in the home at any time during the preceding 12 months in a fireplace, stove, or furnace, as reported by the respondent at the time of the interview. The figures for wood burned cover the major part of the 1986-1987 heating season.

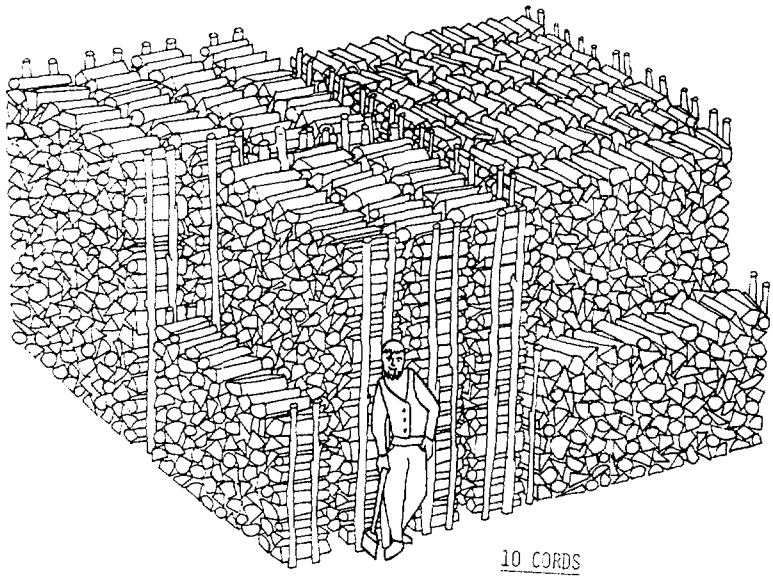
A cord of wood measures 4 feet by 4 feet by 8 feet and approximately 128 cubic feet. A third of a cord measures 16 inches by 4 feet by 8 feet. In order to enable respondents to be more accurate in reporting the amount of wood they burned, especially those households that used more than 5 cords of wood, respondents were shown drawings which included a person holding an ax as a point of reference, and showed wood piles containing 5 and 10 cords. A smaller scale copy of the drawing shown to respondents for 1, 5, and 10 cords is reproduced below.



1 CORD



5 CORDS



Year of Construction: The year the structure was originally completed or the year any part of the structure was first occupied. For mobile homes, year of construction is the model year.

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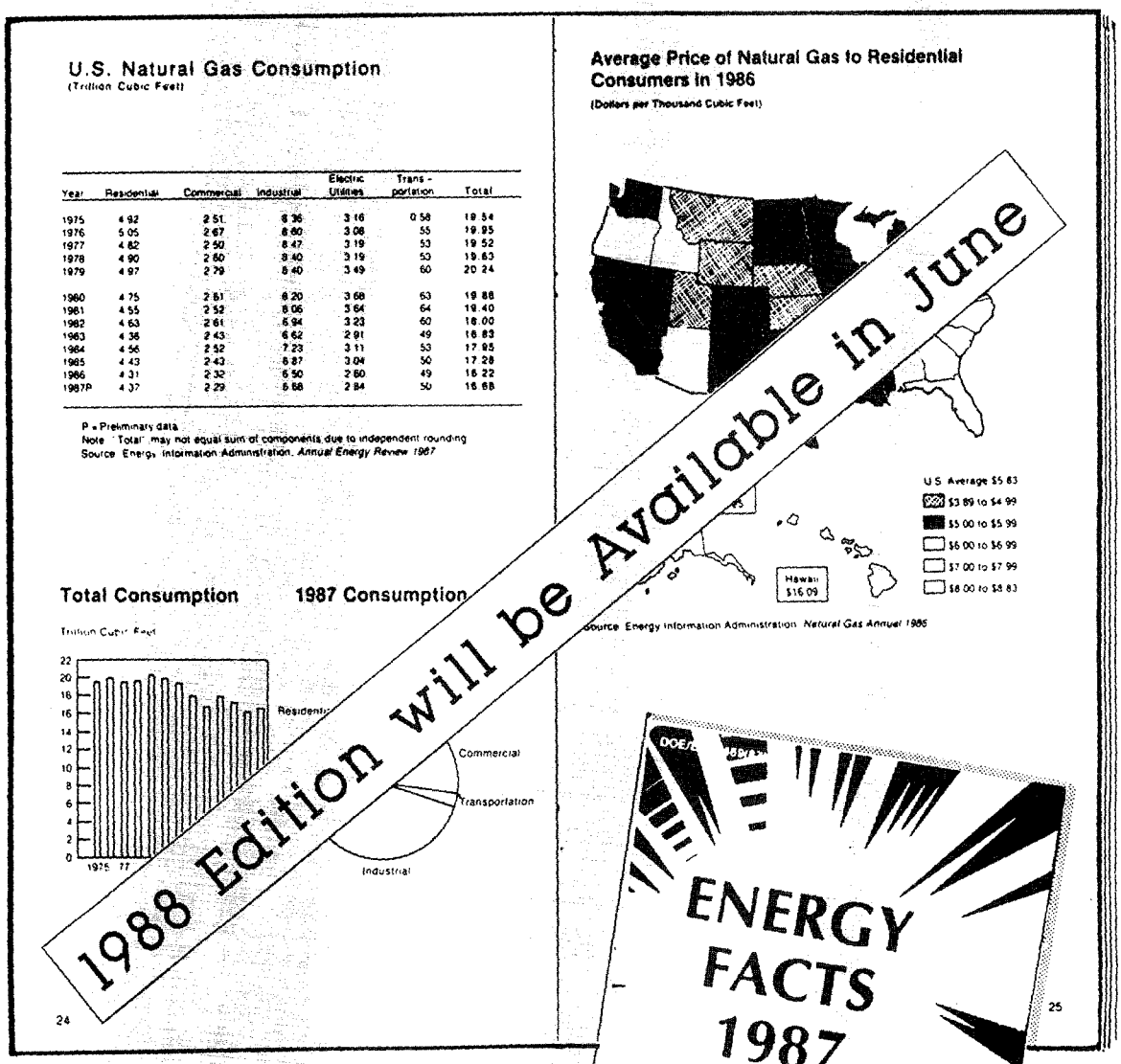


U.S. Natural Gas Consumption
(Trillion Cubic Feet)

Year	Residential	Commercial	Industrial	Electric Utilities	Trans-portation	Total
1975	4.82	2.51	6.35	3.16	0.58	19.54
1976	5.05	2.67	6.60	3.08	.55	19.95
1977	4.82	2.50	6.47	3.19	.53	19.52
1978	4.90	2.60	6.40	3.19	.53	19.63
1979	4.97	2.79	6.40	3.49	.60	20.24
1980	4.75	2.61	6.20	3.68	.63	19.88
1981	4.55	2.52	6.06	3.64	.64	19.40
1982	4.63	2.61	5.94	3.23	.60	18.00
1983	4.38	2.43	6.62	2.91	.49	18.83
1984	4.56	2.52	7.23	3.11	.53	17.95
1985	4.43	2.43	6.87	3.04	.50	17.28
1986	4.31	2.32	6.50	2.80	.49	16.22
1987P	4.37	2.29	6.68	2.84	.50	16.68

P = Preliminary data.
Note: "Total" may not equal sum of components due to independent rounding.
Source: Energy Information Administration, *Annual Energy Review 1987*

Average Price of Natural Gas to Residential Consumers in 1986
(Dollars per Thousand Cubic Feet)

U.S. Average $5.63
$3.89 to $4.99
$5.00 to $5.99
$6.00 to $6.99
$7.00 to $7.99
$8.00 to $8.83
Hawaii $16.09

Source: Energy Information Administration, *Natural Gas Annual 1986*

Total Consumption

Trillion Cubic Feet

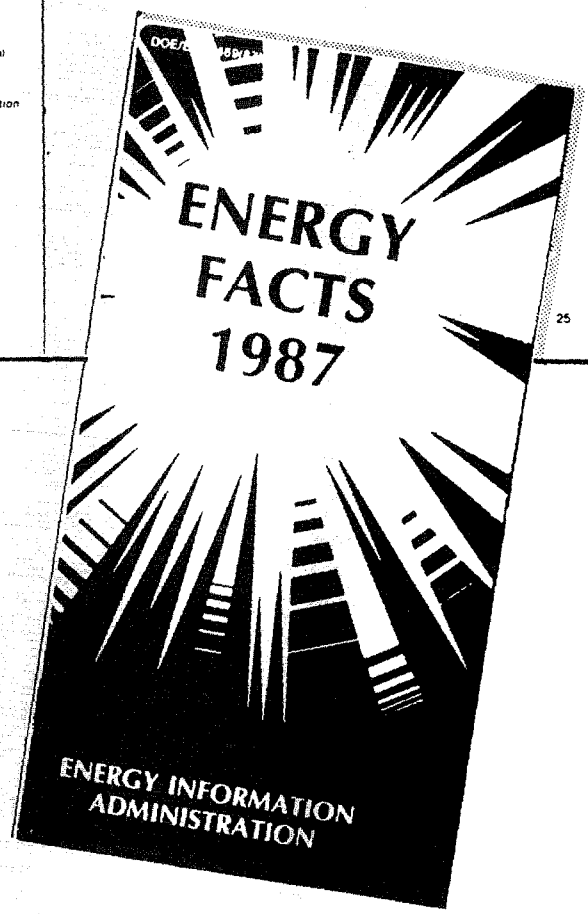
1987 Consumption

Residential
Commercial
Transportation
Industrial

24

25

1988 Edition will be Available in June



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