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Residential Energy  
Consumption Survey:

**Energy Information Administration**  
Washington, D.C.

August 1983

# Housing Characteristics, 1981



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Residential Energy  
Consumption Survey:

# Housing Characteristics, 1981



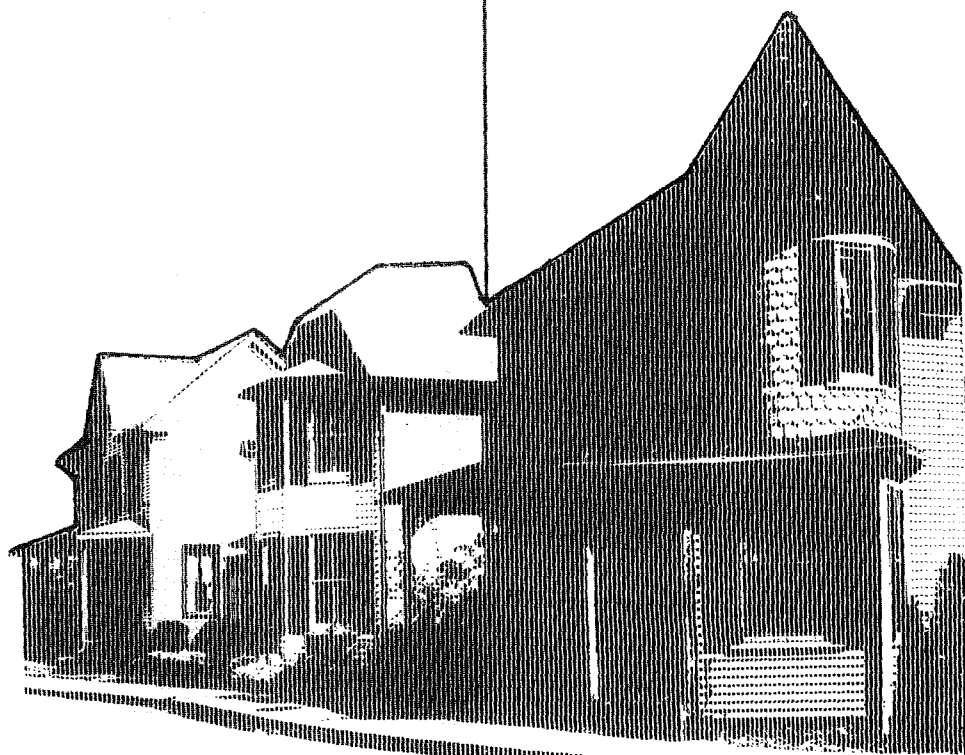
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# Summary of Findings

## Introduction

This report presents data collected in the 1981 Residential Energy Consumption Survey (RECS), the fourth national survey of households and their fuel suppliers conducted by the Energy Information Administration. These surveys have been designed to provide timely information on how energy is used by households living in all types of housing units, including single-family homes, apartments, and mobile homes. Data from the surveys are disseminated to public and private users through published reports such as this one and through public-use computer files.<sup>1</sup>

Data in this report cover fuels and their use in the home, appliances, square footage of floor space, heating equipment, thermal characteristics of the housing unit, conservation activities, and consumption of wood. Collected for the first time as part of the RECS survey and included in this report are data related to indoor temperatures and the use of air conditioning. A unique feature of the 1981 survey is an increased sampling of low-income households funded by the Social Security Administration to provide them information for the Low-Income Home Energy Assistance Program. Data from these additional households are included in the sample for this report.

The following discussion highlights data pertaining to these topics: changes in home heating fuel, secondary heating, indoor temperatures, features of new homes, use of air conditioning, use of solar collectors, and wood consumption.

## Main Heating Fuel

Fewer homes used fuel oil or kerosene as their main heating fuel in 1981, marking the third consecutive year of declining use (Figure 1). The use of wood continued to increase, and use of liquefied petroleum gas (LPG) held steady. Natural gas increased its market share slightly in 1981 after holding steady from 1978 to 1980. Electricity heated the same proportion of homes in 1981 as in 1980 after showing increases in previous years.

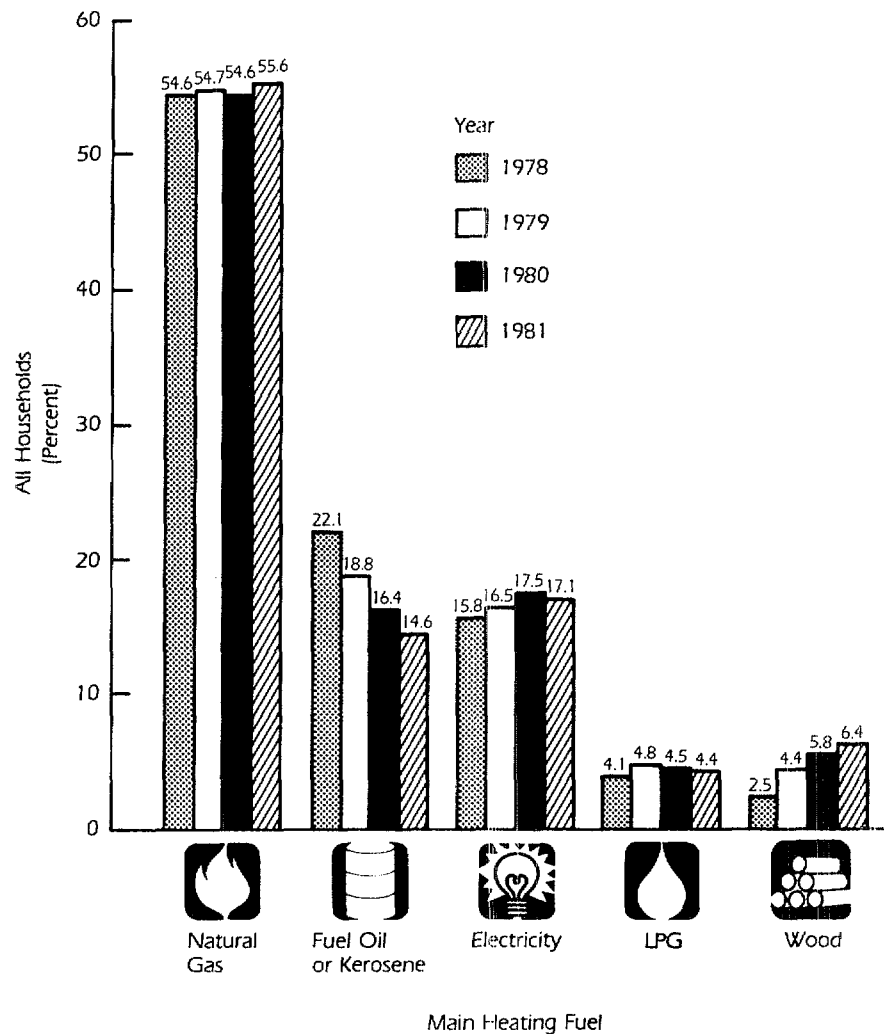
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<sup>1</sup> Reports are available from the National Energy Information Center or U.S. Government Printing Office (see inside front cover). Public-use computer files are available from the National Technical Information Service, Computer Products Division, 5285 Port Royal Road, Springfield, Virginia 22161. (Telephone: 703-487-4808).



## Summary of Findings (Continued)

**Figure 1. Distribution of All Households by Main Heating Fuel by Year, 1978-1981 (Percent)**



Sources: Energy Information Administration, 1978 National Interim Energy Consumption Survey, 1979 Household Screener Survey, 1980 and 1981 Residential Energy Consumption Surveys. See Table 10 for 1981 data.

The changes in main heating fuel used result from households switching from one fuel to another, new homes being added to the housing stock, and homes being deleted from the stock. Fuel switching occurred in 6 million homes from 1979 to 1981--2.1 million in 1979, 2.0 million in



## Summary of Findings (Continued)

1980, and 1.9 ( $\pm 0.5$ ) million in 1981.<sup>2</sup> During this same 3-year period, 4.0 million new homes were added to the stock (Table 18). The RECS survey<sup>3</sup> does not collect data on removal of homes from the housing stock.

The relative influences of new home additions and recent fuel switching on changes in the main home heating fuels are shown in Figure 2. These two factors account for a major share of the changes that occurred from 1978 to 1981 in the number of homes using various heating fuels. Natural gas, electricity, and wood gained users, while fuel oil/kerosene lost users. Electricity's gain of 2.1 million homes from 1979 to 1981 resulted entirely from the addition to the housing stock of new homes that used electricity for heating. Natural gas gained 3.1 million users from both new home additions and fuel switching. The gain for wood resulted mostly from fuel switching.

For LPG, the gain from new home additions was partly offset by the loss from fuel switching. The loss for fuel oil/kerosene from fuel switching was not overcome by the small number of new homes using fuel oil/kerosene, so there was a net loss of 3.1 million homes using fuel oil/kerosene during the 3-year period.

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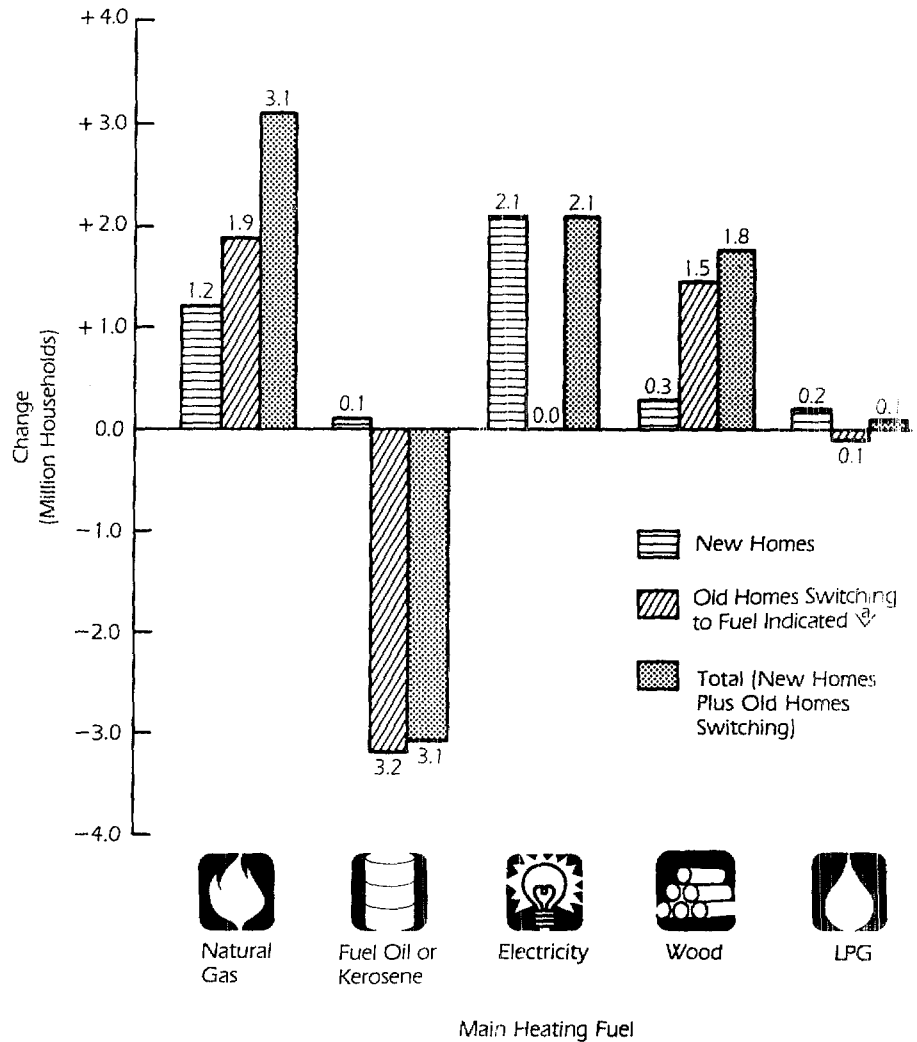
<sup>2</sup>The values shown after estimates given in the text represent two standard errors of the estimate. An explanation of measures of variability and a method for estimating them are given in Appendix C, "Limitations of the Data."

<sup>3</sup>The Annual Housing Survey estimates that 1.4 million housing units were removed from the housing stock in 1979 and 1.2 million in 1980. These losses are not necessarily permanent as some units will be rehabilitated later and returned to the housing stock. (See U.S. Department of Commerce, U.S. Bureau of the Census, Annual Housing Survey, 1980 Part A, General Housing Characteristics for the United States and Regions, Washington, D.C.: U.S. Government Printing Office, 1982, pp. xv-xvii.)



## Summary of Findings (Continued)

**Figure 2. Change in Main Heating Fuel Used by Households During 3-Year Period, 1979-1981 (Million Households)**



✓ Figures for fuel switching are net changes that result from the number of households switching from the fuel and those switching to the fuel.

Sources: For new homes, data are from Table 18. For old homes switching to fuel indicated, data are from reports on the 1979 Household Screener Survey and the 1980 and the 1981 Residential Energy Consumption Surveys. Data came from questions asking if the main heating fuel had changed during the previous year and, if so, what the former heating fuel was. See Table 18 for 1981 data.

### Secondary Heating Sources

An increasing proportion of American households report that they supplement their main heating system, usually with a secondary system. In 1981, 38 (±2) percent of households were supplementing their main heating system.



## Summary of Findings (Continued)

Households Using Secondary Heating, 1978 to 1980 (Percent) <sup>4</sup>	
1978 .....	30
1979 .....	24
1980 .....	37
1981 .....	38

This increased use of a secondary heat source in 1980 and 1981 is interesting because a second system provides a household with some flexibility in dealing with rising energy costs and fuel shortages. Households are no longer bound to their main heating fuel as their only source of heat. Some types of secondary systems have the potential for heating a whole house. The following discussion presents some limits on what can be expected from the secondary heating systems presently found in American homes.

A number of U.S. households are using their fuel oil central heating system as a secondary system. This group is estimated to number 1.9 ( $\pm 0.5$ ) percent of all households, or 1.6 ( $\pm 0.5$ ) million homes in 1981. These households can switch back to fuel oil as the main heating fuel if it is advantageous to do so. Many, 0.9 million ( $\pm 0.3$ ), of these households use wood as the main heating fuel (Table 14). Apparently, these households turned to wood when heating oil prices began their rapid rise. The increased use of fuel oil for secondary rather than main heating occurred before November 1979 and has continued at a slower pace since then, as shown in Table S1.

**Table S1. Households Using Fuel Oil for Secondary Heating, and the Price of Fuel Oil, 1978-1981**

Year	Number of Households (Millions)	Price of Fuel Oil (Cents per Gallon)
1978 .....	0.2	0.55
1979 .....	1.0	0.87
1980 .....	1.4	1.11
1981 .....	1.6	1.23

Source: Energy Information Administration, Residential Energy Consumption Surveys.

<sup>4</sup>The 1979 survey underestimates secondary heating by not counting secondary heating equipment that uses the same fuel as the main heating equipment. The size of this underestimate is believed to be 6 percentage points, which, when added to the 24 percent for 1979, would suggest there was no change from 1978 to 1979 in the use of secondary heating.



## Summary of Findings (Continued)

Table S2 presents the trends in specific secondary heating systems from 1978 to 1981. The most popular type of secondary heating equipment is the fireplace, used by 14.7 ( $\pm 1.5$ ) percent of all households in 1981.

**Table S2. Households Using Secondary Heating Equipment and Fuels, 1978-1981 (Percent)**

Fuel and Equipment	1978	1979	1980	1981
Wood/Fireplace .....	<sup>e</sup> 13.8	NA	12.3	14.7
Electricity/Portable Heater ....	4.8	NA	7.1	7.0
Wood/Heating Stove .....	<sup>e</sup> 13.8	NA	4.0	4.1
Electricity/Built-in Units .....	2.9	NA	3.4	3.1
Natural Gas/Room Heater .....	2.6	NA	1.7	1.5
Fuel Oil/Central System .....	0.2	NA	1.4	1.6
Kerosene/Portable Heater .....	0.2	NA	0.2	0.7

<sup>a</sup>Includes wood used in a fireplace or a heating stove.

NA = Not available because questions about heating equipment were not asked.

Source: Energy Information Administration, Residential Energy Consumption Surveys.

Electric portable heaters were used by 7.0 ( $\pm 1.1$ ) percent of homes in 1981, which is slightly above the 4.8 percent using them in 1978 (Table S2). Electric built-in units were used by 3.1 ( $\pm 0.7$ ) percent in 1981, about the same proportion using them in 1978. Natural gas room heaters were used by 1.5 ( $\pm 0.5$ ) percent in 1981, which is down slightly from earlier years.

Kerosene heaters, although heavily advertised in more recent years, were used by only 0.7 ( $\pm 0.3$ ) percent of all households, or 0.6 ( $\pm 0.3$ ) million homes, by 1981.

### Winter Indoor Temperatures

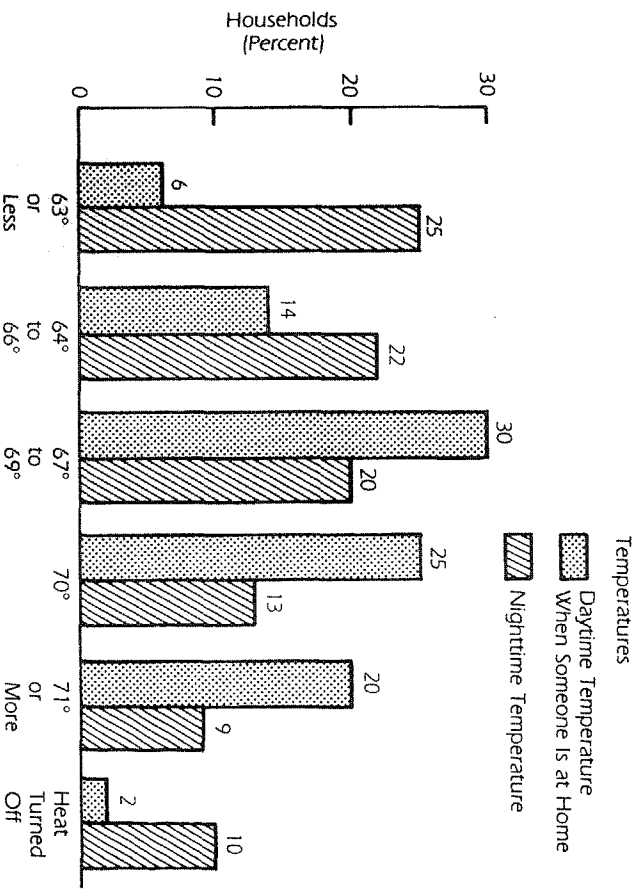
This survey is the first RECS survey to inquire about home temperatures. The temperature inside the home is important in determining the amount of energy used in the home for space heating. More fuel is required to maintain the higher temperatures. The data reported here are not actual temperature readings but respondent estimates of the typical temperature in their homes. In this survey, only households that had direct control over their heating were asked about indoor temperatures. The answers they provided vary widely, as shown in Figure 3.

<sup>5</sup>Fireplaces can be improved through the use of glass doors, heat circulators, or inserts that replace the open burning area with a closed burning area. Fireplaces that are not improved are inefficient heaters.



## Summary of Findings (Continued)

**Figure 3. Distribution of Households with Heating Controls by Daytime and Nighttime Temperatures, 1981 (Percent)**



Note: Temperatures are in degrees Fahrenheit.

Source: Table 33. Energy Information Administration, 1981 Residential Energy Consumption Survey.

During the day, the average temperature is 69 ( $\pm 0.1$ ) degrees Fahrenheit. For most households, the daytime temperature is between 64 and 76 degrees--a wide range of 12 degrees as shown below. A few households have temperatures outside this range. Six (+1) percent have temperatures below 64 degrees and 3 (+1) percent, above 76 degrees.

Daytime Home Temperatures	Percent of Homes <sup>a</sup>
59° or Less .....	1
60° to 63° .....	5
64° to 66° .....	14
67° to 69° .....	30
70° .....	25
71° to 73° .....	10
74° to 76° .....	7
77° or Higher .....	3
Heat Off .....	2
Don't Know/No Answer	2

<sup>a</sup> For homes with heating controls.

At night, the differences are greater. The temperature is 63 degrees Fahrenheit or lower in 25 (+2) percent of the homes, while 22 (+2) percent keep the temperature at 70 degrees or higher.

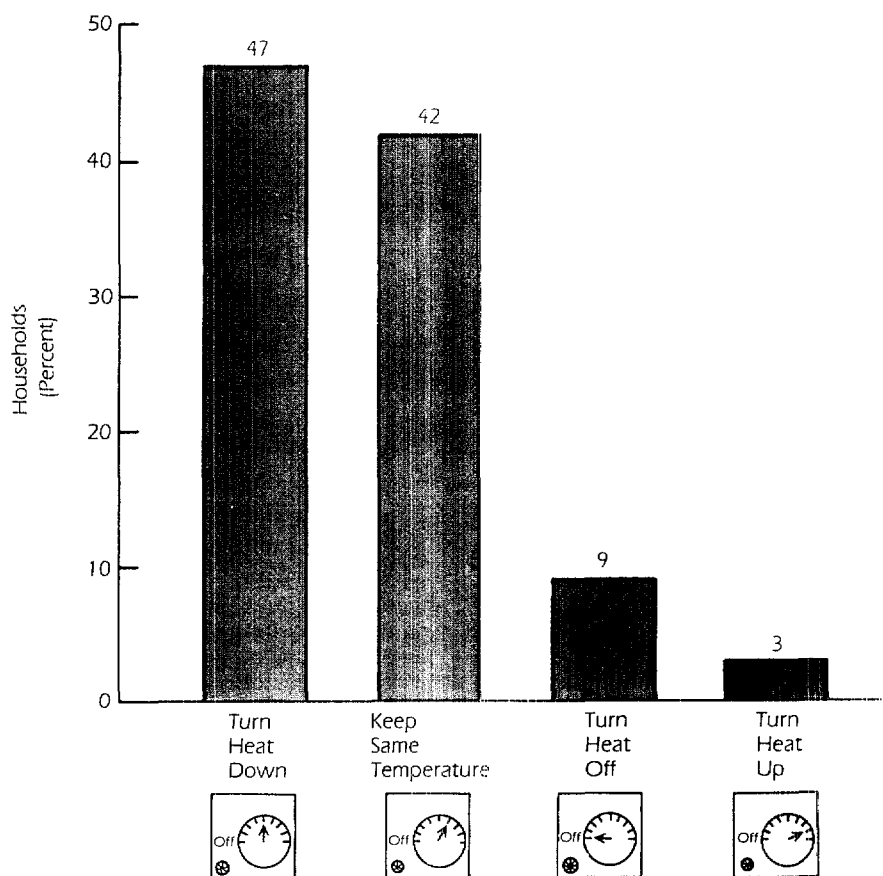


## Summary of Findings (Continued)

It is clear from Figure 3 that a number of homes are "dialing down" their thermostats at night. "Dialing down" occurs at night in almost 50 ( $\pm 1$ ) percent of the homes that have heating controls and that have their heat turned on in the daytime as shown in Figure 4. Of those who "dial down," 42 ( $\pm 3$ ) percent lower their temperature from 3 degrees to 5 degrees Fahrenheit, and another 34 ( $\pm 3$ ) percent, 6 to 10 degrees.

The remainder of homes leave the temperature the same at night or shut off the heat. A few households turn the heat up at night. Turning off the heat occurs more frequently in warmer areas of the country and in smaller homes (Table 33).

**Figure 4. Distribution of Temperature-Setting Behavior at Night for Households with Heating Controls and Heat on in Daytime, 1981 (Percent)**



Source: Table 35. Energy Information Administration, 1981 Residential Energy Consumption Survey.

A number of factors are related to variations in indoor temperatures. The area of the country is one important factor. The colder parts of the Northeast, which include most of New England, New York, and northern Pennsylvania, have the lowest average home temperature of 67 ( $\pm 0.4$ ) degrees Fahrenheit. By contrast, homes in the southern parts of the South report an average temperature of 71 ( $\pm 0.7$ ) degrees--almost 4 degrees warmer than the northern homes.





## Summary of Findings (Continued)

Other factors associated with lower home temperatures, especially in the Northeast, are the use of secondary heating, direct payment for the heating fuel, and age of the householder. The average temperature in homes with secondary heating was 68 ( $\pm 0.3$ ) degrees versus 69 ( $\pm 0.1$ ) in homes not supplementing their heating with room heaters or fireplaces. In the colder parts of the Northeast, the temperature was 66 ( $\pm 0.7$ ) degrees in homes using secondary heating compared with 68 ( $\pm 0.4$ ) degrees in other homes. Households that paid directly for their fuel reported a home temperature of 69 ( $\pm 0.1$ ) degrees, compared with 70 ( $\pm 0.4$ ) degrees for households that paid for fuel indirectly through their rent or in some other way.

Older persons heading a household maintain a slightly warmer house by 1 to 2 degrees. The difference is statistically significant but small compared with the range of 4 degrees between regions and the wide range of temperatures reported by individual households. Among older households, those in the Northeast report the lowest average temperature--68 ( $\pm 1.1$ ) degrees.

Changes Since 1973. Comparing these RECS data with data collected in 1973 from a similar survey shows that some significant shifts have occurred between 1973 and 1981 in reported temperatures in the house (Table S3). Most households (85 percent) had temperatures of 70 degrees or higher in 1973 during the day, but in 1981, only 45 ( $\pm 3$ ) percent had temperatures that high.

**Table S3. Distribution of Households by Indoor Temperatures, 1973 and 1981 (Percent)**

Indoor Temperatures	1973	1981
<b>During the Day</b>		
Under 70 Degrees .....	12	50
70 Degrees or Higher .....	85	45
Do Not Know/Turn Heat Off .....	2	4
<b>During the Night</b>		
Under 70 Degrees .....	45	66
70 Degrees or Higher .....	51	22
Do Not Know/Turn Heat Off .....	4	12

Sources: For 1973 figures, see Dorothy K. Newman and Dawn Day, The American Energy Consumer, Cambridge, Massachusetts: Ballinger Publishing Company, 1975. For 1981 figures, see Table 33.

### New Housing

The energy-related characteristics of new housing are of special interest for what they say about current building practices and what they portend for future energy use. The 1981 RECS survey contained a sufficient number of new homes in its sample (277 cases) to support a special analysis comparing new homes with the existing stock. New



## Summary of Findings (Continued)

housing is defined here as homes built in the 3 years from 1979 to 1981 and includes mobile homes and apartments as well as single-family homes.<sup>6</sup>

The majority of new homes are single-family units, as is true for all housing. Nevertheless, the mix of new homes is different. New homes contain proportionately more mobile homes (14  $\pm$  6 percent versus 5  $\pm$  1 percent for all homes) and apartments in larger apartment buildings (21  $\pm$  7 percent versus 15  $\pm$  2 percent for all homes). This means that mobile homes and apartments in larger buildings account for 20 ( $\pm$  2) percent of all homes but 35 ( $\pm$  9) percent of new homes (Table 4).

The greater portion of smaller housing units in the mix of new homes might be expected to result in a smaller average size of new homes compared with homes in general, because apartments and mobile homes are about half the size of single-family units. New homes, however, are not smaller, they are larger; the average heated floor space for new homes is 1,492 ( $\pm$  81) square feet versus 1,482 ( $\pm$  36) for all homes (Table 5). The difference is small and could be due to sampling error. This small difference occurs because new single-family homes are approximately 105 square feet larger than the existing stock of single-family homes. New single-family homes averaged 1,840 ( $\pm$  81) square feet of heated space versus 1,735 ( $\pm$  42) for all single-family homes (Table 7). There may be fewer single-family homes in the mix of new housing units, but they are larger than single-family homes in the existing stock.

Use of Fuels. New homes differ considerably from all homes in the fuels used. Natural gas and fuel oil are less often used in new homes (Figure 5). Gas is not available to 50 ( $\pm$  17) percent of the new single-family homes or mobile homes (Table 19). By comparison, 28 ( $\pm$  2) percent of all single-family and mobile homes are unable to hook up to gas because there are no gas lines in the neighborhood. When gas is available, it is used less often in new homes (73  $\pm$  11 percent) than in all homes (87  $\pm$  2 percent) (Table 18).

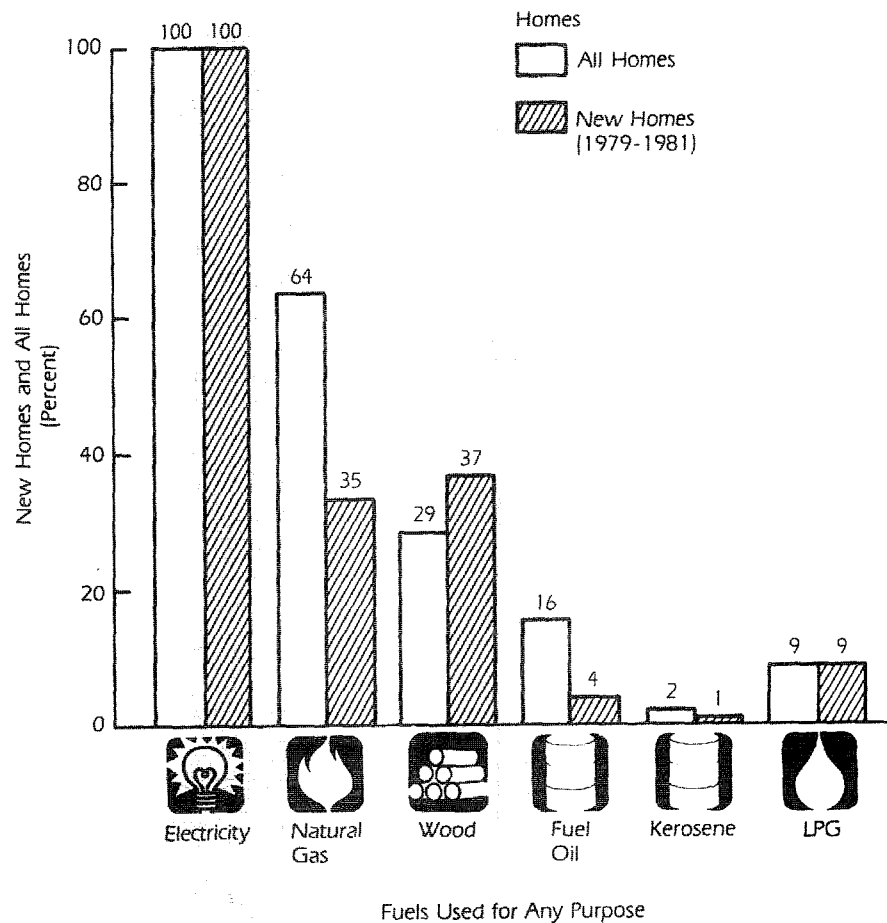
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<sup>6</sup>For more information on new residential housing, the reader is referred to U.S. Bureau of the Census, Construction Report--Series C25, Characteristics of New Housing: 1981. This report does not include statistics on mobile homes.



## Summary of Findings (Continued)

**Figure 5. Distribution of Fuels Used In New Homes and All Homes, as of November 1981 (Percent)**



Note: In addition to use as a main heating fuel, these fuels are used for other purposes, such as water heating, clothes drying, cooking, and operating appliances.

Source: Table 19. Energy Information Administration, 1981 Residential Energy Consumption Survey.

Electricity is used universally in new homes and in older homes, but what Figure 5 does not show is that electricity serves more functions in new homes than in older homes. Electricity is selected as the main heating fuel at thrice the rate in new homes (54 ±13 percent of new homes versus 17 ±1 percent of all homes) (Table 19). It is used for water heating at twice the rate (65 ±9 percent versus 33 ±1 percent in all homes) and more often for cooking and for clothes drying. A major reason that electricity plays such a dominant role in new homes is that many new homes are in the South, where electricity is used widely.



## Summary of Findings (Continued)

Fifty-one ( $\pm 13$ ) percent of the new homes have central air conditioning versus 26 ( $\pm 2$ ) percent of all homes. The greater incidence of central air conditioning in new homes explains why 57 ( $\pm 9$ ) percent of new homes can air condition all their rooms. Only 37 ( $\pm 2$ ) percent of all homes are fully air conditioned.

Three types of heating equipment are most commonly used in electrically heated new homes--central warm-air furnaces, built-in electric units such as baseboard heaters, and heat pumps. Central warm-air furnaces are found in 38 ( $\pm 14$ ) percent of new homes. Central warm-air furnaces are less efficient because heat is lost while it is being delivered to rooms; however, unlike fossil-fuel central furnaces, heat is not lost up the chimney with the elimination of noxious gases. Baseboard units are used in 33 ( $\pm 13$ ) percent of the new homes. They are considered 100-percent efficient because the heat is produced in the room where it is to be used and the temperature can be individually controlled as each room may have its own thermostat. Heat pumps are used in 29 ( $\pm 13$ ) percent of new homes compared with 19 ( $\pm 5$ ) percent of all homes. Heat pumps, the newest technology for electric heating, can be more than 100-percent efficient because they extract heat from the outside air.

Thermal Properties. For a number of thermal properties, new housing units rate higher than the general stock. New homes have more insulation as shown in Table S4.

**Table S4. Thickness of Roof Insulation in Single-Family and Mobile Homes, 1981 (Inches)**

Type of Insulation	New Housing	All Housing
Batts Only	6.5 ( $\pm 0.6$ )	5.5 ( $\pm 0.2$ )
Loose Fill Only	7.2 ( $\pm 0.6$ )	6.3 ( $\pm 0.3$ )
Combination	13.5 ( $\pm 3.0$ )	10.3 ( $\pm 0.6$ )

Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

Most new single-family homes have roof insulation (91  $\pm 6$  percent) or wall insulation (92  $\pm 6$  percent) (Table 29). By comparison, 78 ( $\pm 3$ ) percent of all single-family homes have roof insulation and 61 ( $\pm 3$ ) percent have wall insulation. Presence of storm doors is an exception to these patterns of higher levels of insulation for new homes. Fifty ( $\pm 9$ ) percent of the new homes have storm doors, compared with 58 ( $\pm 3$ ) percent of all homes. For this reason a summary measure of single-family homes with at least some storm windows, some storm doors, and roof insulation is nearly the same for new homes (50  $\pm 12$  percent) as it is for all homes (49  $\pm 3$  percent).

Multifamily Buildings. Few (1 percent) new multifamily units are heated by a central system for the building, which stands in marked contrast to the 42 ( $\pm 4$ ) percent of all multifamily units heated by a central system (Table 19). Central air conditioning for the building has never been a widely accepted mode for air conditioning multifamily units and is found



## Summary of Findings (Continued)

### Use of Air-Conditioning Equipment

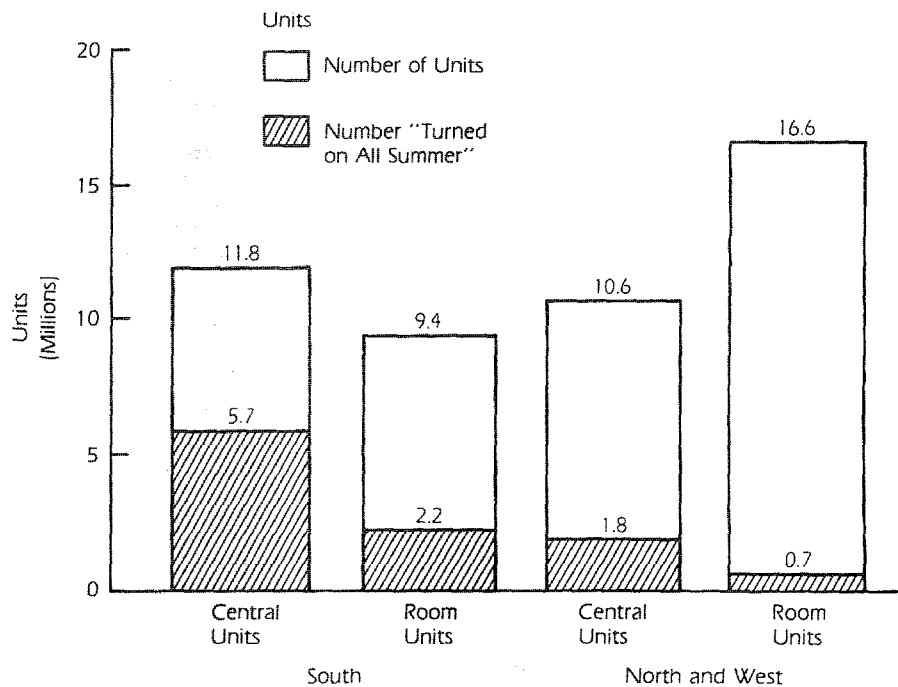
in only 1 percent of new multifamily units. Central systems in the building for water heating are found in 24 ( $\pm 14$ ) percent of new multifamily units. These trends mean that new multifamily units will more often have individual control over the use of energy for space conditioning and water heating.

Three out of every five homes in the United States are equipped with air conditioning (58  $\pm 3$  percent), either central units for the whole house or smaller units that air condition a few rooms. Six ( $\pm 1$ ) percent of these homes did not use their air-conditioning equipment during the summer of 1981. The weather that summer was close to normal (within 1 percent of the long-term average number of cooling degree-days).

In the cooler areas, 12 ( $\pm 5$ ) percent of households chose not to use their equipment versus only 3 ( $\pm 0.4$ ) percent in the warmest areas (Table 38).

An estimated 45.2 ( $\pm 2.1$ ) million homes used their air-conditioning equipment in summer 1981. In the warmest areas, nearly one-half of the homes with air conditioning (47  $\pm 6$  percent) had their equipment "turned on all summer" versus only 5 ( $\pm 3$ ) percent of homes in the coolest parts of the country. Among households with central air conditioning, 33 ( $\pm 4$ ) percent had them "turned on all summer," while only 11 ( $\pm 2$ ) percent of the homes with window units had them "turned on all summer." One of the reasons for this difference is that central units are more common than room units in the South, where cooling requirements are greatest (Figure 6).

**Figure 6. Distribution of Air-Conditioning Units by Size of Unit, Geographic Area, and Use, 1981 (Million Units)**



Sources: Table 9. Number "turned on all summer" shown for total United States in Table 38. Energy Information Administration, 1981 Residential Energy Consumption Survey.



## Summary of Findings (Continued)

A few homes (4 ±1 percent) located in dry, hot areas use evaporative coolers, which cool by saturating the air with water vapor and are not considered air conditioning, according to the definitions used in this report (Table 21).

### Use of Solar Collectors

An estimated 400,000 (±200,000) households use solar collectors for water heating, space heating, or heating swimming pools (Table 9). A breakdown of each use is shown in the following table:

Use Solar Collectors For:	Households (Millions)
Water Heating	
Main .....	0.13
Secondary .....	0.12
Swimming Pool Heating .....	0.09
Space Heating	
Main .....	0.01
Secondary .....	0.02

The differences in the estimates for each use are not statistically significant. The estimates are provided as initial benchmarks of the extent to which active solar systems are being adopted for home use.

### Use of Wood

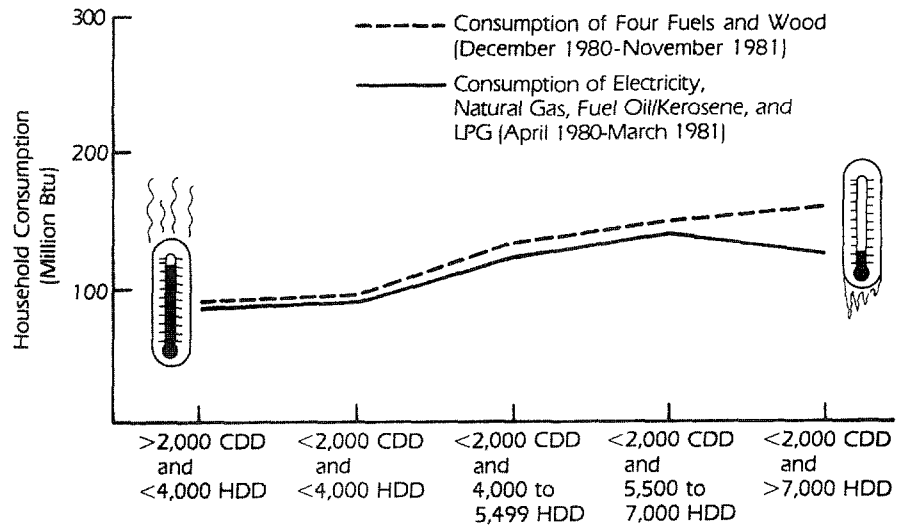
Wood is used by 29 (±2) percent (or 23.9 ±1.7 million) of American households. This number includes 22.8 (±1.7) million households that burned some wood in the 12 months before November 1981 and 1.1 (±0.4) million that did not burn wood but have the equipment for burning wood and apparently planned to do so during the winter of 1981-82. The 1.1 million households include those that have purchased wood-burning equipment since the past winter and those who have moved into a home since last winter and have not had the chance to burn any wood. Most wood burning is for space heating; a few households use wood for water heating (0.3 ±0.2 million) or for cooking (0.2 ±0.1 million) (Table 9).

The importance of wood consumption in explaining residential energy use, especially in the coldest region, is shown in Figure 7. Without including the use of wood for heating homes, an anomaly occurs, as the consumption increases in relation to colder weather except in the coldest weather region where consumption is lower than in the neighboring region, not higher as is expected. When wood consumption is included with the other fuels used in the home, however, the overall consumption per household in the coldest weather region (162 million Btu per household) is higher than for its neighboring region.



## Summary of Findings (Continued)

**Figure 7. Average Fuel Consumption per Household with and without Wood Consumption, by Heating Degree-Day and Cooling Degree-Day Zones (Million Btu)**



Sources: Table 39 for wood data. Wood was converted at the rate of 20 million Btu per cord. Energy Information Administration, 1981 Residential Energy Consumption Survey. Data on other fuels are from *Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981*, DOE/EIA-0321/1, September 1982.



# Housing Characteristics by Census Region, Area Type, and SMSA/Non-SMSA

Table 1. Housing Characteristics by Census Region, Area Type, and SMSA/Non-SMSA, as of November 1981 (Million Households)

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
TOTAL HOUSEHOLDS .....	83.1	17.9	21.2	27.7	16.3	57.3	25.9	56.6	26.5
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)--LONG-TERM AVERAGE									
<2,000 CDD AND >7,000 HDD.....	8.8	1.9	5.6	-	1.3	4.7	4.1	2.6	6.2
5,500 TO 7,000 HDD.....	21.0	7.8	11.5	-	1.7	15.5	5.5	17.0	3.9
4,000 TO 5,499 HDD.....	21.6	8.3	4.2	5.9	3.3	14.7	7.0	14.3	7.4
<2,000 CDD AND <4,000 HDD.....	19.5	-	-	10.5	9.1	14.1	5.4	13.9	5.7
>2,000 CDD AND <4,000 HDD.....	12.2	-	-	11.3	.9	8.3	3.9	8.8	3.4
MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE									
LESS THAN 600 SQUARE FEET.....	7.2	1.7	1.4	2.4	1.6	5.6	1.6	5.0	2.1
600 TO 999 SQUARE FEET.....	21.8	4.4	5.4	7.6	4.3	15.5	6.3	14.7	7.0
1,000 TO 1,599 SQUARE FEET.....	25.2	4.2	5.0	10.2	5.9	16.7	8.5	16.8	8.4
1,600 TO 1,999 SQUARE FEET.....	10.6	2.6	2.9	3.2	1.9	7.6	3.0	7.7	2.9
2,000 TO 2,399 SQUARE FEET.....	7.4	1.8	2.5	1.9	1.3	5.0	2.5	5.0	2.4
2,400 TO 2,999 SQUARE FEET.....	5.6	1.3	2.3	1.3	.7	3.6	2.0	3.6	2.0
3,000 OR MORE SQUARE FEET.....	5.4	1.9	1.9	1.1	.5	3.4	2.1	3.8	1.6
HOW UTILITIES ARE PAID									
ALL PAID BY HOUSEHOLD.....	69.6	12.3	18.1	25.2	14.1	45.0	24.6	44.7	24.9
SOME PAID, SOME IN RENT.....	7.0	3.4	1.6	.8	1.2	6.6	.4	6.4	.6
ALL INCLUDED IN RENT.....	4.6	1.6	1.1	1.4	.6	4.1	.4	3.9	.7
OTHER.....	2.0	.7	.5	.3	.5	1.6	.4	1.6	.4
OWN/RENT									
OWN.....	55.1	11.1	15.0	19.0	10.0	34.4	20.7	34.9	20.2
RENT.....	28.0	6.8	6.2	8.7	6.2	22.8	5.2	21.7	6.3
HOUSING STRUCTURE BY OWNERSHIP									
SINGLE-FAMILY DETACHED.....	54.6	8.8	15.2	19.9	10.7	33.8	20.8	33.6	21.0
OWN.....	46.4	8.4	13.4	16.2	8.4	29.0	17.4	28.8	17.6
RENT.....	8.2	.5	1.7	3.7	2.4	4.8	3.4	4.8	3.4
SINGLE-FAMILY ATTACHED.....	3.0	1.3	.3	.7	.7	2.5	.5	2.7	.3
OWN.....	2.1	1.0	.2	.4	.5	1.7	.3	1.9	.1
RENT.....	.9	.3	.1	.2	.3	.8	.1	.8	.1
BUILDING WITH 2 TO 4 UNITS.....	9.3	3.6	2.4	1.8	1.5	8.3	1.0	7.4	1.9
OWN.....	2.1	1.1	.5	.2	.3	1.7	.3	1.7	.4
RENT.....	7.2	2.5	1.9	1.6	1.3	6.6	.7	5.7	1.5
BUILDING WITH 5 OR MORE UNITS.....	12.0	3.8	2.5	3.2	2.5	11.3	.8	11.2	.9
OWN.....	1.0	.2	.2	.4	.2	.7	.3	1.0	.9
RENT.....	11.0	3.6	2.4	2.8	2.2	10.5	.5	10.2	.9
MOBILE HOME.....	4.2	.4	.8	2.1	.8	1.4	2.8	1.7	2.5
OWN.....	3.6	.4	.7	1.7	.7	1.3	2.3	1.5	2.1
RENT.....	.6	.9	.1	.4	.1	.2	.4	.2	.4
YEAR HOUSE BUILT									
1939 OR EARLIER.....	24.2	8.1	7.7	4.8	3.6	18.0	6.2	16.2	8.0
1940 TO 1949.....	6.9	1.0	1.9	2.7	1.3	5.0	1.9	4.3	2.6
1950 TO 1959.....	13.5	2.4	3.6	4.3	3.2	11.0	2.5	10.1	3.4
1960 TO 1964.....	7.6	1.4	1.7	2.9	1.6	5.8	1.8	5.6	2.0
1965 TO 1969.....	8.5	1.9	1.9	3.5	1.2	5.5	3.0	5.9	2.6
1970 TO 1974.....	10.7	1.6	2.2	4.7	2.2	6.0	4.7	6.9	3.8
1975 TO 1978.....	7.7	1.1	1.7	3.2	1.8	4.2	3.5	5.1	2.6
1979 OR LATER.....	4.0	.5	.6	1.6	1.3	1.8	2.2	2.6	1.4

SEE FOOTNOTES AT END OF TABLE.





# Housing Characteristics by Census Region, Area Type, and SMSA/Non-SMSA

Table 1. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
<b>1980 FAMILY INCOME</b>									
LESS THAN \$5,000.....	9.8	1.6	2.3	4.2	1.7	6.9	2.9	5.9	3.9
\$5,000 TO \$9,999.....	13.5	2.6	4.0	4.6	2.3	9.1	4.4	8.4	5.1
\$10,000 TO \$14,999.....	12.5	2.7	3.3	4.1	2.3	8.8	3.7	8.1	4.4
\$15,000 TO \$19,999.....	10.7	2.6	2.8	3.6	1.7	6.7	4.0	6.7	4.0
\$20,000 TO \$24,999.....	10.8	2.5	2.7	3.6	1.9	7.5	3.3	7.7	3.1
\$25,000 TO \$34,999.....	13.3	3.0	3.5	3.7	3.1	9.5	3.8	10.0	3.3
\$35,000 OR MORE.....	12.6	2.9	2.7	3.9	3.2	8.9	3.7	9.9	2.7
BELOW 100% OF POVERTY.....	11.0	1.6	2.7	4.7	1.9	7.6	3.4	6.7	4.3
BELOW 125% OF POVERTY.....	15.8	2.6	4.0	6.3	2.9	10.9	4.9	9.6	6.2
<b>AGE OF HOUSEHOLDER</b>									
UNDER 25 YEARS.....	6.6	1.0	1.8	2.1	1.7	4.9	1.7	4.7	1.9
25 TO 34 YEARS.....	21.0	4.4	5.1	6.7	4.7	14.5	6.4	15.0	5.9
35 TO 44 YEARS.....	14.6	3.6	3.5	4.4	3.1	9.7	5.0	10.5	4.1
45 TO 59 YEARS.....	18.4	4.1	4.6	6.4	3.4	12.5	5.9	12.2	6.2
60 YEARS AND OVER.....	22.5	4.8	6.2	8.1	3.4	15.7	6.8	14.2	8.3
<b>ORIGIN OF HOUSEHOLDER</b>									
WHITE/OTHER.....	74.1	15.9	19.8	23.2	15.2	49.6	24.5	49.7	24.4
BLACK.....	9.0	2.1	1.4	4.5	1.1	7.7	1.3	6.9	2.1
<b>HOUSEHOLD SIZE</b>									
1 PERSON.....	15.4	3.4	4.3	5.0	2.6	11.8	3.6	10.4	4.9
2 PERSONS.....	27.7	5.4	7.0	9.6	5.7	19.4	8.3	19.0	8.7
3 PERSONS.....	15.4	3.4	4.0	5.2	2.7	10.4	5.0	10.7	4.7
4 PERSONS.....	14.4	3.0	3.5	4.6	3.2	8.9	5.5	9.6	4.8
5 PERSONS.....	6.3	1.6	1.6	1.9	1.2	4.0	2.3	4.2	2.1
6 OR MORE PERSONS.....	4.1	1.1	.8	1.3	.9	2.8	1.3	2.7	1.5

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

*15.7 - 1980*  
*57.5 - urban*

*10.5*



# Housing Characteristics by Census Region, Area Type, and SMSA/Non-SMSA

**Table 2. Housing Characteristics by Census Region, Area Type, and SMSA/Non-SMSA, as of November 1981 (Percentage of Households)**

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
TOTAL HOUSEHOLDS .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)--LONG-TERM AVERAGE									
<2,000 CDD AND >7,000 HDD.....	10.6	10.5	26.4	-	8.1	8.1	16.0	4.7	23.2
<2,000 CDD AND 5,500 TO 7,000 HDD.....	25.2	43.3	54.0	-	10.6	27.1	21.1	30.0	14.9
<2,000 CDD AND 4,000 TO 5,499 HDD.....	26.0	46.2	19.6	21.5	20.0	25.6	26.9	25.2	27.8
<2,000 CDD AND <4,000 HDD.....	23.5	-	-	37.9	55.6	24.6	21.1	24.5	21.3
>2,000 CDD AND <4,000 HDD.....	14.7	-	-	40.6	5.8	14.6	14.9	15.5	12.8
MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE									
LESS THAN 600 SQUARE FEET.....	8.6	9.6	6.5	8.8	10.1	9.8	6.2	8.9	8.1
600 TO 999 SQUARE FEET.....	26.2	24.7	25.3	27.6	26.6	27.0	24.3	26.0	26.5
1,000 TO 1,599 SQUARE FEET.....	30.4	23.3	23.5	36.7	36.3	29.2	33.0	29.7	31.8
1,600 TO 1,999 SQUARE FEET.....	12.7	14.5	13.5	11.6	11.5	13.2	11.5	13.5	10.9
2,000 TO 2,399 SQUARE FEET.....	8.9	10.0	11.9	6.7	7.8	8.7	9.5	8.9	9.1
2,400 TO 2,999 SQUARE FEET.....	6.7	7.5	10.6	4.5	4.3	6.3	7.6	6.3	7.5
3,000 OR MORE SQUARE FEET.....	6.5	10.5	8.7	4.1	3.4	5.9	7.9	6.7	6.1
HOW UTILITIES ARE PAID									
ALL PAID BY HOUSEHOLD.....	83.7	68.4	85.2	91.0	86.3	78.5	95.2	79.0	93.7
SOME PAID, SOME IN RENT.....	8.4	18.8	7.5	2.9	7.5	11.5	1.5	11.3	2.1
ALL INCLUDED IN RENT.....	5.5	8.7	5.1	5.0	3.4	7.2	1.6	6.9	2.6
OTHER.....	2.4	4.1	2.3	1.2	2.8	2.8	1.7	2.8	1.5
OWN/RENT									
OWN.....	66.3	61.9	70.6	68.6	61.7	60.1	80.0	61.7	76.2
RENT.....	33.7	38.1	29.4	31.4	38.3	39.9	20.0	38.3	23.8
HOUSING STRUCTURE BY OWNERSHIP									
SINGLE-FAMILY DETACHED.....	65.6	49.1	71.4	71.7	65.9	58.9	80.5	59.3	79.2
OWN.....	55.8	46.6	63.3	58.5	51.4	50.6	67.2	50.8	66.4
RENT.....	9.9	2.5	8.1	13.2	14.5	8.4	13.2	8.5	12.8
SINGLE-FAMILY ATTACHED.....	3.6	7.2	1.5	2.4	4.4	4.4	1.8	4.8	1.1
OWN.....	2.5	5.5	1.0	1.5	2.8	3.0	1.3	3.4	.5
RENT.....	1.1	1.8	.5	.8	1.7	1.4	.5	1.4	.5
BUILDING WITH 2 TO 4 UNITS.....	11.2	20.1	11.2	6.7	9.2	14.5	4.0	13.1	7.1
OWN.....	2.5	6.4	2.2	.8	1.6	3.0	1.3	3.0	1.5
RENT.....	8.7	13.7	9.0	5.8	7.7	11.4	2.7	10.1	5.7
BUILDING WITH 5 OR MORE UNITS.....	14.5	21.1	11.9	11.7	15.3	19.6	3.0	19.7	3.3
OWN.....	1.2	1.0	.8	1.6	1.5	1.2	1.1	1.8	.1
RENT.....	13.3	20.1	11.1	10.2	13.8	18.4	1.9	18.0	3.2
MOBILE HOME.....	5.0	2.5	4.0	7.5	5.1	2.5	10.7	3.0	9.3
OWN.....	4.3	2.5	3.4	6.2	4.5	2.2	9.0	2.7	7.8
RENT.....	.7	.9	.6	1.3	.7	.3	1.7	.3	1.6
YEAR HOUSE BUILT									
1939 OR EARLIER.....	29.1	45.3	36.2	17.4	22.1	31.4	24.0	28.7	30.2
1940 TO 1949.....	8.3	5.6	9.1	9.8	7.8	8.7	7.4	7.6	9.9
1950 TO 1959.....	16.2	13.1	17.0	15.5	19.8	19.1	9.7	17.8	12.9
1960 TO 1964.....	9.2	7.8	7.8	10.7	9.8	10.1	7.1	9.8	7.7
1965 TO 1969.....	10.2	10.4	9.1	12.5	7.6	9.7	11.4	10.4	9.9
1970 TO 1974.....	12.8	8.9	10.3	16.8	13.7	10.5	18.0	12.2	14.2
1975 TO 1978.....	9.3	6.2	7.9	11.4	11.1	7.3	13.7	9.0	10.0
1979 OR LATER.....	4.8	2.8	2.6	5.8	8.1	3.1	8.6	4.5	5.4

SEE FOOTNOTES AT END OF TABLE.



# Housing Characteristics by Census Region, Area Type, and SMSA/Non-SMSA

Table 2. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
<b>1980 FAMILY INCOME</b>									
LESS THAN \$5,000.....	11.8	9.0	10.8	15.2	10.4	12.1	11.2	10.4	14.8
\$5,000 TO \$9,999.....	16.3	14.3	18.9	16.7	14.1	15.9	17.0	14.8	19.4
\$10,000 TO \$14,999.....	15.0	15.1	15.6	14.9	14.3	15.3	14.4	14.2	16.6
\$15,000 TO \$19,999.....	12.9	14.7	13.0	12.9	10.7	11.7	15.5	11.8	15.0
\$20,000 TO \$24,999.....	12.9	14.0	12.6	13.1	11.9	13.1	12.6	13.5	11.6
\$25,000 TO \$34,999.....	16.0	16.9	16.4	13.3	19.0	16.5	14.8	17.7	12.3
\$35,000 OR MORE.....	15.2	15.9	12.7	13.9	19.6	15.5	14.4	17.5	10.2
BELOW 100% OF POVERTY.....	13.3	9.1	12.9	17.2	11.8	13.3	13.3	11.8	16.3
BELOW 125% OF POVERTY.....	19.0	14.4	18.9	22.7	18.0	19.0	19.0	17.0	23.3
<b>AGE OF HOUSEHOLDER</b>									
UNDER 25 YEARS.....	8.0	5.8	8.5	7.5	10.5	8.6	6.7	8.3	7.3
25 TO 34 YEARS.....	25.2	24.5	24.2	24.2	29.2	25.4	24.9	26.6	22.4
35 TO 44 YEARS.....	17.6	20.0	16.6	16.0	18.9	16.9	19.1	18.6	15.5
45 TO 59 YEARS.....	22.2	23.0	21.4	23.1	20.6	21.8	23.0	21.6	23.4
60 YEARS AND OVER.....	27.1	26.7	29.3	29.2	20.8	27.4	26.4	25.0	31.5
<b>ORIGIN OF HOUSEHOLDER</b>									
WHITE/OTHER.....	89.1	88.5	93.4	83.9	93.1	86.5	94.9	87.8	91.9
BLACK.....	10.9	11.5	6.6	16.1	6.9	13.5	5.1	12.2	8.1
<b>HOUSEHOLD SIZE</b>									
1 PERSON.....	18.5	19.2	20.1	18.2	16.0	20.6	13.8	18.4	18.5
2 PERSONS.....	33.3	30.2	32.9	34.6	35.0	33.9	31.9	33.6	32.7
3 PERSONS.....	18.5	19.1	18.8	18.9	16.7	18.2	19.2	18.9	17.6
4 PERSONS.....	17.3	16.8	16.7	16.7	19.6	15.5	21.2	16.9	17.9
5 PERSONS.....	7.6	8.8	7.5	6.9	7.3	7.0	8.8	7.5	7.7
6 OR MORE PERSONS.....	5.0	5.9	4.0	4.8	5.5	4.9	5.1	4.7	5.5

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

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SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Housing Characteristics by Year House Built

**Table 3. Housing Characteristics by Year House Built, as of November 1981 (Million Households)**

HOUSEHOLD CHARACTERISTICS	TOTAL	YEAR HOUSE BUILT							
		1979 OR LATER	1975 TO 1978	1970 TO 1974	1965 TO 1969	1960 TO 1964	1950 TO 1959	1940 TO 1949	1939 OR EARLIER
TOTAL HOUSEHOLDS .....	83.1	4.0	7.7	10.7	8.5	7.6	13.5	6.9	24.2
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)--LONG-TERM AVERAGE									
<2,000 CDD AND >7,000 HDD.....	8.8	.3	.7	1.1	.7	.5	1.2	.7	3.6
<2,000 CDD AND 5,500 TO 7,000 HDD.....	21.0	.4	1.9	2.2	2.2	1.5	3.4	1.7	7.7
<2,000 CDD AND 4,000 TO 5,499 HDD.....	21.6	1.3	2.0	2.5	2.4	2.0	3.1	1.7	6.7
<2,000 CDD AND <4,000 HDD.....	19.5	1.0	1.7	3.0	1.6	2.1	3.7	1.8	4.6
>2,000 CDD AND <4,000 HDD.....	12.2	1.0	1.6	1.8	1.7	1.4	2.0	1.1	1.6
MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE									
LESS THAN 600 SQUARE FEET.....	7.2	.3	.6	1.1	.7	.6	.9	.5	2.6
600 TO 999 SQUARE FEET.....	21.8	1.0	1.8	3.0	2.8	1.7	3.3	2.1	6.0
1,000 TO 1,599 SQUARE FEET.....	25.2	1.2	2.4	3.2	2.3	2.4	4.2	2.3	7.1
1,600 TO 1,999 SQUARE FEET.....	10.6	.6	1.0	1.0	1.1	1.2	2.2	.7	2.8
2,000 TO 2,399 SQUARE FEET.....	7.4	.4	.8	.8	.8	.7	1.3	.4	2.1
2,400 TO 2,999 SQUARE FEET.....	5.6	.3	.4	.8	.5	.5	.8	.5	1.7
3,000 OR MORE SQUARE FEET.....	5.4	.2	.8	.8	.4	.5	.7	.3	1.8
HOW UTILITIES ARE PAID									
ALL PAID BY HOUSEHOLD.....	69.6	3.8	6.7	8.7	6.9	6.4	11.9	5.9	19.3
SOME PAID, SOME IN RENT.....	7.0	.1	.4	1.1	1.1	.5	.7	.4	2.6
ALL INCLUDED IN RENT.....	4.6	0	.4	.7	.4	.5	.7	.5	1.3
OTHER.....	2.0	.1	.3	.2	.1	.2	.1	.1	1.0
OWN/RENT									
OWN.....	55.1	2.9	5.2	6.8	5.5	5.6	9.8	4.6	14.7
RENT.....	28.0	1.1	2.6	3.8	3.0	2.0	3.6	2.4	9.6
HOUSING STRUCTURE									
SINGLE-FAMILY DETACHED.....	54.6	2.2	4.0	5.4	5.0	5.7	11.0	5.5	15.8
SINGLE-FAMILY ATTACHED.....	3.0	.2	.5	.5	.1	.1	.1	.3	1.1
BUILDING WITH 2 TO 4 UNITS.....	9.3	.2	.8	.8	.7	.5	.7	.6	5.0
BUILDING WITH 5 OR MORE UNITS.....	12.0	.8	1.5	2.4	1.9	1.1	1.5	.5	2.3
MOBILE HOME.....	4.2	.6	.9	1.6	.8	.2	.1	0	0

SEE FOOTNOTES AT END OF TABLE.



# Housing Characteristics by Year House Built

Table 3. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	YEAR HOUSE BUILT							
		1979 OR LATER	1975 TO 1978	1970 TO 1974	1965 TO 1969	1960 TO 1964	1950 TO 1959	1940 TO 1949	1939 OR EARLIER
<b>1980 FAMILY INCOME</b>									
LESS THAN \$5,000.....	9.8	0.3	0.7	1.1	0.8	0.7	1.2	0.9	4.1
\$5,000 TO \$9,999.....	13.5	.3	.9	1.5	1.5	1.1	1.9	1.6	4.8
\$10,000 TO \$14,999.....	12.5	.6	1.1	1.3	1.3	1.2	2.0	1.0	4.1
\$15,000 TO \$19,999.....	10.7	.7	1.0	1.3	.9	.8	1.9	.8	3.3
\$20,000 TO \$24,999.....	10.8	.6	.8	1.3	1.4	1.2	2.0	.9	2.5
\$25,000 TO \$34,999.....	13.3	.7	1.6	2.0	1.2	1.3	2.4	1.1	3.0
\$35,000 OR MORE.....	12.6	.8	1.7	2.0	1.4	1.5	2.2	.6	2.5
BELOW 100% OF POVERTY .....	11.0	.4	.7	1.3	.8	.8	1.6	1.1	4.4
BELOW 125% OF POVERTY.....	15.8	.5	1.1	1.8	1.3	1.1	2.1	1.7	6.3
<b>AGE OF HOUSEHOLDER</b>									
UNDER 25 YEARS.....	6.6	.6	1.0	.9	.7	.7	.8	.5	1.5
25 TO 34 YEARS.....	21.0	1.4	2.8	3.2	1.8	1.8	3.1	1.5	5.4
35 TO 44 YEARS.....	14.6	.8	1.4	2.4	1.6	1.4	2.2	1.0	3.9
45 TO 59 YEARS.....	18.4	.6	1.3	2.1	1.9	2.2	3.6	1.6	5.1
60 YEARS AND OVER.....	22.5	.5	1.2	2.1	2.4	1.6	3.8	2.3	8.5
<b>ORIGIN OF HOUSEHOLDER</b>									
WHITE/OTHER.....	74.1	3.7	7.2	9.7	7.8	6.6	12.2	6.2	20.7
BLACK.....	9.0	.3	.6	1.0	.7	1.0	1.2	.7	3.5
<b>HOUSEHOLD SIZE</b>									
1 PERSON.....	15.4	.4	1.1	2.2	1.8	1.0	2.1	1.6	5.1
2 PERSONS.....	27.7	1.5	2.3	3.1	2.7	2.7	5.1	2.5	7.8
3 PERSONS.....	15.4	.8	1.8	1.7	1.3	1.6	2.6	1.0	4.6
4 PERSONS.....	14.4	.7	1.7	2.2	1.6	1.4	2.3	1.0	3.5
5 PERSONS.....	6.3	.4	.6	.8	.8	.6	.8	.4	1.8
6 OR MORE PERSONS.....	4.1	.2	.3	.6	.4	.4	.6	.4	1.3

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"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

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SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Housing Characteristics by Year House Built

**Table 4. Housing Characteristics by Year House Built, as of November 1981 (Percentage of Households)**

HOUSEHOLD CHARACTERISTICS	TOTAL	YEAR HOUSE BUILT							
		1979 OR LATER	1975 TO 1978	1970 TO 1974	1965 TO 1969	1960 TO 1964	1950 TO 1959	1940 TO 1949	1939 OR EARLIER
TOTAL HOUSEHOLDS .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)--LONG-TERM AVERAGE									
<2,000 CDD AND >7,000 HDD.....	10.6	6.4	8.9	10.4	7.7	7.1	9.2	10.1	14.9
<2,000 CDD AND 5,500 TO 7,000 HDD.....	25.2	10.5	24.3	20.5	25.4	19.8	25.5	24.0	31.9
<2,000 CDD AND 4,000 TO 5,499 HDD.....	26.0	32.6	25.2	23.6	28.1	26.3	22.9	23.9	27.8
<2,000 CDD AND <4,000 HDD.....	23.5	25.8	21.6	28.6	18.9	27.8	27.4	26.4	18.8
>2,000 CDD AND <4,000 HDD.....	14.7	24.7	20.1	16.9	19.9	19.0	15.0	15.6	6.6
MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE									
LESS THAN 600 SQUARE FEET.....	8.6	6.7	7.8	9.9	8.2	7.4	6.8	7.3	10.7
600 TO 999 SQUARE FEET.....	26.2	25.3	22.8	28.0	32.4	22.6	24.8	31.0	25.0
1,000 TO 1,599 SQUARE FEET....	30.4	30.5	31.1	30.0	26.8	32.2	31.5	33.7	29.3
1,600 TO 1,999 SQUARE FEET....	12.7	16.0	12.4	9.7	12.5	15.3	16.0	10.5	11.6
2,000 TO 2,399 SQUARE FEET....	8.9	9.1	10.4	7.8	9.9	9.2	10.0	5.8	8.8
2,400 TO 2,999 SQUARE FEET....	6.7	8.1	5.5	7.2	5.7	6.4	6.0	7.8	7.1
3,000 OR MORE SQUARE FEET.....	6.5	4.3	10.0	7.4	4.6	6.9	5.0	4.0	7.5
HOW UTILITIES ARE PAID									
ALL PAID BY HOUSEHOLD.....	83.7	94.5	86.7	81.3	81.0	84.1	88.3	85.7	79.7
SOME PAID, SOME IN RENT.....	8.4	3.1	4.6	10.5	13.5	6.6	5.4	5.5	10.9
ALL INCLUDED IN RENT.....	5.5	.7	5.1	6.3	4.9	7.2	5.2	7.1	5.4
OTHER.....	2.4	1.7	3.7	1.9	.6	2.1	1.1	1.7	4.0
OWN/RENT									
OWN.....	66.3	73.2	66.9	64.0	65.1	73.7	73.1	65.7	60.5
RENT.....	33.7	26.8	33.1	36.0	34.9	26.3	26.9	34.3	39.5
HOUSING STRUCTURE									
SINGLE-FAMILY DETACHED.....	65.6	55.7	51.4	50.8	58.4	74.9	81.6	79.3	65.2
SINGLE-FAMILY ATTACHED.....	3.6	5.2	6.8	5.1	1.0	1.4	1.1	4.0	4.6
BUILDING WITH 2 TO 4 UNITS....	11.2	3.9	10.8	7.2	8.8	6.2	5.2	9.3	20.7
BUILDING WITH 5 OR MORE UNITS.....	14.5	21.1	19.1	22.3	22.2	15.0	11.2	7.3	9.5
MOBILE HOME.....	5.0	14.0	12.0	14.6	9.7	2.6	.9	.2	9

SEE FOOTNOTES AT END OF TABLE.



# Housing Characteristics by Year House Built

Table 4. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	YEAR HOUSE BUILT							
		1979 OR LATER	1975 TO 1978	1970 TO 1974	1965 TO 1969	1960 TO 1964	1950 TO 1959	1940 TO 1949	1939 OR EARLIER
<b>1980 FAMILY INCOME</b>									
LESS THAN \$5,000.....	11.8	8.3	9.3	10.7	9.9	8.6	8.6	12.6	16.8
\$5,000 TO \$9,999.....	16.3	8.1	11.2	13.9	17.4	13.8	13.7	23.7	19.9
\$10,000 TO \$14,999.....	15.0	14.1	13.6	12.4	15.0	15.8	14.7	14.4	16.8
\$15,000 TO \$19,999.....	12.9	17.2	13.3	12.5	10.9	10.8	13.9	11.1	13.4
\$20,000 TO \$24,999.....	12.9	14.8	10.9	12.5	16.7	15.3	14.8	13.3	10.3
\$25,000 TO \$34,999.....	16.0	18.5	20.2	18.8	13.9	16.5	18.0	15.8	12.5
\$35,000 OR MORE.....	15.2	19.0	21.5	19.1	16.3	19.2	16.3	9.1	10.3
BELOW 100% OF POVERTY.....	13.3	9.9	9.2	12.5	9.0	10.5	11.5	15.9	18.1
BELOW 125% OF POVERTY.....	19.0	13.7	13.7	16.5	14.7	14.4	15.5	24.2	26.1
<b>AGE OF HOUSEHOLDER</b>									
UNDER 25 YEARS.....	8.0	15.3	12.7	8.1	8.5	8.6	5.8	7.8	6.0
25 TO 34 YEARS.....	25.2	35.7	36.6	30.3	21.1	23.3	22.9	21.3	22.1
35 TO 44 YEARS.....	17.6	19.7	18.4	22.4	18.9	18.0	16.2	14.0	16.0
45 TO 59 YEARS.....	22.2	14.8	16.3	19.7	22.9	28.8	26.8	23.7	20.9
60 YEARS AND OVER.....	27.1	14.5	15.9	19.5	28.7	21.3	28.2	33.1	34.9
<b>ORIGIN OF HOUSEHOLDER</b>									
WHITE/OTHER.....	89.1	92.7	92.4	91.0	91.4	86.8	90.8	90.2	85.4
BLACK.....	10.9	7.3	7.6	9.0	8.6	13.2	9.2	9.8	14.6
<b>HOUSEHOLD SIZE</b>									
1 PERSON.....	18.5	8.9	14.3	20.7	21.2	12.8	15.9	23.4	21.2
2 PERSONS.....	33.3	38.7	30.3	29.0	31.3	34.9	37.6	36.4	32.2
3 PERSONS.....	18.5	19.7	23.1	16.1	15.0	20.9	19.3	14.3	19.0
4 PERSONS.....	17.3	17.0	21.6	20.3	18.7	18.3	17.1	14.9	14.5
5 PERSONS.....	7.6	10.6	7.4	7.9	9.3	8.5	6.0	5.5	7.5
6 OR MORE PERSONS.....	5.0	5.1	3.4	6.0	4.4	4.6	4.2	5.4	5.5

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# Housing Characteristics by Average Square Feet

**Table 5. Housing Characteristics by Average Square Feet per Housing Unit, as of November 1981**

HOUSEHOLD CHARACTERISTICS	TOTAL HOUSEHOLDS (MILLIONS)	AVERAGE NUMBER OF SQUARE FEET PER HOUSING UNIT				MEAN NUMBER OF HEATED SQUARE FEET PER HOUSING UNIT			MEAN NUMBER OF HEATED SQUARE FEET PER HOUSEHOLD MEMBER
		MEAN		MEDIAN		SINGLE-FAMILY	MULTI-FAMILY	MOBILE HOME	
		HEATED AND UNHEATED	HEATED	HEATED AND UNHEATED	HEATED				
TOTAL HOUSEHOLDS .....	83.1	1,734	1,482	1,452	1,247	1,735	920	872	528
CENSUS REGION									
NORTHEAST.....	17.9	1,957	1,615	1,728	1,390	2,141	937	911	562
NORTH CENTRAL.....	21.2	1,953	1,646	1,848	1,440	1,894	1,002	848	604
SOUTH.....	27.7	1,538	1,357	1,296	1,160	1,527	886	839	489
WEST.....	16.3	1,538	1,332	1,316	1,173	1,533	832	958	460
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)--LONG-TERM AVERAGE									
<2,000 CDD AND >7,000 HDD.....	8.8	1,923	1,575	1,825	1,344	1,800	1,066	885	546
<2,000 CDD AND 5,500 TO 7,000 HDD.....	21.0	1,994	1,688	1,872	1,510	2,047	980	870	592
<2,000 CDD AND 4,000 TO 5,499 HDD.....	21.6	1,827	1,531	1,591	1,285	1,856	885	857	567
<2,000 CDD AND <4,000 HDD.....	19.5	1,495	1,310	1,248	1,150	1,494	856	822	458
>2,000 CDD AND <4,000 HDD.....	12.2	1,371	1,247	1,200	1,120	1,380	856	917	449
MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE									
LESS THAN 600 SQUARE FEET.....	7.2	573	441	525	489	410	449	464	221
600 TO 999 SQUARE FEET.....	21.8	937	806	840	806	824	791	800	340
1,000 TO 1,599 SQUARE FEET.....	25.2	1,529	1,264	1,375	1,247	1,278	1,205	1,258	438
1,600 TO 1,999 SQUARE FEET.....	10.6	2,147	1,788	1,944	1,785	1,793	1,751	Q	583
2,000 TO 2,399 SQUARE FEET.....	7.4	2,557	2,181	2,336	2,176	2,180	Q	Q	678
2,400 TO 2,999 SQUARE FEET.....	5.6	2,967	2,647	2,810	2,627	2,646	Q	Q	761
3,000 OR MORE SQUARE FEET.....	5.4	4,247	3,844	3,902	3,528	3,849	Q	Q	1093
HOW UTILITIES ARE PAID									
ALL PAID BY HOUSEHOLD.....	69.6	1,891	1,598	1,662	1,375	1,740	1,004	870	549
SOME PAID, SOME IN RENT.....	7.0	827	818	769	765	Q	809	Q	399
ALL INCLUDED IN RENT.....	4.6	817	789	756	750	1,328	745	Q	328
OTHER.....	2.0	1,535	1,344	1,251	1,197	Q	1,462	921	497
OWN/RENT									
OWN.....	55.1	2,067	1,734	1,864	1,534	1,820	1,357	902	593
RENT.....	28.0	1,080	985	871	847	1,282	846	693	382

SEE FOOTNOTES AT END OF TABLE.





# Housing Characteristics by Average Square Feet

Table 5. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL HOUSEHOLDS (MILLIONS)	AVERAGE NUMBER OF SQUARE FEET PER HOUSING UNIT				MEAN NUMBER OF HEATED SQUARE FEET PER HOUSING UNIT			MEAN NUMBER OF HEATED SQUARE FEET PER HOUSEHOLD MEMBER
		MEAN		MEDIAN		SINGLE-FAMILY	MULTI-FAMILY	MOBILE HOME	
		HEATED AND UNHEATED	HEATED	HEATED AND UNHEATED	HEATED				
<b>HOUSING STRUCTURE BY OWNERSHIP</b>									
SINGLE-FAMILY DETACHED.....	54.6	2,093	1,742	1,904	1,540	1,742	-	-	572
OWN.....	46.4	2,195	1,826	2,024	1,650	1,826	-	-	608
RENT.....	8.2	1,517	1,271	1,245	1,084	1,271	-	-	388
SINGLE-FAMILY ATTACHED.....	3.0	1,946	1,596	1,819	1,489	1,596	-	-	575
OWN.....	2.1	2,085	1,688	1,947	1,559	1,688	-	-	609
RENT.....	.9	1,636	1,387	1,499	1,371	1,387	-	-	499
BUILDING WITH 2 TO 4 UNITS....	9.3	1,126	1,054	915	900	-	1,054	-	430
OWN.....	2.1	1,627	1,454	1,250	1,167	-	1,454	-	564
RENT.....	7.2	982	939	829	826	-	939	-	389
BUILDING WITH 5 OR MORE UNITS.....	12.0	826	816	769	766	-	816	-	383
OWN.....	1.0	1,172	1,155	1,207	1,182	-	1,155	-	628
RENT.....	11.0	794	785	756	756	-	785	-	363
MOBILE HOME.....	4.2	880	872	826	826	-	-	872	352
OWN.....	3.6	912	902	840	840	-	-	902	362
RENT.....	.6	695	693	720	720	-	-	693	289
<b>YEAR HOUSE BUILT</b>									
1939 OR EARLIER.....	24.2	1,831	1,502	1,591	1,259	1,716	1,009	Q	544
1940 TO 1949.....	6.9	1,608	1,394	1,303	1,177	1,496	888	Q	525
1950 TO 1959.....	13.5	1,729	1,481	1,500	1,248	1,612	872	Q	537
1960 TO 1964.....	7.6	1,725	1,523	1,512	1,316	1,749	820	Q	523
1965 TO 1969.....	8.5	1,592	1,391	1,275	1,150	1,782	824	807	501
1970 TO 1974.....	10.7	1,688	1,465	1,295	1,152	1,941	850	881	512
1975 TO 1978.....	7.7	1,790	1,573	1,500	1,320	2,010	986	912	540
1979 OR LATER.....	4.0	1,721	1,492	1,457	1,317	1,840	903	1,032	494
<b>1980 FAMILY INCOME</b>									
LESS THAN \$5,000.....	9.8	1,111	990	897	847	1,233	737	756	464
\$5,000 TO \$9,999.....	13.5	1,376	1,161	1,056	959	1,397	845	814	473
\$10,000 TO \$14,999.....	12.5	1,520	1,314	1,237	1,106	1,526	918	871	492
\$15,000 TO \$19,999.....	10.7	1,638	1,387	1,440	1,197	1,586	971	947	479
\$20,000 TO \$24,999.....	10.8	1,845	1,582	1,626	1,378	1,784	1,005	976	523
\$25,000 TO \$34,999.....	13.3	2,027	1,705	1,872	1,600	1,860	1,139	896	538
\$35,000 OR MORE.....	12.6	2,494	2,134	2,297	1,912	2,306	1,123	Q	667
BELOW 100% OF POVERTY.....	11.0	1,173	1,046	950	870	1,281	770	753	344
BELOW 125% OF POVERTY.....	15.8	1,209	1,076	980	908	1,312	789	774	382
<b>AGE OF HOUSEHOLDER</b>									
UNDER 25 YEARS.....	6.6	1,041	957	866	840	1,228	781	794	373
25 TO 34 YEARS.....	21.0	1,613	1,403	1,320	1,153	1,687	927	851	447
35 TO 44 YEARS.....	14.6	2,063	1,753	1,784	1,550	1,970	1,048	964	463
45 TO 59 YEARS.....	18.4	1,969	1,692	1,800	1,498	1,859	1,009	914	584
60 YEARS AND OVER.....	22.5	1,647	1,362	1,394	1,150	1,571	889	855	733
<b>ORIGIN OF HOUSEHOLDER</b>									
WHITE/OTHER.....	74.1	1,782	1,510	1,517	1,288	1,757	922	873	546
BLACK.....	9.0	1,346	1,246	1,075	1,040	1,506	914	846	398
<b>HOUSEHOLD SIZE</b>									
1 PERSON.....	15.4	1,183	1,006	900	824	1,316	716	735	1006
2 PERSONS.....	27.7	1,663	1,417	1,428	1,217	1,644	950	907	709
3 PERSONS.....	15.4	1,871	1,584	1,582	1,350	1,790	1,091	904	528
4 PERSONS.....	14.4	2,081	1,787	1,830	1,584	1,954	1,054	994	447
5 PERSONS.....	6.3	2,058	1,779	1,856	1,566	1,923	1,079	950	356
6 OR MORE PERSONS.....	4.1	2,064	1,789	1,829	1,534	1,906	1,228	Q	266

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Total Square Footage by Housing Characteristics

Table 6. Total Square Footage by Housing Characteristics, as of November 1981

HOUSEHOLD CHARACTERISTICS	TOTAL HOUSEHOLDS		TOTAL SQUARE FOOTAGE			
	(MILLIONS)	(PERCENT)	TOTAL HEATED AND UNHEATED		TOTAL HEATED	
			(BILLIONS)	(PERCENT)	(BILLIONS)	(PERCENT)
TOTAL HOUSEHOLDS .....	63.1	100.0	144.2	100.0	123.2	100.0
<b>CENSUS REGION AND MAIN HEATING FUEL</b>						
NORTHEAST.....	17.9	21.6	35.1	24.3	29.0	23.5
FUEL OIL OR KEROSENE.....	7.9	9.5	15.5	10.8	12.7	10.3
NATURAL GAS.....	7.0	8.5	13.5	9.4	11.5	9.3
ELECTRICITY.....	1.5	1.9	2.5	1.8	2.1	1.7
WOOD.....	1.1	1.3	2.6	1.8	2.0	1.6
OTHER/NONE.....	.4	.4	.9	.6	.7	.5
NORTH CENTRAL.....	21.2	25.5	41.5	28.8	35.0	28.4
NATURAL GAS.....	15.4	18.6	31.0	21.5	26.5	21.5
ELECTRICITY.....	1.6	1.9	2.1	1.5	1.8	1.4
FUEL OIL OR KEROSENE.....	1.7	2.0	3.6	2.5	2.9	2.3
LPG.....	1.0	1.2	2.0	1.4	1.6	1.3
WOOD.....	1.2	1.4	2.3	1.6	1.8	1.5
OTHER/NONE.....	.3	.4	.4	.3	.3	.3
SOUTH.....	27.7	33.3	42.6	29.5	37.6	30.5
NATURAL GAS.....	13.0	15.6	20.6	14.3	18.4	14.9
ELECTRICITY.....	7.7	9.3	11.1	7.7	10.1	8.2
FUEL OIL OR KEROSENE.....	2.2	2.6	3.7	2.6	2.8	2.3
LPG.....	2.1	2.6	2.7	1.9	2.4	2.0
WOOD.....	2.2	2.7	3.6	2.5	3.0	2.5
OTHER/NONE.....	.5	.5	.9	.6	.8	.7
WEST.....	16.3	19.6	25.1	17.4	21.7	17.6
NATURAL GAS.....	10.8	12.9	17.2	11.9	15.1	12.3
ELECTRICITY.....	3.4	4.1	4.3	3.0	4.0	3.2
OTHER/NONE.....	2.1	2.6	3.5	2.5	2.6	2.1
<b>ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)--LONG-TERM AVERAGE</b>						
<2,000 CDD AND >7,000 HDD.....	8.8	10.6	16.9	11.7	13.9	11.3
<2,000 CDD AND 5,500 TO 7,000 HDD.....	21.0	25.2	41.8	29.0	35.4	28.7
<2,000 CDD AND 4,000 TO 5,499 HDD.....	21.6	26.0	39.5	27.4	33.1	26.9
<2,000 CDD AND <4,000 HDD.....	19.5	23.5	29.2	20.3	25.6	20.8
>2,000 CDD AND <4,000 HDD.....	12.2	14.7	16.7	11.6	15.2	12.4
<b>MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE</b>						
LESS THAN 600 SQUARE FEET.....	7.2	8.6	4.1	2.9	3.2	2.6
600 TO 999 SQUARE FEET.....	21.8	26.2	20.4	14.1	17.6	14.2
1,000 TO 1,599 SQUARE FEET.....	25.2	30.4	38.6	26.8	31.9	25.9
1,600 TO 1,999 SQUARE FEET.....	10.6	12.7	22.7	15.7	18.9	15.3
2,000 TO 2,399 SQUARE FEET.....	7.4	8.9	19.0	13.2	16.2	13.1
2,400 TO 2,999 SQUARE FEET.....	5.6	6.7	16.5	11.4	14.7	11.9
3,000 OR MORE SQUARE FEET.....	5.4	6.5	23.0	15.9	20.8	16.9
<b>HOW UTILITIES ARE PAID</b>						
ALL PAID BY HOUSEHOLD.....	69.6	83.7	131.6	91.3	111.2	90.3
SOME PAID, SOME IN RENT.....	7.0	8.4	5.8	4.0	5.7	4.6
ALL INCLUDED IN RENT.....	4.6	5.5	3.7	2.6	3.6	2.9
OTHER.....	2.0	2.4	3.1	2.1	2.7	2.2
<b>OWN/RENT</b>						
OWN.....	55.1	66.3	113.9	79.0	95.6	77.6
RENT.....	28.0	33.7	30.3	21.0	27.6	22.4

SEE FOOTNOTES AT END OF TABLE.



# Total Square Footage by Housing Characteristics

Table 6. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL HOUSEHOLDS		TOTAL SQUARE FOOTAGE			
	(MILLIONS)	(PERCENT)	TOTAL HEATED AND UNHEATED		TOTAL HEATED	
			(BILLIONS)	(PERCENT)	(BILLIONS)	(PERCENT)
<b>HOUSING STRUCTURE BY OWNERSHIP</b>						
SINGLE-FAMILY DETACHED.....	54.6	65.6	114.2	79.2	95.1	77.2
OWN.....	46.4	55.8	101.8	70.6	84.7	68.7
RENT.....	8.2	9.9	12.5	8.6	10.4	8.5
SINGLE-FAMILY ATTACHED.....	3.0	3.6	5.8	4.1	4.8	3.9
OWN.....	2.1	2.5	4.3	3.0	3.5	2.8
RENT.....	.9	1.1	1.5	1.1	1.3	1.0
BUILDING WITH 2 TO 4 UNITS....	9.3	11.2	10.5	7.3	9.8	8.0
OWN.....	2.1	2.5	3.4	2.4	3.0	2.5
RENT.....	7.2	8.7	7.1	4.9	6.8	5.5
BUILDING WITH 5 OR MORE UNITS.....	12.0	14.5	9.9	6.9	9.8	8.0
OWN.....	1.0	1.2	1.2	.8	1.2	.9
RENT.....	11.0	13.3	8.8	6.1	8.7	7.0
MOBILE HOME.....	4.2	5.0	3.7	2.6	3.7	3.0
OWN.....	3.6	4.3	3.3	2.3	3.2	2.6
RENT.....	.6	.7	.4	.3	.4	.3
<b>YEAR HOUSE BUILT</b>						
1939 OR EARLIER.....	24.2	29.1	44.4	30.8	36.4	29.5
1940 TO 1949.....	6.9	8.3	11.1	7.7	9.7	7.8
1950 TO 1959.....	13.5	16.2	23.3	16.2	20.0	16.2
1960 TO 1964.....	7.6	9.2	13.1	9.1	11.6	9.4
1965 TO 1969.....	8.5	10.2	13.5	9.4	11.8	9.6
1970 TO 1974.....	10.7	12.8	18.0	12.5	15.6	12.7
1975 TO 1978.....	7.7	9.3	13.9	9.6	12.2	9.9
1979 OR LATER.....	4.0	4.8	6.9	4.8	6.0	4.8
<b>1980 FAMILY INCOME</b>						
LESS THAN \$5,000.....	9.8	11.8	10.9	7.6	9.7	7.9
\$5,000 TO \$9,999.....	13.5	16.3	18.6	12.9	15.7	12.7
\$10,000 TO \$14,999.....	12.5	15.0	19.0	13.1	16.4	13.3
\$15,000 TO \$19,999.....	10.7	12.9	17.5	12.1	14.8	12.0
\$20,000 TO \$24,999.....	10.8	12.9	19.8	13.8	17.0	13.8
\$25,000 TO \$34,999.....	13.3	16.0	26.9	18.7	22.7	18.4
\$35,000 OR MORE.....	12.6	15.2	31.5	21.8	26.9	21.8
BELOW 100% OF POVERTY.....	11.0	13.3	12.9	9.0	11.5	9.4
BELOW 125% OF POVERTY.....	15.8	19.0	19.1	13.3	17.0	13.8
<b>AGE OF HOUSEHOLDER</b>						
UNDER 25 YEARS.....	6.6	8.0	6.9	4.8	6.3	5.2
25 TO 34 YEARS.....	21.0	25.2	33.8	23.5	29.4	23.9
35 TO 44 YEARS.....	14.6	17.6	30.1	20.9	25.6	20.8
45 TO 59 YEARS.....	18.4	22.2	36.3	25.1	31.2	25.3
60 YEARS AND OVER.....	22.5	27.1	37.1	25.7	30.6	24.9
<b>ORIGIN OF HOUSEHOLDER</b>						
WHITE/OTHER.....	74.1	89.1	132.0	91.6	111.9	90.9
BLACK.....	9.0	10.9	12.2	8.4	11.3	9.1
<b>HOUSEHOLD SIZE</b>						
1 PERSON.....	15.4	18.5	18.2	12.6	15.4	12.5
2 PERSONS.....	27.7	33.3	46.0	31.9	39.2	31.8
3 PERSONS.....	15.4	18.5	28.7	19.9	24.3	19.7
4 PERSONS.....	14.4	17.3	29.9	20.7	25.6	20.8
5 PERSONS.....	6.3	7.6	12.9	9.0	11.2	9.1
6 OR MORE PERSONS.....	4.1	5.0	8.5	5.9	7.4	6.0

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Housing Characteristics by Family Income

**Table 7. Housing Characteristics by Family Income, as of November 1981 (Million Households)**

HOUSEHOLD CHARACTERISTICS	TOTAL	1980 FAMILY INCOME							BELOW 100% OF POVERTY	BELOW 125% OF POVERTY
		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 OR MORE		
TOTAL HOUSEHOLDS .....	83.1	9.8	13.5	12.5	10.7	10.8	13.3	12.6	11.0	15.8
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)--LONG-TERM AVERAGE										
<2,000 CDD AND >7,000 HDD.....	8.8	.6	1.9	1.4	1.6	1.1	1.2	1.0	1.0	1.6
<2,000 CDD AND 5,500 TO 7,000 HDD.....	21.0	2.2	3.2	3.1	2.7	2.9	3.6	3.2	2.6	3.5
<2,000 CDD AND 4,000 TO 5,499 HDD.....	21.6	2.2	3.2	3.2	3.0	3.0	3.8	3.3	2.1	3.5
<2,000 CDD AND <4,000 HDD.....	19.5	2.9	3.2	2.7	2.1	2.1	3.0	3.6	3.3	4.5
>2,000 CDD AND <4,000 HDD.....	12.2	1.8	2.1	2.0	1.3	1.7	1.7	1.6	2.0	2.7
HOW UTILITIES ARE PAID										
ALL PAID BY HOUSEHOLD.....	69.6	7.3	10.4	10.1	9.0	9.5	11.8	11.5	8.4	12.1
SOME PAID, SOME IN RENT.....	7.0	1.3	1.4	1.2	.9	.7	1.0	.5	1.2	1.8
ALL INCLUDED IN RENT.....	4.6	1.1	1.4	.8	.4	.3	.2	.4	1.3	1.7
OTHER.....	2.0	.1	.4	.3	.3	.3	.4	.2	.1	.3
OWN/RENT										
OWN.....	55.1	4.0	7.4	7.3	7.0	8.0	10.7	10.7	4.4	7.1
RENT.....	28.0	5.8	6.1	5.2	3.7	2.7	2.6	1.9	6.6	8.7
HOUSING STRUCTURE										
SINGLE-FAMILY DETACHED.....	54.6	4.5	7.4	7.9	6.8	7.6	10.0	10.3	5.6	8.0
SINGLE-FAMILY ATTACHED.....	3.0	.5	.3	.3	.4	.4	.6	.5	.4	.7
BUILDING WITH 2 TO 4 UNITS.....	9.3	1.9	2.1	1.5	1.3	1.0	.9	.6	2.1	2.9
BUILDING WITH 5 OR MORE UNITS.....	12.0	2.3	2.7	2.1	1.5	1.2	1.3	1.1	2.2	3.1
MOBILE HOME.....	4.2	.7	1.0	.6	.6	.6	.5	.2	.7	1.1
YEAR HOUSE BUILT										
1939 OR EARLIER.....	24.2	4.1	4.8	4.1	3.3	2.5	3.0	2.5	4.4	6.3
1940 TO 1949.....	6.9	.9	1.6	1.0	.8	.9	1.1	.6	1.1	1.7
1950 TO 1959.....	13.5	1.2	1.9	2.0	1.9	2.0	2.4	2.2	1.6	2.1
1960 TO 1964.....	7.6	.7	1.1	1.2	.8	1.2	1.3	1.5	.8	1.1
1965 TO 1969.....	8.5	.8	1.5	1.3	.9	1.4	1.2	1.4	.8	1.3
1970 TO 1974.....	10.7	1.1	1.5	1.3	1.3	1.3	2.0	2.0	1.3	1.8
1975 TO 1978.....	7.7	.7	.9	1.1	1.0	.8	1.6	1.7	.7	1.1
1979 OR LATER.....	4.0	.3	.3	.6	.7	.6	.7	.8	.4	.5
AGE OF HOUSEHOLDER										
UNDER 25 YEARS.....	6.6	1.4	1.1	1.4	1.1	0.8	0.5	0.3	1.7	1.9
25 TO 34 YEARS.....	21.0	1.1	2.4	3.1	3.6	3.7	3.9	3.3	2.1	2.8
35 TO 44 YEARS.....	14.6	.8	1.5 <sup>10</sup>	1.5 <sup>10</sup>	1.9 <sup>13</sup>	2.0 <sup>14</sup>	3.5 <sup>24</sup>	3.3 <sup>23</sup>	1.6 <sup>11</sup>	2.1 <sup>14</sup>
45 TO 59 YEARS.....	18.4	1.4	1.9	2.5	2.0	2.4	3.8	4.5	1.7	2.4
60 YEARS AND OVER.....	22.5	5.1	6.7	3.9	2.1	1.8	1.6	1.3	3.9	6.6
ORIGIN OF HOUSEHOLDER										
WHITE/OTHER.....	74.1	7.4	11.3	10.8	10.0	9.9	12.7	12.1	8.0	11.9
BLACK.....	9.0	2.4	2.2	1.7	.7	.9	.6	.5	3.0	3.9
HOUSEHOLD SIZE										
1 PERSON.....	15.4	4.7	3.9	2.3	1.5	1.1	1.0	.8	2.9	4.7
2 PERSONS.....	27.7	2.5	4.9	4.8	3.6	3.9	3.9	4.1	2.5	4.1
3 PERSONS.....	15.4	1.0	2.1	2.2	2.2	1.9	3.2	2.8	1.8	2.3
4 PERSONS.....	14.4	.9	1.3	1.6	1.9	2.3	3.3	3.0	1.5	2.1
5 PERSONS.....	6.3	.3	.6	1.0	.9	.9	1.3	1.2	.9	1.1
6 OR MORE PERSONS.....	4.1	.4	.7	.5	.5	.6	.6	.8	1.4	1.6

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 "Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.  
 NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Housing Characteristics by Family Income

**Table 8. Housing Characteristics by Family Income, as of November 1981 (Percentage of Households)**

HOUSEHOLD CHARACTERISTICS	TOTAL	1980 FAMILY INCOME							BELOW 100% OF POVERTY	BELOW 125% OF POVERTY
		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 OR MORE		
TOTAL HOUSEHOLDS .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)--LONG-TERM AVERAGE										
<2,000 CDD AND >7,000 HDD.....	10.6	6.4	14.0	11.3	14.6	10.5	8.8	8.1	9.4	10.2
<2,000 CDD AND 5,500 TO 7,000 HDD.....	25.2	22.9	23.8	25.2	24.9	26.7	27.4	25.1	23.3	22.0
<2,000 CDD AND 4,000 TO 5,499 HDD.....	26.0	22.8	23.3	25.7	28.4	27.5	28.5	25.9	19.3	22.0
<2,000 CDD AND <4,000 HDD.....	23.5	29.9	23.7	21.7	19.6	19.5	22.3	28.2	29.8	28.7
>2,000 CDD AND <4,000 HDD.....	14.7	18.0	15.2	16.1	12.5	15.8	13.0	12.7	18.2	17.1
HOW UTILITIES ARE PAID										
ALL PAID BY HOUSEHOLD.....	83.7	74.1	76.8	81.4	84.5	88.6	88.5	91.0	76.5	76.5
SOME PAID, SOME IN RENT.....	8.4	13.2	10.3	9.7	8.6	6.2	7.3	4.3	10.8	11.1
ALL INCLUDED IN RENT.....	5.5	11.3	10.1	6.6	3.7	2.7	1.6	2.9	11.4	10.5
OTHER.....	2.4	1.5	2.9	2.3	3.1	2.5	2.7	1.8	1.2	1.9
OWN/RENT										
OWN.....	66.3	40.9	54.6	58.3	65.8	74.6	80.4	85.0	40.3	44.7
RENT.....	33.7	59.1	45.4	41.7	34.2	25.4	19.6	15.0	59.7	55.3
HOUSING STRUCTURE										
SINGLE-FAMILY DETACHED.....	65.6	46.1	55.0	63.1	63.8	71.1	75.1	81.7	50.5	50.8
SINGLE-FAMILY ATTACHED.....	3.6	4.6	2.6	2.4	4.0	3.3	4.7	3.9	3.8	4.1
BUILDING WITH 2 TO 4 UNITS.....	11.2	19.3	15.6	12.3	12.5	9.2	6.8	4.4	19.0	18.4
BUILDING WITH 5 OR MORE UNITS.....	14.5	23.2	19.7	17.0	13.6	10.7	9.6	8.6	20.3	19.8
MOBILE HOME.....	5.0	6.9	7.1	5.2	6.0	5.7	3.8	1.3	6.5	6.8
YEAR HOUSE BUILT										
1939 OR EARLIER.....	29.1	41.6	35.7	32.6	30.4	23.2	22.8	19.7	39.7	40.0
1940 TO 1949.....	8.3	8.9	12.1	8.0	7.2	8.6	8.2	5.0	18.0	10.6
1950 TO 1959.....	16.2	11.8	13.7	15.9	17.5	18.6	18.2	17.4	14.1	13.3
1960 TO 1964.....	9.2	6.7	7.8	9.6	7.7	10.8	9.4	11.6	7.3	6.9
1965 TO 1969.....	10.2	8.6	10.9	10.2	8.6	13.2	8.9	11.0	6.9	7.9
1970 TO 1974.....	12.8	11.7	11.0	10.7	12.5	12.4	15.1	16.2	12.1	11.1
1975 TO 1978.....	9.3	7.4	6.4	8.4	9.6	7.8	11.8	13.2	6.4	6.7
1979 OR LATER.....	4.8	3.4	2.4	4.5	6.4	5.5	5.6	6.0	3.6	3.4
AGE OF HOUSEHOLDER										
UNDER 25 YEARS.....	8.0	14.6	8.3	11.0	10.2	7.8	3.8	2.0	15.1	12.3
25 TO 34 YEARS.....	25.2	10.9	17.7	25.1	33.7	34.3	29.0	25.8	18.7	17.6
35 TO 44 YEARS.....	17.6	8.3	10.8	12.3	18.1	18.9	26.7	26.1	14.7	13.0
45 TO 59 YEARS.....	22.2	13.9	13.9	20.2	18.7	22.0	28.8	35.4	15.7	15.1
60 YEARS AND OVER.....	27.1	52.3	49.3	31.4	19.3	17.0	11.7	10.6	35.7	42.0
ORIGIN OF HOUSEHOLDER										
WHITE/OTHER.....	89.1	76.0	83.8	86.2	93.2	92.0	95.2	95.6	72.5	75.5
BLACK.....	10.9	24.0	16.2	13.8	6.8	8.0	4.8	4.4	27.5	24.5
HOUSEHOLD SIZE										
1 PERSON.....	18.5	47.5	28.8	18.7	14.5	10.4	7.3	6.5	26.5	29.5
2 PERSONS.....	33.3	25.9	36.2	38.6	33.8	36.3	29.0	32.2	22.7	26.0
3 PERSONS.....	18.5	10.2	15.3	17.7	20.6	18.0	24.0	22.0	16.4	14.3
4 PERSONS.....	17.3	8.7	9.9	12.9	17.8	21.5	25.0	23.9	13.9	13.4
5 PERSONS.....	7.6	3.4	4.6	8.2	8.7	8.0	10.0	9.4	8.3	7.0
6 OR MORE PERSONS.....	5.0	4.3	5.3	4.0	4.6	5.8	4.6	6.0	12.3	9.8

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Fuel Use by Census Region, Area Type, and SMSA/Non-SMSA

Table 9. Fuel Use by Census Region, Area Type, and SMSA/Non-SMSA, as of November 1981 (Million Households)

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
TOTAL HOUSEHOLDS .....	83.1	17.9	21.2	27.7	16.3	57.3	25.9	56.6	26.5
<b>FUELS USED FOR ANY USE (MORE THAN ONE FUEL OFTEN USED)</b>									
ELECTRICITY.....	83.1	17.9	21.2	27.7	16.3	57.3	25.8	56.6	26.5
NATURAL GAS.....	53.4	11.3	16.1	14.2	11.8	45.0	8.4	41.7	11.7
WOOD.....	23.9	5.0	5.9	6.8	6.2	12.4	11.5	14.2	9.7
FUEL OIL.....	13.0	8.5	2.0	2.0	.5	8.4	4.5	8.7	4.2
KEROSENE.....	2.0	.7	.3	.9	.1	.6	1.4	1.2	.8
LPG.....	7.3	1.2	2.1	3.4	.7	1.3	6.0	2.1	5.2
SOLAR COLLECTORS.....	.4	.1	Q	Q	.2	.2	.1	.3	.1
<b>MAIN HEATING FUEL AND HEATING EQUIPMENT</b>									
NATURAL GAS.....	46.2	7.0	15.4	13.0	10.8	38.3	8.0	35.2	11.1
CENTRAL WARM-AIR FURNACE.....	28.5	3.1	11.8	7.2	6.4	23.2	5.3	22.1	6.4
STEAM OR HOT WATER SYSTEM... FLOOR, WALL, OR PIPELESS FURNACE.....	7.2	3.6	2.3	.8	.5	6.5	.7	6.0	1.2
ROOM HEATER.....	5.9	.1	.6	1.8	3.3	5.2	.7	4.6	1.2
ELECTRICITY.....	4.7	.3	.7	3.1	.5	3.4	1.3	2.5	2.2
BUILT-IN ELECTRIC UNITS.....	14.2	1.5	1.6	7.7	3.4	8.8	5.4	10.1	4.1
CENTRAL WARM-AIR FURNACE.....	5.5	1.1	1.0	1.7	1.7	3.4	2.1	3.5	2.0
HEAT PUMP.....	5.1	.2	.5	3.5	1.0	3.1	2.0	3.8	1.3
OTHER.....	2.7	.2	Q	2.0	.5	1.8	.9	2.2	.5
FUEL OIL.....	.9	Q	.1	.6	.2	.5	.4	.6	.3
STEAM OR HOT WATER SYSTEM... CENTRAL WARM-AIR FURNACE.....	11.3	7.8	1.6	1.5	.4	7.8	3.5	8.0	3.3
OTHER.....	6.7	6.0	.2	.4	Q	5.5	1.2	5.7	.9
WOOD.....	4.1	1.7	1.2	.9	.3	2.0	2.1	2.1	2.0
HEATING STOVE.....	.6	Q	.2	.3	Q	.3	.2	.2	.3
OTHER.....	5.4	1.1	1.2	2.2	.8	.9	4.5	1.1	4.3
LPG.....	4.6	1.0	.9	2.0	.7	.7	3.9	.9	3.7
CENTRAL WARM-AIR FURNACE.....	.8	.1	.3	.2	.1	.2	.6	1.2	.6
ROOM HEATER.....	3.7	.1	1.0	2.1	.4	.6	3.1	1.2	2.5
OTHER.....	1.9	Q	.6	1.0	.3	.4	1.5	.7	1.2
KEROSENE.....	1.2	Q	.2	.9	.1	.2	1.0	.3	.9
OTHER.....	.6	Q	.2	.3	.1	.1	.6	.2	.4
NONE.....	.8	.1	Q	.7	Q	.2	.6	.4	.4
	1.0	.2	.3	.4	Q	.5	.5	.6	.4
	.4	Q	Q	Q	.4	.2	.2	.2	.3
<b>SECONDARY HEATING FUEL AND HEATING EQUIPMENT</b>									
WOOD.....	15.7	3.1	3.9	4.0	4.8	9.7	5.9	11.0	4.7
FIREPLACE.....	12.2	2.2	2.6	3.3	4.2	8.5	3.7	9.5	2.7
HEATING STOVE.....	3.4	.8	1.3	.7	.5	1.2	2.2	1.5	2.0
OTHER.....	Q	Q	Q	Q	Q	Q	Q	Q	Q
ELECTRICITY.....	9.0	1.9	1.7	3.4	2.0	5.8	3.2	5.6	3.4
PORTABLE HEATER.....	5.8	1.5	.9	2.3	1.2	4.2	1.6	3.9	1.9
BUILT-IN ELECTRIC UNITS.....	2.6	.4	.7	.8	.7	1.4	1.2	1.4	1.1
HEAT PUMP.....	.3	Q	.1	.1	Q	.1	.2	.2	.1
OTHER.....	.4	.1	Q	.2	.1	.1	.2	.2	.2
NATURAL GAS.....	2.8	.2	.8	1.2	.5	2.1	.7	2.0	.9
ROOM HEATER.....	1.3	.1	.3	.8	.1	1.0	.3	.8	.5
OTHER.....	1.6	.1	.5	.4	.5	1.2	.4	1.2	.4
FUEL OIL.....	1.6	.7	.4	.4	Q	.6	.9	.7	.9
CENTRAL WARM-AIR FURNACE OR STEAM OR HOT WATER SYSTEM.....	1.3	.7	.3	.3	Q	.6	.7	.6	.7
OTHER.....	.3	.1	.1	.1	Q	.1	.2	.1	.2
KEROSENE.....	1.1	.6	.3	.2	.1	.4	.7	.7	.4
PORTABLE HEATER.....	.6	.3	.2	.1	Q	.3	.3	.4	.2
ROOM HEATER/OTHER.....	.5	.3	.1	.1	Q	.2	.4	.3	.2
LPG.....	.8	.1	.3	.3	Q	.1	.7	.2	.6
OTHER.....	.4	.2	Q	.1	.1	.2	.2	.3	.1
NONE.....	51.7	11.1	13.8	18.0	8.8	38.2	13.5	36.1	15.6

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Census Region, Area Type, and SMSA/Non-SMSA

Table 9. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
<b>FUEL COMBINATIONS</b>									
USE NATURAL GAS FOR HEATING... AND HAVE A/C.....	46.2	7.0	15.4	13.0	10.8	38.3	8.0	35.2	11.1
NATURAL GAS FOR HOT WATER AND NO A/C.....	25.1	3.7	9.0	8.8	3.5	21.0	4.1	19.7	5.4
NATURAL GAS FOR HOT WATER AND NO A/C.....	17.0	3.0	5.1	2.2	6.7	14.2	2.8	13.2	3.8
ELECTRICITY FOR HOT WATER AND HAVE A/C.....	2.6	.1	.8	1.6	.1	1.9	.7	1.5	1.1
ELECTRICITY FOR HOT WATER AND NO A/C.....	1.4	.1	.5	.4	.4	1.0	.4	.7	.8
OTHER.....	.1	.1	Q	Q	Q	.1	Q	.1	Q
USE ELECTRICITY FOR HEATING... AND HAVE A/C.....	14.2	1.5	1.6	7.7	3.4	8.8	5.4	10.1	4.1
ELECTRICITY FOR HOT WATER AND NO A/C.....	9.5	.8	1.2	6.3	1.1	5.7	3.7	6.8	2.6
ELECTRICITY FOR HOT WATER AND NO A/C.....	3.2	.6	.2	.7	1.7	1.7	1.6	1.8	1.4
OTHER.....	1.5	.1	.1	.7	.6	1.4	.1	1.4	1.1
USE FUEL OIL FOR MAIN HEAT... AND HAVE A/C.....	11.3	7.8	1.6	1.5	.4	7.8	3.5	8.0	3.3
FUEL OIL FOR HOT WATER AND NO A/C.....	2.9	2.6	Q	.2	Q	2.5	.4	2.6	.3
FUEL OIL FOR HOT WATER AND NO A/C.....	2.8	2.7	Q	Q	Q	2.2	.5	2.4	.4
ELECTRICITY FOR HOT WATER AND HAVE A/C.....	1.8	.5	.6	.7	.1	.8	1.0	.8	1.0
ELECTRICITY FOR HOT WATER AND NO A/C.....	2.2	.8	.8	.3	.3	.9	1.3	.9	1.3
OTHER.....	1.6	1.1	.2	.2	Q	1.3	.3	1.3	.3
USE WOOD FOR MAIN HEAT.....	5.4	1.1	1.2	2.2	.8	.9	4.5	1.1	4.3
USE LPG FOR MAIN HEAT.....	3.7	.1	1.0	2.1	.4	.6	3.1	1.2	2.5
USE KEROSENE FOR MAIN HEAT.....	.8	.1	Q	.7	Q	.2	.6	.4	.4
USE COAL FOR MAIN HEAT.....	.7	.2	.2	.3	Q	.4	.3	.4	.3
NO HEATING FUEL.....	.4	Q	Q	Q	.4	.2	.2	.2	.3
OTHER FUEL.....	.3	.1	.1	.2	Q	.1	.3	.2	.2
<b>WATER HEATING FUEL</b>									
NATURAL GAS.....	45.6	8.0	14.5	11.9	11.2	38.4	7.1	35.9	9.6
ELECTRICITY.....	27.1	3.6	5.2	13.9	4.3	13.2	13.9	14.2	12.9
FUEL OIL OR KEROSENE.....	6.1	5.7	.1	.3	Q	4.9	1.2	5.2	.9
LIQUID PETROLEUM GAS.....	3.4	.4	1.2	1.3	.5	.4	3.0	.9	2.6
WOOD.....	.3	.1	Q	.1	.1	Q	.3	Q	.3
COAL.....	.3	.1	.2	.1	Q	.3	Q	.3	Q
SOLAR.....	.1	Q	Q	Q	.1	Q	.1	Q	.1
NONE.....	.2	Q	.1	.1	Q	Q	.1	Q	.2
<b>MAIN COOKING FUEL</b>									
ELECTRICITY.....	45.4	7.9	11.0	16.9	9.7	28.3	17.2	29.2	16.3
NATURAL GAS.....	32.2	9.0	8.8	8.2	6.2	28.0	4.2	25.9	6.3
LIQUID PETROLEUM GAS.....	5.1	1.0	1.3	2.4	.4	.9	4.2	1.4	3.8
WOOD.....	.2	Q	Q	.1	Q	Q	.2	Q	.2
OTHER/NONE.....	.2	Q	.1	.1	Q	.1	.1	.1	.1
<b>CLOTHES DRYING FUEL</b>									
WITH CLOTHES DRYER.....	50.4	9.4	14.8	16.1	10.2	32.3	18.2	32.8	17.7
ELECTRICITY.....	37.5	6.1	10.2	13.9	7.3	21.7	15.8	22.5	15.0
NATURAL GAS.....	12.5	3.2	4.3	2.2	2.8	10.6	1.9	10.2	2.3
LPG.....	.5	.1	.2	.1	.1	Q	.5	.1	.4
WITHOUT CLOTHES DRYER.....	32.7	8.6	6.4	11.6	6.1	25.0	7.7	23.9	8.8
<b>AIR CONDITIONING (A/C)</b>									
CENTRAL A/C ONLY.....	22.0	1.7	5.5	11.6	3.2	15.8	6.1	17.1	4.9
INDIVIDUAL ROOM UNITS ONLY.....	26.0	7.0	7.3	9.4	2.3	18.6	7.4	17.5	8.5
CENTRAL A/C AND ROOM UNITS.....	.4	Q	.1	.2	.1	.3	.1	.3	Q
NO AIR CONDITIONING.....	34.7	9.2	8.4	6.5	10.7	22.5	12.2	21.7	13.1
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>									
ALL.....	30.7	3.2	7.8	16.1	3.6	21.9	8.8	22.5	8.2
SOME.....	17.7	5.5	5.1	5.1	1.9	12.9	4.8	12.4	5.2
NONE.....	34.7	9.2	8.4	6.5	10.7	22.5	12.2	21.7	13.1
<b>WOOD BURNED IN PAST 12 MONTHS</b>									
YES.....	22.8	4.9	5.5	6.5	5.9	11.6	11.1	13.4	9.3
LESS THAN 1/3 CORD.....	7.2	1.5	1.6	1.6	2.5	5.3	1.9	5.8	1.3
1/3 CORD OR MORE.....	15.6	3.5	3.9	4.8	3.4	6.4	9.2	7.6	8.0
NO.....	60.4	13.0	15.7	21.2	10.4	45.7	14.7	43.2	17.2

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Census Region, Area Type, and SMSA/Non-SMSA

Table 9. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
<b>MAIN FUEL IN NOVEMBER 1980</b>									
SAME FUEL AS IN NOV. 1981.....	80.2	17.2	20.6	26.9	15.5	55.5	24.7	54.9	25.3
DIFFERENT FUEL.....	1.9	.7	.4	.5	.2	1.3	.6	1.2	.6
<b>FUEL IN NOVEMBER 1980</b>									
FUEL OIL OR KEROSENE.....	1.1	.5	.2	.3	.1	.9	.2	.9	.2
NATURAL GAS.....	.3	Q	.1	.1	.1	.2	.1	.1	.1
LIQUID PETROLEUM GAS.....	.1	Q	.1	Q	Q	Q	.1	Q	.1
ELECTRICITY.....	.1	Q	Q	Q	Q	Q	.1	Q	.1
OTHER/NO FUEL.....	.2	.1	Q	Q	Q	.1	.1	.2	.1
NOT HEATED IN NOV. 1981.....	.4	Q	Q	Q	.4	.2	.2	.2	.3
BUILT IN 1981/1982.....	.7	.1	.2	.3	.1	.3	.4	.4	.3
<b>TOTAL SINGLE-FAMILY UNITS AND MOBILE HOMES.....</b>	<b>61.8</b>	<b>10.5</b>	<b>16.3</b>	<b>22.6</b>	<b>12.3</b>	<b>37.7</b>	<b>24.0</b>	<b>38.0</b>	<b>23.8</b>
<b>AVAILABILITY OF NATURAL GAS IN THE NEIGHBORHOOD (SINGLE-FAMILY UNITS AND MOBILE HOMES)</b>									
USES ANY NATURAL GAS.....	38.3	5.6	12.1	11.7	8.9	30.6	7.7	28.1	10.1
DOES NOT USE NATURAL GAS.....	23.5	5.0	4.2	10.9	3.4	7.2	16.4	9.9	13.6
GAS IS AVAILABLE.....	6.0	1.2	1.1	2.1	1.6	3.9	2.1	3.5	2.5
(PERCENT).....	25.4	24.1	25.0	19.7	46.3	54.7	12.6	35.3	18.2
GAS IS NOT AVAILABLE.....	17.5	3.8	3.2	8.8	1.8	3.2	14.3	6.4	11.1
(PERCENT).....	74.6	75.9	75.0	80.3	53.7	45.3	87.4	64.7	81.8
<b>TOTAL HOUSEHOLDS IN 2-OR-MORE UNIT BUILDINGS.....</b>	<b>21.4</b>	<b>7.4</b>	<b>4.9</b>	<b>5.1</b>	<b>4.0</b>	<b>19.5</b>	<b>1.8</b>	<b>18.6</b>	<b>2.8</b>
<b>CENTRAL MAIN HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>									
YES.....	8.9	5.0	2.2	1.1	.6	8.5	.4	7.9	1.0
NO/NO MAIN HEATING SYSTEM.....	12.5	2.3	2.7	4.0	3.4	11.1	1.4	10.7	1.7
<b>CENTRAL WATER HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>									
YES.....	11.4	5.3	2.8	1.7	1.6	10.8	.6	10.4	1.0
NO/NO WATER HEATING FUEL NO HOT RUNNING WATER.....	9.9	2.1	2.1	3.3	2.4	8.7	1.2	8.2	1.7
<b>CENTRAL AIR CONDITIONING SYSTEM FOR THE BUILDING (2-OR-MORE UNIT BUILDINGS)</b>									
YES.....	0.6	0.1	0.1	0.3	0.2	0.6	Q	0.6	Q
NO.....	11.5	3.6	2.6	3.9	1.4	10.5	1.0	10.4	1.1
NO AIR CONDITIONING.....	9.2	3.7	2.2	.9	2.4	8.5	.8	7.7	1.6

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.





# Fuel Use by Census Region, Area Type, and SMSA/Non-SMSA

**Table 10. Fuel Use by Census Region, Area Type, and SMSA/Non-SMSA, as of November 1981 (Percentage of Households)**

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
TOTAL HOUSEHOLDS .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>FUELS USED FOR ANY USE (MORE THAN ONE FUEL OFTEN USED)</b>									
ELECTRICITY.....	100.0	100.0	100.0	100.0	99.8	100.0	99.9	100.0	99.9
NATURAL GAS.....	64.2	63.3	75.8	51.3	72.3	78.6	32.4	73.7	44.1
WOOD.....	28.8	28.0	27.8	24.6	38.0	21.7	44.4	25.1	36.5
FUEL OIL.....	15.6	47.4	9.6	7.1	2.8	14.7	17.5	15.4	15.9
KEROSENE.....	2.4	4.1	1.3	3.2	.6	1.1	5.2	2.0	3.2
LPG.....	8.8	6.6	9.8	12.2	4.4	2.3	23.4	3.7	19.8
SOLAR COLLECTORS.....	.4	.3	.1	.1	1.5	.4	.5	.5	.4
<b>MAIN HEATING FUEL AND HEATING EQUIPMENT</b>									
NATURAL GAS.....	55.6	39.2	72.7	46.9	66.1	66.8	30.8	62.1	41.7
CENTRAL WARM-AIR FURNACE....	34.3	17.0	55.7	26.1	39.3	40.5	20.4	38.9	24.3
STEAM OR HOT WATER SYSTEM... FLOOR, WALL, OR PIPELESS FURNACE.....	8.7	20.0	10.9	2.8	3.1	11.3	2.7	10.6	4.6
ROOM HEATER.....	7.0	.4	2.9	6.6	20.5	9.0	2.6	8.2	4.6
ELECTRICITY.....	5.6	1.8	3.2	11.3	3.2	5.9	5.0	4.4	8.2
BUILT-IN ELECTRIC UNITS.....	17.1	8.6	7.5	27.8	20.8	15.4	20.9	17.8	15.6
CENTRAL WARM-AIR FURNACE....	6.6	6.4	4.6	6.1	10.4	5.9	8.3	6.2	7.6
HEAT PUMP.....	6.1	.8	2.3	12.5	6.1	5.5	7.6	6.7	5.0
OTHER.....	3.3	1.1	.2	7.2	2.9	3.1	3.5	3.9	2.0
FUEL OIL.....	1.1	.2	.4	2.0	1.4	.9	1.5	1.1	1.1
STEAM OR HOT WATER SYSTEM... CENTRAL WARM-AIR FURNACE....	13.6	43.3	7.7	5.5	2.5	13.6	13.7	14.1	12.5
ROOM HEATER.....	8.0	33.6	1.1	1.4	.2	9.6	4.6	10.1	3.6
OTHER.....	4.9	9.5	5.6	3.1	2.1	3.5	8.1	3.6	7.7
WOOD.....	.7	.1	1.0	1.1	.2	.5	1.0	.4	1.3
HEATING STOVE.....	6.4	6.2	5.6	8.0	5.2	1.6	17.3	1.9	16.2
OTHER.....	5.5	5.6	4.1	7.1	4.4	1.2	15.0	1.5	14.0
LPG.....	1.0	.6	1.5	.9	.8	.3	2.3	.4	2.2
CENTRAL WARM-AIR FURNACE....	4.4	.6	4.8	7.7	2.6	1.1	11.8	2.0	9.6
ROOM HEATER.....	2.3	.1	2.8	3.7	1.7	.7	5.8	1.2	4.7
OTHER.....	1.4	.2	.9	3.1	.4	.3	3.8	.5	3.3
KEROSENE.....	.7	.2	1.2	.9	.4	.1	2.2	.4	1.6
OTHER.....	1.0	.8	.1	2.4	.1	.4	2.5	.8	1.6
NONE.....	1.2	1.4	1.5	1.6	.2	.8	2.1	1.0	1.7
	.5	Q	Q	.1	2.5	.3	.9	.3	1.0
<b>SECONDARY HEATING FUEL AND HEATING EQUIPMENT</b>									
WOOD.....	18.8	17.0	18.3	14.3	29.2	17.0	22.9	19.4	17.6
FIREPLACE.....	14.7	12.3	12.0	11.8	25.8	14.9	14.3	16.9	10.1
HEATING STOVE.....	4.1	4.7	6.3	2.6	3.4	2.1	8.5	2.6	7.5
OTHER.....	Q	Q	Q	Q	Q	Q	.1	Q	.1
ELECTRICITY.....	10.8	10.9	8.0	12.3	12.2	10.2	12.4	9.9	12.8
PORTABLE HEATER.....	7.0	8.3	4.1	8.2	7.1	7.4	6.0	6.8	7.3
BUILT-IN ELECTRIC UNITS.....	3.1	2.2	3.1	2.8	4.5	2.4	4.6	2.5	4.3
HEAT PUMP.....	.4	Q	.7	.5	.1	.2	.8	.3	.5
OTHER.....	.5	.3	.1	.8	.5	.2	.9	.3	.8
NATURAL GAS.....	3.4	1.3	3.9	4.5	3.3	3.7	2.7	3.5	3.3
ROOM HEATER.....	1.5	.6	1.5	2.9	.4	1.7	1.2	1.4	1.8
OTHER.....	1.9	.8	2.4	1.6	2.9	2.1	1.5	2.1	1.5
FUEL OIL.....	1.9	4.0	1.8	1.6	.2	1.1	3.7	1.2	3.3
CENTRAL WARM-AIR FURNACE OR STEAM OR HOT WATER SYSTEM.....	1.6	3.6	1.4	1.2	.2	1.0	2.9	1.1	2.6
OTHER.....	.3	.4	.4	.4	Q	.1	.8	.1	.7
KEROSENE.....	1.4	3.3	1.3	.8	.4	.8	2.7	1.3	1.6
PORTABLE HEATER.....	.7	1.6	.8	.4	.3	.5	1.3	.7	.8
ROOM HEATER/OTHER.....	.6	1.6	.5	.4	.1	.3	1.4	.6	.7
LPG.....	.9	.7	1.5	1.1	.2	.1	2.7	.4	2.2
OTHER.....	.5	1.0	.1	.3	.7	.4	.6	.5	.4
NONE.....	62.2	61.9	65.1	65.1	53.8	66.7	52.3	63.7	59.0

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Census Region, Area Type, and SMSA/Non-SMSA

Table 10. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
FUEL COMBINATIONS									
USE NATURAL GAS FOR HEATING... NATURAL GAS FOR HOT WATER AND HAVE A/C.....	55.6	39.2	72.7	46.9	66.1	66.8	30.8	62.1	41.7
NATURAL GAS FOR HOT WATER AND NO A/C.....	30.1	20.8	42.4	31.9	21.6	36.6	15.7	34.8	20.2
ELECTRICITY FOR HOT WATER AND HAVE A/C.....	20.5	16.8	24.0	7.8	41.4	24.8	10.7	23.3	14.4
ELECTRICITY FOR HOT WATER AND NO A/C.....	3.1	.6	3.8	5.6	.7	3.4	2.5	2.6	4.1
OTHER.....	1.7	.7	2.5	1.5	2.3	1.8	1.7	1.2	2.9
USE ELECTRICITY FOR HEATING... ELECTRICITY FOR HOT WATER AND HAVE A/C.....	.2	.4	.1	.1	.1	.2	.2	.2	.1
ELECTRICITY FOR HOT WATER AND NO A/C.....	17.1	8.6	7.5	27.8	20.8	15.4	20.9	17.8	15.6
USE FUEL OIL FOR MAIN HEAT... FUEL OIL FOR HOT WATER AND HAVE A/C.....	11.4	4.6	5.8	22.8	6.6	10.0	14.4	12.1	9.9
FUEL OIL FOR HOT WATER AND NO A/C.....	3.9	3.3	1.1	2.6	10.4	2.9	6.0	3.3	5.2
OTHER.....	1.8	.7	.7	2.4	3.7	2.5	.4	2.5	.5
USE FUEL OIL FOR MAIN HEAT... FUEL OIL FOR HOT WATER AND NO A/C.....	13.6	43.3	7.7	5.5	2.5	13.6	13.7	14.1	12.5
ELECTRICITY FOR HOT WATER AND HAVE A/C.....	3.5	14.4	.2	.9	Q	4.3	1.6	4.6	1.1
ELECTRICITY FOR HOT WATER AND NO A/C.....	3.3	15.1	Q	.1	.1	3.9	2.0	4.2	1.5
OTHER.....	2.2	2.8	2.7	2.5	.4	1.5	3.8	1.5	3.8
USE WOOD FOR MAIN HEAT.....	2.6	4.6	3.6	1.1	1.9	1.5	5.1	1.5	5.0
USE LPG FOR MAIN HEAT.....	2.0	6.3	1.1	.9	Q	2.4	1.1	2.3	1.2
USE KEROSENE FOR MAIN HEAT.....	6.4	6.2	5.6	8.0	5.2	1.6	17.3	1.9	16.2
USE COAL FOR MAIN HEAT.....	4.4	.6	4.8	7.7	2.6	1.1	11.8	2.0	9.6
OTHER HEATING FUEL.....	1.0	.8	.1	2.4	.1	.4	2.5	.8	1.6
OTHER FUEL.....	.8	.9	1.1	.9	.1	.7	1.0	.7	1.0
	.5	Q	Q	.1	2.5	.3	.9	.3	1.0
	.4	.5	.3	.6	.1	.1	1.1	.3	.7

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Census Region, Area Type, and SMSA/Non-SMSA

Table 10. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
<b>WATER HEATING FUEL</b>									
NATURAL GAS.....	54.8	44.9	68.1	42.9	68.8	67.1	27.6	63.5	36.3
ELECTRICITY.....	32.6	20.3	24.5	50.2	26.6	23.0	53.7	25.1	48.5
FUEL OIL OR KEROSENE.....	7.4	31.9	.4	1.0	.2	8.6	4.5	9.3	3.3
LIQUID PETROLEUM GAS.....	4.1	2.3	5.4	4.9	3.2	.6	11.8	1.5	9.7
WOOD.....	.4	.5	.2	.5	.5	Q	1.3	Q	1.2
COAL.....	.4	.3	1.1	.2	Q	.5	.1	.6	Q
SOLAR.....	.2	Q	Q	.1	.7	.1	.4	.1	.3
NONE.....	.2	Q	.3	.3	Q	Q	.6	Q	.6
<b>MAIN COOKING FUEL</b>									
ELECTRICITY.....	54.7	44.0	51.8	61.0	59.5	49.4	66.4	51.5	61.3
NATURAL GAS.....	38.7	50.2	41.6	29.6	37.8	48.9	16.2	45.8	23.6
LIQUID PETROLEUM GAS.....	6.2	5.5	6.1	8.8	2.5	1.6	16.3	2.4	14.2
WOOD.....	.2	.1	Q	.4	.2	Q	.6	Q	.6
OTHER/NONE.....	.2	.2	.5	.2	.1	.2	.4	.2	.3
<b>CLOTHES DRYING FUEL</b>									
<b>WITH CLOTHES DRYER.....</b>									
ELECTRICITY.....	60.7	52.3	69.7	58.1	62.5	56.4	70.2	57.9	66.7
NATURAL GAS.....	45.1	34.0	48.3	50.0	44.9	37.9	61.1	39.8	56.5
LPG.....	15.1	17.9	20.4	7.9	17.3	18.5	7.4	18.1	8.7
WITHOUT CLOTHES DRYER.....	.6	.6	1.1	.3	.7	.1	1.9	.2	1.6
OTHER/NONE.....	39.3	47.7	30.3	41.9	37.5	43.6	29.8	42.1	33.3
<b>AIR CONDITIONING (A/C)</b>									
CENTRAL A/C ONLY.....	26.4	9.5	25.7	42.0	19.7	27.7	23.8	30.2	18.5
INDIVIDUAL ROOM UNITS ONLY.....	31.3	39.3	34.3	34.0	14.1	32.5	28.7	31.0	32.0
CENTRAL A/C AND ROOM UNITS.....	.5	.1	.6	.6	.3	.6	.2	.6	.2
NO AIR CONDITIONING.....	41.8	51.1	39.4	23.4	65.9	39.3	47.4	38.3	49.3
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>									
ALL.....	36.9	18.0	36.8	58.0	22.2	38.2	34.2	39.7	31.0
SOME.....	21.3	30.8	23.8	18.6	11.9	22.5	18.5	22.0	19.8
NONE.....	41.8	51.2	39.4	23.4	65.9	39.3	47.3	38.3	49.3
<b>WOOD BURNED IN PAST 12 MONTHS</b>									
YES.....	27.4	27.5	26.0	23.3	35.9	20.3	43.1	23.7	35.2
LESS THAN 1/3 CORD.....	8.6	8.1	7.6	5.8	15.2	9.2	7.3	10.3	4.9
1/3 CORD OR MORE.....	18.8	19.4	18.4	17.5	20.8	11.1	35.8	13.4	30.3
NO.....	72.6	72.5	74.0	76.7	64.1	79.7	56.9	76.3	64.8

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Census Region, Area Type, and SMSA/Non-SMSA

Table 10. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
<b>MAIN FUEL IN NOVEMBER 1980</b>									
SAME FUEL AS IN NOV. 1981.....	96.5	95.8	96.9	97.2	95.4	96.9	95.5	96.9	95.4
DIFFERENT FUEL.....	2.2	3.9	2.0	1.8	1.5	2.3	2.1	2.2	2.4
<b>FUEL IN NOVEMBER 1980</b>									
FUEL OIL OR KEROSENE.....	1.3	2.7	1.1	1.1	.3	1.6	.6	1.5	.8
NATURAL GAS.....	.3	.1	.3	.3	.6	.3	.4	.2	.5
LIQUID PETROLEUM GAS.....	.2	.2	.3	.1	.1	.1	.4	.1	.4
ELECTRICITY.....	.2	.2	.1	.1	.2	.1	.4	.1	.4
OTHER/NO FUEL.....	.3	.6	.2	.2	.3	.3	.4	.3	.3
NOT HEATED IN NOV. 1981.....	.5	Q	Q	.1	2.5	.3	.9	.3	1.0
BUILT IN 1981/1982.....	.8	.3	1.1	1.0	.6	.5	1.5	.6	1.2
<b>TOTAL SINGLE-FAMILY UNITS AND MOBILE HOMES.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>AVAILABILITY OF NATURAL GAS IN THE NEIGHBORHOOD (SINGLE-FAMILY UNITS AND MOBILE HOMES)</b>									
USES ANY NATURAL GAS.....	61.9	52.8	74.3	51.6	72.3	81.0	31.9	74.0	42.7
DOES NOT USE NATURAL GAS.....	38.1	47.2	25.7	48.4	27.7	19.0	68.1	26.0	57.3
GAS IS AVAILABLE.....	9.7	11.4	6.4	9.5	12.8	10.4	8.6	9.2	10.5
GAS IS NOT AVAILABLE.....	28.4	35.8	19.3	38.9	14.9	8.6	59.5	16.8	46.9
<b>TOTAL HOUSEHOLDS IN 2-OR-MORE UNIT BUILDINGS.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>CENTRAL MAIN HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>									
YES.....	41.5	68.2	44.8	21.5	13.8	43.4	21.9	42.3	36.7
NO/NO MAIN HEATING SYSTEM.....	58.5	31.8	55.2	78.5	86.2	56.6	78.1	57.7	63.3
<b>CENTRAL WATER HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>									
YES.....	53.5	71.7	56.3	34.3	40.7	55.5	31.7	55.9	37.1
NO/NO WATER HEATING FUEL NO HOT RUNNING WATER.....	46.5	28.3	43.7	65.7	59.3	44.5	68.3	44.1	62.9
<b>CENTRAL AIR CONDITIONING SYSTEM FOR THE BUILDING (2-OR-MORE UNIT BUILDINGS)</b>									
YES.....	3.0	1.3	1.5	6.0	3.9	3.1	1.0	3.1	1.8
NO.....	53.8	48.2	54.1	76.4	35.2	53.6	56.2	55.7	41.3
NO AIR CONDITIONING.....	43.2	50.5	44.5	17.6	60.9	43.3	42.7	41.2	56.9

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



**Table 11. Fuel Use by Housing Structure and Ownership, as of November 1981**  
(Million Households)

# Fuel Use by Housing Structure and Ownership

HOUSEHOLD CHARACTERISTICS	TOTAL	HOUSING STRUCTURE BY OWNERSHIP														
		SINGLE-FAMILY DETACHED			SINGLE-FAMILY ATTACHED			BUILDING WITH 2 TO 4 UNITS			BUILDING WITH 5 OR MORE UNITS			MOBILE HOME		
		TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT
TOTAL HOUSEHOLDS	83.1	54.6	46.4	8.2	3.0	2.1	0.9	9.3	2.1	7.2	12.0	1.0	11.0	4.2	3.6	0.6
<b>FUELS USED FOR ANY USE (MORE THAN ONE FUEL OFTEN USED)</b>																
ELECTRICITY	83.1	54.6	46.3	8.2	3.0	2.1	.9	9.3	2.1	7.2	12.0	1.0	11.0	4.2	3.6	.6
NATURAL GAS	53.4	34.8	29.8	5.0	2.1	1.5	.6	7.3	1.8	5.5	7.8	.5	7.3	1.3	1.1	.2
WOOD	23.9	22.0	19.6	2.4	.7	.5	.2	.6	.3	.2	.2	Q	.1	.5	.4	Q
FUEL OIL	13.0	7.6	6.8	.8	.6	.4	.2	1.7	.5	1.2	2.6	.2	2.4	.5	.4	.1
KEROSENE	2.8	1.5	1.2	.3	.1	.1	Q	.1	Q	.1	Q	Q	Q	.2	.1	.1
LPG	7.3	5.4	4.1	1.2	Q	Q	Q	.2	.1	.1	Q	Q	Q	1.8	1.6	.2
SOLAR COLLECTORS	.4	.3	.3	Q	Q	Q	Q	Q	Q	Q	.1	Q	.1	Q	Q	Q
<b>MAIN HEATING FUEL</b>																
NATURAL GAS	46.2	32.5	27.8	4.7	1.7	1.3	.5	5.6	1.5	4.2	5.1	.3	4.7	1.3	1.1	.2
ELECTRICITY	14.2	6.6	5.6	1.0	.7	.4	.2	1.8	.1	1.7	4.3	.5	3.8	.8	.7	.1
FUEL OIL	11.3	6.4	5.9	.6	.5	.3	.2	1.7	.4	1.2	2.3	.1	2.1	.4	.4	.1
WOOD	5.4	5.0	4.0	.9	Q	Q	Q	.1	Q	Q	Q	Q	Q	.3	.3	Q
LPG	3.7	2.6	1.9	.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	1.1	1.0	.1
KEROSENE	.8	.6	.5	.1	Q	Q	Q	Q	Q	Q	Q	Q	Q	.2	.1	.1
OTHER	1.0	.6	.5	.1	.1	.1	Q	.1	Q	Q	.3	Q	.3	Q	Q	Q
NONE	.4	.3	.2	.1	Q	Q	Q	Q	Q	Q	.1	Q	.1	Q	Q	Q
<b>SECONDARY HEATING FUEL</b>																
WOOD	15.7	14.5	13.3	1.2	.6	.4	.2	.3	.1	.2	.2	Q	.1	.1	.1	Q
ELECTRICITY	9.0	6.9	5.9	.9	.2	.2	Q	.9	.3	.7	.6	Q	.5	.5	.4	Q
NATURAL GAS	2.8	2.4	2.1	.3	Q	Q	Q	.2	Q	.2	.2	Q	.2	.1	.1	Q
FUEL OIL	1.6	1.1	.9	.2	Q	Q	Q	.1	.1	Q	.3	Q	.3	.1	.1	Q
KEROSENE	1.1	.9	.8	.1	.1	.1	Q	.1	Q	.1	Q	Q	Q	Q	Q	Q
LPG	.8	.7	.5	.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	.1	.1	Q
OTHER	.4	.3	.3	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
NONE	51.7	27.8	22.6	5.2	2.1	1.4	.7	7.7	1.6	6.1	10.8	.9	9.9	3.4	2.8	.6
<b>FUEL COMBINATIONS</b>																
USE NATURAL GAS FOR HEATING... AND HAVE A/C	46.2	32.5	27.8	4.7	1.7	1.3	0.5	5.6	1.5	4.2	5.1	0.3	4.7	1.3	1.1	0.2
NATURAL GAS FOR HOT WATER AND NO A/C	25.1	18.4	16.5	1.8	.9	.8	.1	2.2	.9	1.3	3.0	.2	2.7	.6	.5	.1
ELECTRICITY FOR HOT WATER AND HAVE A/C	17.0	10.9	8.6	2.3	.8	.5	.3	3.0	.5	2.5	1.9	.1	1.8	.4	.4	.1
ELECTRICITY FOR HOT WATER AND NO A/C	2.6	2.1	1.8	.3	Q	Q	Q	.2	.1	.2	.1	Q	.1	.2	.1	Q
OTHER	1.4	1.1	.8	.3	Q	Q	Q	.2	Q	.2	Q	Q	Q	Q	Q	Q
USE ELECTRICITY FOR HEATING... AND HAVE A/C	14.2	6.6	5.6	1.0	.7	.4	.2	1.8	.1	1.7	4.3	.5	3.8	.8	.7	.1
ELECTRICITY FOR HOT WATER AND NO A/C	9.5	4.6	4.0	.6	.5	.3	.2	1.1	Q	1.0	2.9	.4	2.5	.4	.4	.1
OTHER	3.2	1.6	1.3	.4	.1	Q	.1	.3	Q	.3	.8	.1	.7	.4	.3	Q
USE FUEL OIL FOR MAIN HEAT... AND HAVE A/C	11.3	6.4	5.9	.6	.5	.3	.2	1.7	.4	1.2	2.3	.1	2.1	.4	.4	.1
FUEL OIL FOR HOT WATER AND NO A/C	2.9	1.3	1.2	.1	.1	.1	Q	.4	.1	.3	1.0	.1	.9	Q	Q	Q
ELECTRICITY FOR HOT WATER AND HAVE A/C	2.8	.9	.8	.1	.1	.1	.1	.7	.1	.5	1.1	Q	1.1	Q	Q	Q
ELECTRICITY FOR HOT WATER AND NO A/C	1.8	1.4	1.3	.1	Q	Q	Q	.1	Q	.1	Q	Q	Q	.2	.2	Q
OTHER	2.2	1.9	1.6	.3	.1	Q	Q	.1	Q	Q	Q	Q	Q	.2	.1	Q
USE WOOD FOR MAIN HEAT	1.6	1.0	.9	.1	.2	.1	.1	.3	.1	.2	.1	Q	.1	Q	Q	Q
USE LPG FOR MAIN HEAT	5.4	5.0	4.0	.9	Q	Q	Q	.1	.1	Q	Q	Q	Q	.3	.3	Q
USE KEROSENE FOR MAIN HEAT	3.7	2.6	1.9	.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	1.1	1.0	.1
USE COAL FOR MAIN HEAT	.8	.6	.5	.1	Q	Q	Q	Q	Q	Q	Q	Q	Q	.2	.1	.1
NO HEATING FUEL	.7	.3	.2	.1	.1	.1	Q	Q	Q	Q	.3	Q	.3	Q	Q	Q
OTHER FUEL	.4	.3	.2	.1	Q	Q	Q	Q	Q	Q	.1	Q	.1	Q	Q	Q
WATER HEATING FUEL	.3	.3	.3	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
NATURAL GAS	45.6	30.9	26.6	4.3	2.0	1.5	.5	6.0	1.5	4.4	5.7	.3	5.3	1.1	.9	.2
FUEL OIL OR KEROSENE	27.1	17.8	14.8	3.0	.8	.5	.3	2.2	.3	1.9	3.9	.5	3.3	2.5	2.1	.4
LIQUID PETROLEUM GAS	6.1	2.5	2.4	.1	.3	.1	.1	1.1	.2	.9	2.2	.2	2.1	Q	Q	Q
OTHER/NONE	3.4	2.8	2.2	.6	Q	Q	Q	.1	Q	Q	Q	Q	Q	.6	.5	.1
	1.0	.6	.4	.2	Q	Q	Q	Q	Q	Q	.3	Q	.3	Q	Q	Q

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Housing Structure and Ownership

Table 11. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	HOUSING STRUCTURE BY OWNERSHIP														
		SINGLE-FAMILY DETACHED			SINGLE-FAMILY ATTACHED			BUILDING WITH 2 TO 4 UNITS			BUILDING WITH 5 OR MORE UNITS			MOBILE HOME		
		TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT
<b>MAIN COOKING FUEL</b>																
ELECTRICITY.....	45.4	31.7	27.7	4.0	1.3	0.9	0.4	3.9	0.6	3.2	7.0	0.7	6.3	1.6	1.4	0.2
NATURAL GAS.....	32.2	19.2	15.8	3.4	1.7	1.2	.5	5.3	1.4	3.9	5.0	.3	4.7	1.0	.9	.2
OTHER/NONE.....	5.5	3.7	2.8	.9	Q	Q	Q	.2	.1	.1	Q	Q	Q	1.5	1.3	.2
<b>CLOTHES DRYING FUEL</b>																
WITH CLOTHES DRYER.....																
ELECTRICITY.....	50.4	41.8	37.8	4.1	2.0	1.5	.5	2.6	1.0	1.7	1.7	.6	1.1	2.3	2.1	.2
NATURAL GAS.....	37.5	30.8	27.4	3.4	1.3	.9	.4	1.9	.7	1.2	1.4	.5	.9	2.2	2.0	.2
LPG.....	12.5	10.7	10.1	.6	.7	.6	.1	.8	.3	.5	.3	.1	.2	.1	.1	Q
WITHOUT CLOTHES DRYER.....	.5	.5	.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	.1	.1	Q
<b>AIR CONDITIONING (A/C)</b>																
CENTRAL A/C ONLY.....																
INDIVIDUAL ROOM UNITS ONLY.....	22.0	14.5	13.4	1.1	1.0	.8	.3	1.5	.4	1.1	3.8	.6	3.3	1.1	1.0	.1
CENTRAL A/C AND ROOM UNITS.....	26.0	17.1	14.8	2.3	.8	.7	.1	2.9	.9	2.0	3.9	.2	3.6	1.4	1.1	.3
NO AIR CONDITIONING.....	.4	.3	.3	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>																
ALL.....	30.7	20.0	18.1	1.8	1.1	.8	.3	2.5	.6	1.9	5.3	.6	4.7	1.9	1.6	.2
SOME.....	17.7	11.9	10.4	1.6	.7	.6	.1	2.0	.7	1.3	2.4	.2	2.2	.7	.5	.2
NONE.....	34.7	22.7	17.9	4.8	1.2	.6	.5	4.9	.8	4.1	4.4	.2	4.1	1.7	1.5	.2
<b>WOOD BURNED IN PAST 12 MONTHS</b>																
YES.....	22.8	21.0	18.7	2.3	.6	.5	.1	.5	.3	.2	.1	Q	.1	.5	.4	Q
LESS THAN 1/3 CORD.....	7.2	6.3	5.4	.8	.4	.3	.1	.3	.2	.1	.1	Q	Q	.1	.1	Q
1/3 CORD OR MORE.....	15.6	14.8	13.3	1.5	.2	.2	.1	.2	.2	.1	Q	Q	Q	.3	.3	Q
NO.....	60.4	33.6	27.6	5.9	2.4	1.6	.8	6.8	1.8	7.0	11.9	1.0	10.9	3.7	3.2	.6
<b>MAIN FUEL IN NOVEMBER 1980</b>																
SAME FUEL AS IN NOV. 1981.....																
DIFFERENT FUEL.....	80.2	52.8	44.9	7.9	2.9	2.0	.9	9.0	2.0	7.0	11.6	1.0	10.6	3.9	3.4	.6
NOT HEATED IN NOV. 1981.....	1.9	1.1	1.0	.1	.1	.1	Q	.3	.1	.2	.2	Q	.2	.1	.1	Q
BUILT IN 1981/1982.....	.4	.3	.2	.1	Q	Q	Q	Q	Q	Q	.1	Q	.1	Q	Q	Q
<b>AVAILABILITY OF NATURAL GAS IN THE NEIGHBORHOOD</b>																
USES ANY NATURAL GAS.....	53.4	34.8	29.8	5.0	2.1	1.5	0.6	7.3	1.8	5.5	7.8	0.5	7.3	1.3	1.1	0.2
DOES NOT USE NATURAL GAS.....	29.7	19.8	16.5	3.2	.9	.6	.3	2.0	.3	1.7	4.2	.5	3.7	2.9	2.5	.4
GAS IS AVAILABLE.....	9.9	4.9	4.0	.8	.5	.3	.2	1.3	.1	1.2	2.6	.1	2.5	.6	.5	.1
(PERCENT).....	33.3	24.6	24.5	25.6	57.4	53.8	64.0	64.4	39.0	68.6	62.3	22.4	68.0	21.0	20.5	24.5
GAS IS NOT AVAILABLE.....	19.8	14.9	12.5	2.4	.4	.3	.1	.7	.2	.5	1.6	.4	1.2	2.3	2.0	.3
(PERCENT).....	66.7	75.4	75.5	74.4	42.6	46.2	36.0	35.6	61.0	31.4	37.7	77.6	32.0	79.0	79.5	75.5
<b>TOTAL HOUSEHOLDS IN 2-OR-MORE UNIT BUILDINGS.....</b>																
21.4																
<b>CENTRAL MAIN HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>																
YES.....																
NO/NO MAIN HEATING SYSTEM.....	8.9	-	-	-	-	-	-	3.2	.8	2.3	5.7	.3	5.4	-	-	-
12.5																
<b>CENTRAL WATER HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>																
YES.....																
NO/NO WATER HEATING FUEL	11.4	-	-	-	-	-	-	3.7	.9	2.8	7.7	.3	7.4	-	-	-
NO HOT RUNNING WATER.....	9.9	-	-	-	-	-	-	5.6	1.2	4.4	4.3	.7	3.7	-	-	-
<b>CENTRAL AIR CONDITIONING SYSTEM FOR THE BUILDING (2-OR-MORE UNIT BUILDINGS)</b>																
YES.....																
NO.....	.6	-	-	-	-	-	-	.1	Q	Q	.6	Q	.5	-	-	-
NO AIR CONDITIONING.....	11.5	-	-	-	-	-	-	4.4	1.2	3.1	7.1	.7	6.4	-	-	-
9.2																

"-" = DATA NOT APPLICABLE.  
 "Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.  
 NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



**Table 12. Fuel Use by Housing Structure and Ownership, as of November 1981**  
(Percentage of Households)

# Fuel Use by Housing Structure and Ownership

HOUSEHOLD CHARACTERISTICS	HOUSING STRUCTURE BY OWNERSHIP															
	TOTAL	SINGLE-FAMILY DETACHED			SINGLE-FAMILY ATTACHED			BUILDING WITH 2 TO 4 UNITS			BUILDING WITH 5 OR MORE UNITS			MOBILE HOME		
		TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT
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	100.0	100.0	100.0
<b>FUELS USED FOR ANY USE (MORE THAN ONE FUEL OFTEN USED)</b>																
ELECTRICITY	100.0	100.0	100.0	100.0	99.8	100.0	99.4	100.0	100.0	100.0	100.0	100.0	100.0	99.7	100.0	98.1
NATURAL GAS	64.2	63.8	64.3	60.9	70.8	72.8	66.3	78.5	86.2	76.2	65.1	67.9	66.7	31.4	30.9	34.8
WOOD	28.8	40.4	42.2	29.8	22.4	24.5	17.7	6.2	15.9	3.3	1.4	3.1	1.2	11.2	12.1	5.5
FUEL OIL	15.6	13.9	14.7	9.7	18.7	17.7	21.1	18.2	22.8	16.9	21.6	15.2	22.2	11.3	11.5	10.1
KEROSENE	2.4	2.8	2.7	3.6	3.4	5.0	Q	1.3	1.4	1.3	Q	Q	Q	5.5	3.8	15.4
LPG	8.8	9.9	8.9	15.1	.8	1.0	.6	1.8	2.7	1.6	.1	Q	.2	41.7	43.4	32.2
SOLAR COLLECTORS	.4	.5	.6	Q	Q	Q	Q	Q	Q	Q	.5	Q	.6	.1	.2	Q
<b>MAIN HEATING FUEL</b>																
NATURAL GAS	55.6	59.5	59.9	57.4	57.8	60.4	52.1	60.5	69.8	57.8	42.2	34.4	42.9	30.4	30.0	32.9
ELECTRICITY	17.1	12.1	12.1	12.2	21.9	20.3	25.6	19.2	4.5	23.4	35.8	52.1	34.4	20.1	20.3	18.6
FUEL OIL	13.6	11.8	12.6	7.0	17.8	16.4	21.1	17.7	21.0	16.8	18.9	13.5	19.4	10.3	10.3	10.1
WOOD	6.4	9.1	8.7	11.1	.7	.5	1.2	.9	3.4	.1	Q	Q	Q	7.3	7.6	5.5
LPG	4.4	4.7	4.2	7.6	Q	Q	Q	.5	Q	.6	Q	Q	Q	26.1	27.5	17.4
KEROSENE	1.0	1.1	1.0	1.7	Q	Q	Q	.3	Q	.3	Q	Q	Q	5.2	3.5	15.4
OTHER	1.2	1.1	1.1	1.2	1.7	2.4	Q	.6	1.3	.4	2.3	Q	2.5	.7	.8	Q
NONE	.5	.5	.3	1.7	Q	Q	Q	.4	Q	.5	.8	Q	.9	Q	Q	Q
<b>SECONDARY HEATING FUEL</b>																
WOOD	18.8	26.5	28.6	14.5	18.8	19.9	16.5	3.4	6.8	2.4	1.4	3.1	1.2	3.5	4.0	Q
ELECTRICITY	10.8	12.6	12.8	11.4	6.6	7.5	4.5	10.1	12.2	9.4	4.6	3.4	4.7	10.9	11.5	7.1
NATURAL GAS	3.4	4.3	4.4	3.7	1.2	Q	3.9	1.8	.7	2.2	1.5	Q	1.7	1.8	2.1	Q
FUEL OIL	1.9	2.1	2.0	2.7	.9	1.3	Q	.6	2.7	Q	2.5	Q	2.7	1.5	1.7	Q
KEROSENE	1.4	1.7	1.7	1.8	3.4	5.0	Q	1.1	1.4	1.0	Q	Q	Q	.2	.3	Q
LPG	.9	1.3	1.1	2.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	2.0	2.0	2.2
OTHER	.5	.6	.6	.6	Q	Q	Q	.3	1.0	.1	.1	Q	.1	.3	.4	Q
NONE	62.2	50.8	48.7	63.0	69.1	66.4	75.1	82.7	75.2	84.9	90.0	93.5	89.6	79.8	78.0	90.7
<b>FUEL COMBINATIONS</b>																
USE NATURAL GAS FOR HEATING... AND HAVE A/C	55.6	59.5	59.9	57.4	57.8	60.4	52.1	60.5	69.8	57.8	42.2	34.4	42.9	30.4	30.0	32.9
NATURAL GAS FOR HOT WATER AND NO A/C	30.1	33.7	35.6	22.4	30.7	37.2	15.9	23.5	43.4	17.8	24.6	23.1	24.7	14.9	14.8	15.2
ELECTRICITY FOR HOT WATER AND HAVE A/C	20.5	19.9	18.6	27.5	25.3	22.4	31.7	32.2	22.1	35.0	16.1	9.6	16.6	10.3	10.2	11.2
ELECTRICITY FOR HOT WATER AND NO A/C	3.1	3.8	3.9	3.3	.9	.7	1.4	2.6	4.3	2.1	.5	Q	.5	3.8	3.8	3.9
OTHER	1.7	2.1	1.7	4.1	.9	Q	3.0	2.2	Q	2.8	.3	Q	.3	1.1	1.2	.7
USE ELECTRICITY FOR HEATING... AND HAVE A/C	.2	.1	Q	.1	Q	Q	Q	Q	Q	Q	.7	1.8	.7	.3	Q	1.8
ELECTRICITY FOR HEATING... AND NO A/C	17.1	12.1	12.1	12.2	21.9	20.3	25.6	19.2	4.5	23.4	35.8	52.1	34.4	20.1	20.3	18.6
FUEL OIL FOR MAIN HEAT... AND HAVE A/C	11.4	8.4	8.5	7.4	17.7	16.7	20.0	11.4	2.3	14.1	23.8	41.2	22.2	10.6	10.4	11.5
FUEL OIL FOR MAIN HEAT... AND NO A/C	3.9	3.0	2.7	4.3	2.5	1.1	5.6	3.7	.7	4.5	6.9	10.9	6.6	8.5	8.9	6.0
OTHER	1.8	.8	.9	.6	1.8	2.6	Q	4.1	1.5	4.8	5.1	Q	5.5	1.0	1.0	1.1
USE FUEL OIL FOR MAIN HEAT... AND HAVE A/C	13.6	11.8	12.6	7.0	17.8	16.4	21.1	17.7	21.0	16.8	18.9	13.5	19.4	10.3	10.3	10.1
FUEL OIL FOR MAIN HEAT... AND NO A/C	3.5	2.3	2.6	.6	4.0	4.2	3.4	4.6	4.3	4.6	8.7	12.2	8.4	.2	.2	Q
ELECTRICITY FOR MAIN HEAT... AND HAVE A/C	3.3	1.6	1.7	.9	4.4	3.0	7.7	7.3	6.3	7.5	8.9	1.2	9.6	.4	.5	Q
ELECTRICITY FOR MAIN HEAT... AND NO A/C	2.2	2.5	2.7	1.4	1.2	1.0	1.7	1.3	2.1	1.0	.4	Q	.4	5.9	5.8	6.7
OTHER	2.6	3.4	3.5	3.2	2.1	1.8	2.6	.9	1.8	.7	.2	Q	.2	3.7	3.8	3.4
USE WOOD FOR MAIN HEAT... AND HAVE A/C	2.0	1.9	2.0	.9	6.2	6.4	5.7	3.7	6.5	2.9	.7	Q	.7	Q	Q	Q
USE WOOD FOR MAIN HEAT... AND NO A/C	6.4	9.1	8.7	11.1	.7	.5	1.2	.9	3.4	.1	Q	Q	Q	7.3	7.6	5.5
USE LPG FOR MAIN HEAT... AND HAVE A/C	4.4	4.7	4.2	7.6	Q	Q	Q	.5	Q	.6	Q	Q	Q	26.1	27.5	17.4
USE LPG FOR MAIN HEAT... AND NO A/C	1.0	1.1	1.0	1.7	Q	Q	Q	.3	Q	.3	Q	Q	Q	5.2	3.5	15.4
USE KEROSENE FOR MAIN HEAT... AND HAVE A/C	.8	.6	.5	.7	1.7	2.4	Q	.3	Q	.4	2.3	Q	2.5	.3	.3	Q
USE KEROSENE FOR MAIN HEAT... AND NO A/C	.5	.5	.3	1.7	Q	Q	Q	.4	Q	.5	.8	Q	.9	Q	Q	Q
OTHER	.4	.6	.6	.5	Q	Q	Q	.3	1.3	Q	Q	Q	Q	.4	.5	Q
<b>WATER HEATING FUEL</b>																
NATURAL GAS	54.8	56.6	57.4	52.3	65.6	71.1	53.4	64.0	73.1	61.4	47.2	32.7	48.5	25.4	25.2	26.5
ELECTRICITY	32.6	32.5	31.9	36.3	25.8	21.7	35.0	23.2	13.9	25.9	32.2	52.1	30.4	59.6	59.2	61.6
FUEL OIL OR KEROSENE	7.4	4.6	5.1	1.7	8.4	7.2	11.1	11.9	10.7	12.3	18.4	15.2	18.7	.6	.7	Q
LIQUID PETROLEUM GAS	4.1	5.1	4.7	7.3	.2	Q	.6	.7	2.3	.3	Q	Q	Q	13.4	14.1	9.3
OTHER/NONE	1.2	1.2	1.0	2.3	Q	Q	Q	.2	Q	.2	2.3	Q	2.5	.8	.5	2.7

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Housing Structure and Ownership

Table 12. (Continued)

HOUSEHOLD CHARACTERISTICS	HOUSING STRUCTURE BY OWNERSHIP															
	TOTAL	SINGLE-FAMILY DETACHED			SINGLE-FAMILY ATTACHED			BUILDING WITH 2 TO 4 UNITS			BUILDING WITH 5 OR MORE UNITS			MOBILE HOME		
		TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT
<b>MAIN COOKING FUEL</b>																
ELECTRICITY.....	54.7	58.1	59.8	48.2	41.8	41.1	43.4	41.3	29.0	44.8	58.4	73.8	57.0	38.1	38.7	34.7
NATURAL GAS.....	38.7	35.1	34.1	41.0	57.3	57.9	56.1	56.7	67.3	53.6	41.3	26.2	42.7	25.0	23.8	32.2
OTHER/NONE.....	6.6	6.8	6.1	10.8	.8	1.0	.6	2.0	3.8	1.6	.2	q	.3	36.9	37.6	33.1
<b>CLOTHES DRYING FUEL</b>																
WITH CLOTHES DRYER.....	60.7	76.7	81.4	49.8	65.7	71.6	52.6	28.4	46.6	23.1	14.0	56.9	10.0	54.8	59.8	25.3
ELECTRICITY.....	45.1	56.4	59.1	41.4	43.4	45.0	39.6	20.2	32.2	16.7	11.5	45.1	8.4	51.7	56.3	24.7
NATURAL GAS.....	15.1	19.7	21.8	7.9	22.4	26.5	13.0	8.2	14.4	6.4	2.5	11.8	1.7	1.6	1.8	.6
LPG.....	.6	.9	.9	.5	q	q	q	q	q	q	q	q	q	1.4	1.6	q
WITHOUT CLOTHES DRYER.....	39.3	23.3	18.6	50.2	34.3	28.4	47.4	71.6	53.4	76.9	86.0	43.1	90.0	45.2	40.2	74.7
<b>AIR CONDITIONING (A/C)</b>																
CENTRAL A/C ONLY.....	26.4	26.6	29.0	12.9	34.6	37.3	28.4	16.1	18.0	15.6	31.7	54.9	29.5	27.0	29.0	15.4
INDIVIDUAL ROOM UNITS ONLY.....	31.3	31.3	31.8	28.2	26.1	31.5	24.1	31.6	43.1	28.3	32.0	21.6	33.0	32.9	29.7	52.0
CENTRAL A/C AND ROOM UNITS.....	.5	.6	.7	.3	.7	1.1	q	q	q	q	.1	q	.1	q	q	q
NO AIR CONDITIONING.....	41.8	41.5	38.5	58.6	38.6	30.1	57.5	52.3	38.9	56.2	36.2	23.4	37.3	40.1	41.4	32.6
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>																
ALL.....	36.9	36.6	39.1	22.2	37.6	40.4	31.2	26.5	28.7	25.9	44.1	59.1	42.7	44.1	44.8	39.8
SOME.....	21.3	21.9	22.4	19.2	23.9	29.5	11.2	21.2	32.3	17.9	19.7	17.4	19.9	15.8	13.8	27.6
NONE.....	41.8	41.5	38.5	58.6	38.6	30.1	57.5	52.3	38.9	56.2	36.2	23.4	37.3	40.1	41.4	32.6
<b>WOOD BURNED IN PAST 12 MONTHS</b>																
YES.....	27.4	38.5	40.4	28.0	20.5	23.8	13.2	5.9	15.9	3.0	1.0	3.1	.8	11.0	12.0	5.5
LESS THAN 1/3 CORD.....	8.6	11.5	11.7	10.0	13.2	16.4	6.0	3.2	8.0	1.8	.6	3.1	.4	2.9	3.2	.9
1/3 CORD OR MORE.....	18.8	27.1	28.6	18.0	7.3	7.4	7.2	2.6	7.9	1.1	.3	q	.4	8.2	8.8	4.6
NO.....	72.6	61.5	59.6	72.0	79.5	76.2	86.8	94.1	84.1	97.0	99.0	96.9	99.2	89.0	88.0	94.5
<b>MAIN FUEL IN NOVEMBER 1980</b>																
SAME FUEL AS IN NOV. 1981.....	96.5	96.7	96.8	96.6	95.8	95.3	96.8	96.6	95.3	97.0	96.0	97.0	96.0	93.8	93.8	93.5
DIFFERENT FUEL.....	2.2	2.1	2.2	1.3	3.9	4.3	3.2	2.7	4.4	2.3	1.9	q	2.0	2.7	2.0	6.5
NOT HEATED IN NOV. 1981.....	.5	.5	.3	1.7	q	q	q	.4	q	.5	.8	q	.9	q	q	q
BUILT IN 1981/1982.....	.8	.6	.6	.4	.3	.4	q	.2	.2	.2	1.3	3.0	1.1	3.5	4.1	q
<b>AVAILABILITY OF NATURAL GAS IN THE NEIGHBORHOOD</b>																
USES ANY NATURAL GAS.....	64.2	63.8	64.3	60.9	70.8	72.8	66.3	78.5	86.2	76.2	65.1	47.9	66.7	31.4	30.9	34.8
DOES NOT USE NATURAL GAS.....	35.8	36.2	35.7	39.1	29.2	27.2	33.7	21.5	13.8	23.8	34.9	52.1	33.3	68.6	69.1	65.2
GAS IS AVAILABLE.....	11.9	8.9	8.7	10.0	16.8	14.6	21.5	13.9	5.4	16.3	21.7	11.7	22.7	14.4	14.1	16.0
GAS IS NOT AVAILABLE.....	23.9	27.3	27.0	29.1	12.4	12.6	12.1	7.7	8.4	7.5	13.2	40.4	10.7	54.2	55.0	49.2
<b>TOTAL HOUSEHOLDS IN 2-OR-MORE UNIT BUILDINGS.....</b>																
	100.0	-	-	-	-	-	-	100.0	100.0	100.0	100.0	100.0	100.0	-	-	-
<b>CENTRAL MAIN HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>																
YES.....	41.5	-	-	-	-	-	-	33.9	39.2	32.3	47.5	26.9	49.4	-	-	-
NO/NO MAIN HEATING SYSTEM.....	58.5	-	-	-	-	-	-	66.1	60.8	67.7	52.5	73.1	50.6	-	-	-
<b>CENTRAL WATER HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>																
YES.....	53.5	-	-	-	-	-	-	40.0	42.8	39.2	63.9	33.0	66.7	-	-	-
NO/NO WATER HEATING FUEL.....	46.5	-	-	-	-	-	-	60.0	57.2	60.8	36.1	67.0	33.3	-	-	-
NO HOT RUNNING WATER.....																
<b>CENTRAL AIR CONDITIONING SYSTEM FOR THE BUILDING (2-OR-MORE UNIT BUILDINGS)</b>																
YES.....	3.0	-	-	-	-	-	-	.8	1.3	.7	4.6	2.8	4.8	-	-	-
NO.....	53.8	-	-	-	-	-	-	46.9	59.8	43.2	59.2	73.8	57.9	-	-	-
NO AIR CONDITIONING.....	43.2	-	-	-	-	-	-	52.3	38.9	56.2	36.2	23.4	37.3	-	-	-

"-" = DATA NOT APPLICABLE.

"q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.





# Total Square Footage by Fuel Use

**Table 13. Total Square Footage by Fuel Use, as of November 1981**

HOUSEHOLD CHARACTERISTICS	TOTAL HOUSEHOLDS		TOTAL SQUARE FOOTAGE			
	(MILLIONS)	(PERCENT)	TOTAL HEATED AND UNHEATED		TOTAL HEATED	
			(BILLIONS)	(PERCENT)	(BILLIONS)	(PERCENT)
TOTAL HOUSEHOLDS .....	83.1	100.0	144.2	100.0	123.2	100.0
<b>FUELS USED FOR ANY USE (MORE THAN ONE FUEL OFTEN USED)</b>						
ELECTRICITY.....	83.1	100.0	144.2	100.0	123.2	100.0
NATURAL GAS.....	53.4	64.2	92.8	64.3	80.5	65.3
WOOD.....	23.9	28.8	57.4	39.8	47.6	38.7
FUEL OIL.....	13.0	15.6	26.1	18.1	20.9	17.0
KEROSENE.....	2.0	2.4	3.5	2.4	2.8	2.3
LPG.....	7.3	8.8	12.2	8.4	9.8	7.9
SOLAR COLLECTORS.....	.4	.4	.7	.5	.5	.4
<b>MAIN HEATING FUEL AND HEATING EQUIPMENT</b>						
NATURAL GAS.....	46.2	55.6	82.3	57.1	71.5	58.1
CENTRAL WARM-AIR FURNACE...	28.5	34.3	57.8	40.1	49.8	40.4
STEAM OR HOT WATER SYSTEM... FLOOR, HALL, OR PIPELESS FURNACE.....	7.2	8.7	12.7	8.8	11.1	9.0
ROOM HEATER.....	5.9	7.0	6.4	4.5	5.8	4.7
ELECTRICITY.....	4.7	5.6	5.4	3.7	4.8	3.9
BUILT-IN ELECTRIC UNITS.....	14.2	17.1	20.1	14.0	18.0	14.6
CENTRAL WARM-AIR FURNACE....	5.5	6.6	7.1	4.9	6.2	5.0
HEAT PUMP.....	5.1	6.1	7.2	5.0	6.7	5.5
OTHER.....	2.7	3.3	4.9	3.4	4.3	3.5
FUEL OIL.....	.9	1.1	.9	.6	.7	.6
STEAM OR HOT WATER SYSTEM... CENTRAL WARM-AIR FURNACE....	11.3	13.6	22.7	15.8	18.3	14.8
OTHER.....	6.7	8.0	12.6	8.8	10.3	8.4
WOOD.....	4.1	4.9	9.4	6.5	7.3	5.9
HEATING STOVE.....	.6	.7	.7	.5	.6	.5
OTHER.....	5.4	6.4	9.9	6.9	8.1	6.5
LPG.....	4.6	5.5	8.1	5.6	6.6	5.4
CENTRAL WARM-AIR FURNACE....	.8	1.0	1.8	1.2	1.4	1.1
ROOM HEATER.....	3.7	4.4	5.6	3.9	4.8	3.9
OTHER.....	1.9	2.3	2.9	2.0	2.5	2.0
KEROSENE.....	1.2	1.4	1.7	1.2	1.5	1.2
OTHER.....	.6	.7	1.0	.7	.8	.6
NONE.....	.8	1.0	1.0	.7	.9	.7
	1.0	1.2	2.1	1.4	1.8	1.4
	.4	.5	.5	.3	-	-
<b>SECONDARY HEATING FUEL AND HEATING EQUIPMENT</b>						
WOOD.....	15.7	18.8	39.2	27.2	32.9	26.7
FIREPLACE.....	12.2	14.7	30.7	21.3	25.9	21.0
HEATING STOVE.....	3.4	4.1	8.4	5.8	7.0	5.7
OTHER.....	0	0	.1	0	0	0
ELECTRICITY.....	9.0	10.8	17.2	12.0	14.6	11.9
PORTABLE HEATER.....	5.8	7.0	10.3	7.1	8.6	7.0
BUILT-IN ELECTRIC UNITS.....	2.6	3.1	5.4	3.7	4.6	3.7
HEAT PUMP.....	.3	.4	.9	.6	.8	.6
OTHER.....	.4	.5	.7	.5	.7	.5
NATURAL GAS.....	2.8	3.4	5.3	3.7	4.7	3.8
ROOM HEATER.....	1.3	1.5	2.1	1.4	1.8	1.5
OTHER.....	1.6	1.9	3.2	2.3	2.8	2.3
FUEL OIL.....	1.6	1.9	3.3	2.3	2.6	2.1
CENTRAL WARM-AIR FURNACE OR STEAM OR HOT WATER SYSTEM.....	1.3	1.6	2.9	2.0	2.3	1.9
OTHER.....	.3	.3	.4	.3	.3	.3
KEROSENE.....	1.1	1.4	2.4	1.7	2.0	1.6
PORTABLE HEATER.....	.6	.7	1.3	.9	1.0	.8
ROOM HEATER/OTHER.....	.5	.6	1.1	.8	1.0	.8
LPG.....	.8	.9	1.5	1.0	1.2	1.0
OTHER.....	.4	.5	1.2	.8	.9	.7
NONE.....	51.7	62.2	74.1	51.4	64.3	52.2

SEE FOOTNOTES AT END OF TABLE.



# Total Square Footage by Fuel Use

Table 13. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL HOUSEHOLDS		TOTAL SQUARE FOOTAGE			
	(MILLIONS)	(PERCENT)	TOTAL HEATED AND UNHEATED		TOTAL HEATED	
			(BILLIONS)	(PERCENT)	(BILLIONS)	(PERCENT)
<b>FUEL COMBINATIONS</b>						
USE NATURAL GAS FOR HEATING...	46.2	55.6	82.3	57.1	71.5	58.1
NATURAL GAS FOR HOT WATER AND HAVE A/C.....	25.1	30.1	47.4	32.9	41.4	33.6
NATURAL GAS FOR HOT WATER AND NO A/C.....	17.0	20.5	27.5	19.0	23.8	19.3
ELECTRICITY FOR HOT WATER AND HAVE A/C.....	2.6	3.1	4.8	3.3	4.2	3.4
ELECTRICITY FOR HOT WATER AND NO A/C.....	1.4	1.7	2.5	1.7	2.0	1.7
OTHER.....	.1	.2	.1	.1	.1	.1
USE ELECTRICITY FOR HEATING... AND HAVE A/C.....	14.2	17.1	20.1	14.0	18.0	14.6
ELECTRICITY FOR HOT WATER AND NO A/C.....	9.5	11.4	14.3	9.9	12.8	10.4
OTHER.....	3.2	3.9	4.3	3.0	3.7	3.0
USE FUEL OIL FOR MAIN HEAT... AND HAVE A/C.....	1.5	1.8	1.5	1.1	1.4	1.2
FUEL OIL FOR HOT WATER AND NO A/C.....	11.3	13.6	22.7	15.8	18.3	14.8
ELECTRICITY FOR HOT WATER AND HAVE A/C.....	2.9	3.5	5.7	4.0	4.7	3.8
OTHER.....	2.8	3.3	4.4	3.1	3.7	3.0
ELECTRICITY FOR HOT WATER AND NO A/C.....	1.8	2.2	3.9	2.7	3.1	2.5
OTHER.....	2.2	2.6	4.9	3.4	3.9	3.2
USE WOOD FOR MAIN HEAT.....	1.6	2.0	3.7	2.6	2.9	2.3
USE LPG FOR MAIN HEAT.....	5.4	6.4	9.9	6.9	8.1	6.5
USE KEROSENE FOR MAIN HEAT... AND HAVE A/C.....	3.7	4.4	5.6	3.9	4.8	3.9
OTHER.....	.8	1.0	1.0	.7	.9	.7
USE COAL FOR MAIN HEAT.....	.7	.8	1.2	.9	1.1	.9
NO HEATING FUEL.....	.4	.5	.5	.3	-	-
OTHER FUEL.....	.3	.4	.8	.6	.7	.5
<b>WATER HEATING FUEL</b>						
NATURAL GAS.....	45.6	54.8	80.8	56.0	69.9	56.7
ELECTRICITY.....	27.1	32.6	45.2	31.3	38.6	31.3
FUEL OIL OR KEROSENE.....	6.1	7.4	11.3	7.8	9.3	7.6
LIQUID PETROLEUM GAS.....	3.4	4.1	5.7	4.0	4.5	3.7
WOOD.....	.3	.4	.4	.3	.3	.2
COAL.....	.3	.4	.4	.3	.4	.3
SOLAR.....	.1	.2	.2	.2	.1	.1
NONE.....	.2	.2	.1	.1	.1	.1
<b>MAIN COOKING FUEL</b>						
ELECTRICITY.....	45.4	54.7	85.0	59.0	71.6	58.1
NATURAL GAS.....	32.2	38.7	50.8	35.3	44.9	36.5
LIQUID PETROLEUM GAS.....	5.1	6.2	7.8	5.4	6.2	5.1
WOOD.....	.2	.2	.2	.1	.1	.1
OTHER/NONE.....	.2	.2	.4	.2	.3	.2
<b>CLOTHES DRYING FUEL</b>						
WITH CLOTHES DRYER.....	50.4	60.7	106.6	73.9	90.1	73.1
ELECTRICITY.....	37.5	45.1	77.9	54.0	65.7	53.4
NATURAL GAS.....	12.5	15.1	28.0	19.4	23.9	19.4
LPG.....	.5	.6	1.0	.7	.8	.6
WITHOUT CLOTHES DRYER.....	32.7	39.3	37.6	26.1	33.1	26.9
<b>AIR CONDITIONING (A/C)</b>						
CENTRAL A/C ONLY.....	22.0	26.4	43.2	29.9	37.9	30.7
INDIVIDUAL ROOM UNITS ONLY...	26.0	31.3	43.2	30.0	36.9	29.9
CENTRAL A/C AND ROOM UNITS...	.4	.5	1.0	.7	.9	.7
NO AIR CONDITIONING.....	34.7	41.8	56.9	39.4	47.6	38.6
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>						
ALL.....	30.7	36.9	54.5	37.8	47.9	38.9
SOME.....	17.7	21.3	32.8	22.8	27.6	22.4
NONE.....	34.7	41.8	56.9	39.5	47.6	38.7

SEE FOOTNOTES AT END OF TABLE.



# Total Square Footage by Fuel Use

Table 13. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL HOUSEHOLDS		TOTAL SQUARE FOOTAGE			
	(MILLIONS)	(PERCENT)	TOTAL HEATED AND UNHEATED		TOTAL HEATED	
			(BILLIONS)	(PERCENT)	(BILLIONS)	(PERCENT)
<b>WOOD BURNED IN PAST 12 MONTHS</b>						
YES.....	22.8	27.4	54.9	38.0	45.5	37.0
LESS THAN 1/3 CORD.....	7.2	8.6	17.8	12.4	15.1	12.2
1/3 CORD OR MORE.....	15.6	18.8	37.0	25.7	30.4	24.7
NO.....	60.4	72.6	89.3	62.0	77.7	63.0
<b>MAIN FUEL IN NOVEMBER 1980</b>						
SAME FUEL AS IN NOV. 1981.....	80.2	96.5	139.2	96.5	119.5	97.0
DIFFERENT FUEL.....	1.9	2.2	3.5	2.5	2.9	2.3
<b>FUEL IN NOVEMBER 1980</b>						
FUEL OIL OR KEROSENE.....	1.1	1.3	2.0	1.4	1.7	1.4
NATURAL GAS.....	.3	.3	.6	.4	.5	.4
LIQUID PETROLEUM GAS.....	.1	.2	.2	.2	.2	.2
ELECTRICITY.....	.1	.2	.2	.2	.2	.2
OTHER/NO FUEL.....	.2	.3	.5	.3	.3	.3
NOT HEATED IN NOV. 1981.....	.4	.5	.5	.3	-	-
BUILT IN 1981/1982.....	.7	.8	1.0	.7	.8	.7
<b>TOTAL SINGLE-FAMILY UNITS AND MOBILE HOMES.....</b>	<b>61.8</b>	<b>100.0</b>	<b>123.8</b>	<b>100.0</b>	<b>103.5</b>	<b>100.0</b>
<b>AVAILABILITY OF NATURAL GAS IN THE NEIGHBORHOOD (SINGLE-FAMILY UNITS AND MOBILE HOMES)</b>						
USES ANY NATURAL GAS.....	38.3	61.9	77.8	62.9	66.1	63.9
DOES NOT USE ANY NATURAL GAS..	23.5	38.1	45.9	37.1	37.4	36.1
GAS IS AVAILABLE.....	6.0	9.7	12.0	9.7	9.8	9.5
GAS IS NOT AVAILABLE.....	17.5	28.4	34.0	27.5	27.6	26.7
<b>TOTAL HOUSEHOLDS IN 2-OR-MORE UNIT BUILDINGS.....</b>	<b>21.4</b>	<b>100.0</b>	<b>20.4</b>	<b>100.0</b>	<b>19.7</b>	<b>100.0</b>
<b>CENTRAL MAIN HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>						
YES.....	8.9	41.5	8.0	39.2	7.9	40.0
NO/NO MAIN HEATING SYSTEM.....	12.5	58.5	12.4	60.8	11.8	60.0
<b>CENTRAL WATER HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>						
YES.....	11.4	53.5	9.9	48.6	9.7	49.2
NO/NO WATER HEATING FUEL NO HOT RUNNING WATER.....	9.9	46.5	10.5	51.4	10.0	50.8
<b>CENTRAL AIR CONDITIONING SYSTEM FOR THE BUILDING (2-OR-MORE UNIT BUILDINGS)</b>						
YES.....	.6	3.0	.6	2.8	.6	2.9
NO.....	11.5	53.8	11.5	56.4	11.1	56.5
NO AIR CONDITIONING.....	9.2	43.2	8.4	40.9	8.0	40.6

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Fuel Use by Main Heating Fuel

Table 14. Fuel Use by Main Heating Fuel, as of November 1981  
(Million Households)

53.8 47.4 13.4 12.1 5.7 3.7 1.1

HOUSEHOLD CHARACTERISTICS	TOTAL	MAIN HEATING FUEL IN NOVEMBER 1981					
		NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	WOOD	LIQUID PETROLEUM GAS	OTHER/NONE
TOTAL HOUSEHOLDS	83.1	46.2	14.2	12.2	5.4	3.7	1.5
FUELS USED FOR ANY USE (MORE THAN ONE FUEL OFTEN USED)							
ELECTRICITY	83.1	46.2	14.2	12.2	5.3	3.7	1.5
NATURAL GAS	53.4	46.2	1.6	4.4	.6	Q	.6
WOOD	23.9	10.9	3.1	3.3	5.4	.6	.5
FUEL OIL	13.0	.4	Q	11.3	1.1	Q	.1
KEROSENE	2.0	.3	.1	1.3	.1	.1	.1
LPG	7.3	Q	.3	1.5	1.6	3.7	.2
SOLAR COLLECTORS	.4	.2	Q	Q	Q	Q	.1
MAIN HEATING EQUIPMENT							
CENTRAL WARM-AIR FURNACE	40.4	28.5	5.1	4.3	.3	1.9	.3
FORCED AIR	39.3	27.7	5.0	4.2	.3	1.9	.2
GRAVITY	1.1	.8	.1	.1	Q	Q	.1
STEAM OR HOT WATER SYSTEM	14.6	7.2	.1	6.7	.1	.2	.3
HEAT PUMP	2.8	Q	2.7	Q	Q	Q	Q
FLOOR, WALL, OR PIPELESS FURNACE	6.5	5.6	.1	.3	.1	.4	Q
OIL OR GAS ROOM HEATER	6.6	4.7	-	.8	-	1.2	Q
BUILT-IN ELECTRIC UNITS	5.5	-	5.5	-	-	-	-
WOOD OR COAL HEATING STOVE	4.9	-	-	-	4.6	-	.3
PORTABLE HEATER	.8	Q	.7	.1	Q	Q	Q
FIREPLACE	.4	Q	Q	Q	.4	Q	Q
OTHER	.2	.2	Q	Q	Q	Q	Q
NONE	.4	-	-	-	-	-	.4
SECONDARY HEATING FUEL AND HEATING EQUIPMENT							
WOOD	15.7	9.3	2.9	2.6	0.1	0.7	0.1
FIREPLACE	12.2	8.1	2.2	1.5	Q	.4	Q
HEATING STOVE	3.4	1.2	.7	1.1	.1	.3	.1
OTHER	Q	Q	Q	Q	Q	Q	Q
ELECTRICITY	9.0	4.6	1.0	1.5	1.3	.6	Q
PORTABLE HEATER	5.8	3.2	.7	1.1	.3	.5	Q
BUILT-IN ELECTRIC UNITS	2.6	1.3	.1	.3	.7	.1	Q
HEAT PUMP	.3	Q	.1	.1	.1	Q	Q
OTHER	.4	Q	.1	Q	.3	Q	Q
NATURAL GAS	2.8	2.1	.2	.1	.4	Q	Q
ROOM HEATER	1.3	1.0	.1	Q	.1	Q	Q
OTHER	1.6	1.0	.1	Q	.3	Q	Q
FUEL OIL	1.6	.4	Q	Q	1.0	Q	.1
CENTRAL WARM-AIR FURNACE OR STEAM OR HOT WATER SYSTEM	1.3	.4	Q	Q	.9	Q	.1
OTHER	.3	Q	Q	Q	.1	Q	Q
KEROSENE	1.1	.3	.1	.4	.1	.1	Q
PORTABLE HEATER	.6	.2	.1	.2	Q	.1	Q
ROOM HEATER/OTHER	.5	.1	.1	.2	.1	Q	Q
LPG	.8	Q	.1	.1	.5	.1	Q
OTHER	.4	.2	.1	.2	Q	Q	Q
NONE	51.7	29.3	9.9	7.2	1.9	2.2	1.2
WATER HEATING FUEL							
NATURAL GAS	45.6	42.1	1.4	1.4	.5	Q	.3
ELECTRICITY	27.1	4.0	12.7	4.6	3.4	1.7	.5
FUEL OIL OR KEROSENE	6.1	.1	Q	5.7	.3	Q	.1
LIQUID PETROLEUM GAS	3.4	Q	.1	.4	.8	1.9	.1
WOOD	.3	Q	Q	Q	.2	Q	.1
COAL	.3	Q	Q	Q	Q	Q	.3
SOLAR	.1	Q	Q	Q	Q	Q	.1
NONE	.2	Q	Q	Q	.1	Q	Q
MAIN COOKING FUEL							
ELECTRICITY	45.4	19.3	13.4	6.6	3.8	1.5	.8
NATURAL GAS	32.2	26.8	.6	4.1	.2	Q	.5
LIQUID PETROLEUM GAS	5.1	Q	.2	1.3	1.2	2.2	.2
WOOD	.2	Q	Q	Q	.1	Q	Q
OTHER/NONE	.2	.1	Q	.1	Q	Q	Q

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Main Heating Fuel

Table 14. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	MAIN HEATING FUEL IN NOVEMBER 1981					
		NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	WOOD	LIQUID PETROLEUM GAS	OTHER/NONE
<b>CLOTHES DRYING FUEL</b>							
WITH CLOTHES DRYER.....	50.4	30.2	7.5	6.4	3.6	2.1	0.5
ELECTRICITY.....	37.5	18.7	7.4	5.8	3.3	1.9	.5
NATURAL GAS.....	12.5	11.6	.1	.6	.1	Q	.1
LPG.....	.5	Q	Q	Q	.2	.3	Q
WITHOUT CLOTHES DRYER.....	32.7	16.0	6.7	5.7	1.8	1.6	.9
<b>AIR CONDITIONING (A/C)</b>							
CENTRAL A/C ONLY.....	22.0	12.6	7.2	.9	.5	.8	Q
INDIVIDUAL ROOM UNITS ONLY.....	26.0	14.8	3.4	4.9	1.2	1.5	.2
CENTRAL A/C AND ROOM UNITS.....	.4	.3	.1	Q	Q	Q	Q
NO AIR CONDITIONING.....	34.7	18.5	3.6	6.3	3.7	1.4	1.2
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>							
ALL.....	30.7	17.2	8.8	2.1	1.1	1.4	.2
SOME.....	17.7	10.5	1.8	3.8	.6	1.0	.1
NONE.....	34.7	18.5	3.6	6.3	3.7	1.4	1.2
<b>WOOD BURNED IN PAST 12 MONTHS</b>							
YES.....	22.8	10.3	2.8	3.2	5.3	.8	.5
LESS THAN 1/3 CORD.....	7.2	4.8	.9	.9	.3	.1	.1
1/3 CORD OR MORE.....	15.6	5.5	1.9	2.3	5.0	.6	.4
NO.....	60.4	35.9	11.5	9.0	.1	2.9	1.0
<b>MAIN FUEL IN NOVEMBER 1980</b>							
SAME FUEL AS IN NOV. 1981.....	80.2	45.1	13.6	12.0	4.9	3.6	1.0
DIFFERENT FUEL.....	1.9	.9	.3	.1	.4	Q	.1
<b>FUEL IN NOVEMBER 1980</b>							
FUEL OIL OR KEROSENE.....	1.1	.8	.1	Q	.1	Q	Q
NATURAL GAS.....	.3	Q	.1	Q	.1	Q	Q
LIQUID PETROLEUM GAS.....	.1	Q	Q	Q	.1	Q	Q
ELECTRICITY.....	.1	Q	Q	Q	.1	Q	Q
OTHER/NO FUEL.....	.2	.1	.1	.1	Q	Q	Q
NOT HEATED IN NOV. 1981.....	.4	-	-	-	-	-	.4
BUILT IN 1981/1982.....	.7	.2	.3	Q	.1	.1	Q
<b>TOTAL SINGLE-FAMILY UNITS AND MOBILE HOMES.....</b>	<b>61.8</b>	<b>35.5</b>	<b>8.1</b>	<b>8.2</b>	<b>5.3</b>	<b>3.7</b>	<b>1.0</b>

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Main Heating Fuel

Table 14. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	MAIN HEATING FUEL IN NOVEMBER 1981					
		NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	WOOD	LIQUID PETROLEUM GAS	OTHER/NONE
<b>AVAILABILITY OF NATURAL GAS IN THE NEIGHBORHOOD (SINGLE-FAMILY UNITS AND MOBILE HOMES)</b>							
USES ANY NATURAL GAS.....	38.3	35.5	0.5	1.5	0.6	Q	0.1
DOES NOT USE NATURAL GAS.....	23.5	-	7.6	6.7	4.7	3.7	.9
GAS IS AVAILABLE.....	6.0	-	2.7	2.1	.5	.6	.1
(PERCENT).....	25.4	-	35.8	31.3	10.6	16.2	9.5
GAS IS NOT AVAILABLE.....	17.5	-	4.9	4.6	4.2	3.1	.8
(PERCENT).....	74.6	-	64.2	68.7	89.4	83.8	90.5
TOTAL HOUSEHOLDS IN 2-OR-MORE UNIT BUILDINGS.....	21.4	10.7	6.1	3.9	.1	Q	.5
<b>CENTRAL MAIN HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>							
YES.....	8.9	4.5	.7	3.4	Q	Q	.3
NO/NO MAIN HEATING SYSTEM.....	12.5	6.2	5.4	.6	.1	Q	.2
<b>CENTRAL WATER HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>							
YES.....	11.4	6.1	1.5	3.3	Q	Q	.4
NO/NO WATER HEATING FUEL NO HOT RUNNING WATER.....	9.9	4.6	4.6	.6	.1	Q	Q
<b>CENTRAL AIR CONDITIONING SYSTEM FOR THE BUILDING (2-OR-MORE UNIT BUILDINGS)</b>							
YES.....	.6	.5	.1	.1	Q	Q	Q
NO.....	11.5	5.0	4.6	1.8	Q	Q	Q
NO AIR CONDITIONING.....	9.2	5.2	1.4	2.1	.1	Q	.4

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Fuel Use by Main Heating Fuel

**Table 15. Fuel Use by Main Heating Fuel, as of November 1981  
(Percentage of Households)**

HOUSEHOLD CHARACTERISTICS	TOTAL	MAIN HEATING FUEL IN NOVEMBER 1981					
		NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	WOOD	LIQUID PETROLEUM GAS	OTHER/NONE
TOTAL HOUSEHOLDS .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>FUELS USED FOR ANY USE (MORE THAN ONE FUEL OFTEN USED)</b>							
ELECTRICITY.....	100.0	100.0	100.0	100.0	99.3	100.0	100.0
NATURAL GAS.....	64.2	100.0	11.5	36.4	10.5	.4	38.0
WOOD.....	28.8	23.5	21.9	27.2	100.0	20.5	35.7
FUEL OIL.....	15.6	.9	.2	93.1	19.7	.8	7.3
KEROSENE.....	2.4	.7	.9	10.5	2.4	2.0	3.5
LPG.....	8.8	Q	2.5	12.6	29.0	100.0	13.4
SOLAR COLLECTORS.....	.4	.4	.2	.1	.5	1.0	4.8
<b>MAIN HEATING EQUIPMENT</b>							
CENTRAL WARM-AIR FURNACE.....	48.6	61.6	35.8	35.3	5.2	51.8	20.5
FORCED AIR.....	47.2	59.8	35.1	34.6	5.2	51.1	16.0
GRAVITY.....	1.4	1.8	.8	.8	Q	.7	4.5
STEAM OR HOT WATER SYSTEM.....	17.6	15.6	.8	54.9	1.4	5.0	23.6
HEAT PUMP.....	3.3	.1	19.0	Q	Q	.5	Q
FLOOR, HALL, OR PIPELESS FURNACE.....	7.8	12.2	.6	2.6	1.0	10.3	2.0
OIL OR GAS ROOM HEATER.....	8.0	10.1	-	6.5	-	31.5	1.3
BUILT-IN ELECTRIC UNITS.....	6.6	-	38.8	-	-	-	-
WOOD OR COAL HEATING STOVE.....	5.9	-	-	-	85.2	-	21.9
PORTABLE HEATER.....	1.0	Q	5.0	.5	Q	.5	Q
FIREPLACE.....	.4	Q	Q	Q	6.6	Q	Q
OTHER.....	.3	.4	Q	Q	.5	.4	.8
NONE.....	.5	-	-	-	-	-	29.8
<b>SECONDARY HEATING FUEL AND HEATING EQUIPMENT</b>							
WOOD.....	18.8	20.1	20.0	21.6	1.8	18.5	6.9
FIREPLACE.....	14.7	17.5	15.3	12.3	.8	10.2	3.2
HEATING STOVE.....	4.1	2.6	4.8	9.3	.9	8.1	3.7
OTHER.....	Q	Q	Q	.1	Q	.2	Q
ELECTRICITY.....	10.8	10.0	6.9	12.6	23.8	16.2	.8
PORTABLE HEATER.....	7.0	6.9	4.9	9.3	5.4	12.5	.3
BUILT-IN ELECTRIC UNITS.....	3.1	2.9	.9	2.7	12.4	2.5	Q
HEAT PUMP.....	.4	.1	.7	.5	1.3	.5	.5
OTHER.....	.5	.1	.4	.1	4.7	.7	Q
NATURAL GAS.....	3.4	4.5	1.4	.6	8.2	Q	2.0
ROOM HEATER.....	1.5	2.3	.6	.3	1.8	Q	Q
OTHER.....	1.9	2.3	.7	.4	6.4	Q	2.0
FUEL OIL.....	1.9	.8	.2	.3	19.3	.8	6.2
CENTRAL WARM-AIR FURNACE OR STEAM OR HOT WATER SYSTEM.....	1.6	.8	.1	Q	16.6	Q	6.2
OTHER.....	.3	Q	.2	.3	2.8	.8	Q
KEROSENE.....	1.4	.7	.9	3.7	2.1	2.0	2.9
PORTABLE HEATER.....	.7	.5	.4	1.9	.5	1.8	1.5
ROOM HEATER/OTHER.....	.6	.3	.5	1.8	1.6	.2	1.4
LPG.....	.9	Q	.8	.7	9.1	2.0	1.0
OTHER.....	.5	.3	.4	1.4	Q	Q	.8
NONE.....	62.2	63.5	69.4	59.1	35.7	60.5	79.3
<b>WATER HEATING FUEL</b>							
NATURAL GAS.....	54.8	91.0	9.9	11.1	8.6	.4	18.4
ELECTRICITY.....	32.6	8.7	89.3	38.0	64.1	46.8	37.6
FUEL OIL OR KEROSENE.....	7.4	.2	Q	46.7	5.4	Q	3.7
LIQUID PETROLEUM GAS.....	4.1	Q	.8	3.5	15.7	52.3	6.7
WOOD.....	.4	Q	Q	.3	4.4	Q	4.4
COAL.....	.4	Q	Q	Q	Q	Q	23.0
SOLAR.....	.2	Q	Q	.1	.5	.3	4.4
NONE.....	.2	Q	Q	.3	1.4	.2	.8
<b>MAIN COOKING FUEL</b>							
ELECTRICITY.....	54.7	41.8	94.3	54.4	70.8	40.1	54.3
NATURAL GAS.....	38.7	58.0	4.0	33.9	4.6	.2	31.6
LIQUID PETROLEUM GAS.....	6.2	Q	1.7	11.0	22.1	59.5	11.1
WOOD.....	.2	Q	Q	.3	2.5	Q	.7
OTHER/NONE.....	.2	.2	Q	.4	.1	.2	2.3

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Main Heating Fuel

Table 15. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	MAIN HEATING FUEL IN NOVEMBER 1981					
		NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	WOOD	LIQUID PETROLEUM GAS	OTHER/NONE
<b>CLOTHES DRYING FUEL</b>							
WITH CLOTHES DRYER.....	60.7	65.4	53.0	52.9	66.6	57.7	37.0
ELECTRICITY.....	45.1	40.4	52.2	47.8	60.9	50.4	32.0
NATURAL GAS.....	15.1	25.2	.5	5.1	2.7	Q	3.5
LPG.....	.6	Q	.3	.3	3.1	7.3	1.5
WITHOUT CLOTHES DRYER.....	39.3	34.6	47.0	47.1	33.4	42.3	63.0
<b>AIR CONDITIONING (A/C)</b>							
CENTRAL A/C ONLY.....	26.4	27.2	50.4	7.6	9.0	21.1	3.1
INDIVIDUAL ROOM UNITS ONLY....	31.3	32.1	23.6	40.3	22.4	41.4	15.8
CENTRAL A/C AND ROOM UNITS....	.5	.6	.4	.2	Q	.1	Q
NO AIR CONDITIONING.....	41.8	40.1	25.6	51.9	68.6	37.3	81.1
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>							
ALL.....	36.9	37.2	61.9	17.1	20.0	37.0	12.2
SOME.....	21.3	22.6	12.5	31.0	11.4	25.8	6.7
NONE.....	41.8	40.1	25.6	51.9	68.6	37.2	81.1
<b>WOOD BURNED IN PAST 12 MONTHS</b>							
YES.....	27.4	22.2	19.4	26.0	99.0	20.3	34.6
LESS THAN 1/3 CORD.....	8.6	10.4	6.4	7.4	5.8	3.0	6.7
1/3 CORD OR MORE.....	18.8	11.8	13.0	18.6	93.3	17.3	27.9
NO.....	72.6	77.8	80.6	74.0	1.0	79.7	65.4
<b>MAIN FUEL IN NOVEMBER 1980</b>							
SAME FUEL AS IN NOV. 1981.....	96.5	97.5	95.6	98.8	91.2	98.0	65.8
DIFFERENT FUEL.....	2.2	2.0	2.2	1.2	7.6	.5	3.9
FUEL IN NOVEMBER 1980							
FUEL OIL OR KEROSENE.....	1.3	1.7	1.0	.1	1.8	.3	Q
NATURAL GAS.....	.3	Q	.7	.2	2.3	Q	1.7
LIQUID PETROLEUM GAS.....	.2	.1	.1	Q	1.7	Q	Q
ELECTRICITY.....	.2	.1	Q	.2	1.7	Q	Q
OTHER/NO FUEL.....	.3	.1	.4	.7	.1	.2	2.2
NOT HEATED IN NOV. 1981.....	.5	-	-	-	-	-	29.8
BUILT IN 1981/1982.....	.8	.5	2.2	Q	1.2	1.5	.5
<b>TOTAL SINGLE-FAMILY UNITS AND MOBILE HOMES.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

SEE FOOTNOTES AT END OF TABLE.





# Fuel Use by Main Heating Fuel

Table 15. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	MAIN HEATING FUEL IN NOVEMBER 1981					
		NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	WOOD	LIQUID PETROLEUM GAS	OTHER/NONE
<b>AVAILABILITY OF NATURAL GAS IN THE NEIGHBORHOOD (SINGLE-FAMILY UNITS AND MOBILE HOMES)</b>							
USES ANY NATURAL GAS.....	61.9	100.0	6.5	18.8	19.6	Q	12.2
DOES NOT USE NATURAL GAS.....	38.1	-	93.5	81.2	89.4	100.0	87.8
GAS IS AVAILABLE.....	9.7	-	33.4	25.4	9.4	16.2	8.4
GAS IS NOT AVAILABLE.....	26.4	-	60.0	55.8	79.9	83.8	79.5
TOTAL HOUSEHOLDS IN 2-OR-MORE UNIT BUILDINGS.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>CENTRAL MAIN HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>							
YES.....	41.5	41.8	11.1	85.1	Q	77.7	68.1
NO/NO MAIN HEATING SYSTEM.....	58.5	58.2	88.9	14.9	100.0	22.3	31.9
<b>CENTRAL WATER HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>							
YES.....	53.5	57.2	24.8	83.7	Q	77.7	94.9
NO/NO WATER HEATING FUEL NO HOT RUNNING WATER.....	46.5	42.8	75.2	16.3	100.0	22.3	5.1
<b>CENTRAL AIR CONDITIONING SYSTEM FOR THE BUILDING (2-OR-MORE UNIT BUILDINGS)</b>							
YES.....	3.0	4.4	1.5	1.8	Q	Q	Q
NO.....	53.8	47.1	75.5	44.8	Q	68.4	9.8
NO AIR CONDITIONING.....	43.2	48.5	23.0	53.4	100.0	31.6	90.2

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Fuel Use by Heating and Cooling Degree-Days and Census Regions

Table 16. Fuel Use by Heating and Cooling Degree-Days and Census Regions, as of November 1981 (Million Households)

HOUSEHOLD CHARACTERISTICS	ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)-- LONG-TERM AVERAGE													
	TOTAL							CENSUS REGIONS						
		<2,000 CDD AND >7,000 HDD	<2,000 CDD AND 5,500 TO 7,000 HDD	<2,000 CDD AND 4,000 TO 5,499 HDD	<2,000 CDD AND <4,000 HDD	>2,000 CDD AND <4,000 HDD	NORTHEAST		NORTH CENTRAL		SOUTH		WEST	
							5,500 HDD OR MORE	LESS THAN 5,500 HDD	4,000 HDD OR MORE	LESS THAN 2,000 CDD	2,000 CDD OR MORE	4,000 HDD OR MORE	LESS THAN 4,000 HDD	
TOTAL HOUSEHOLDS	83.1	8.8	21.0	21.6	19.5	12.2	9.6	8.3	21.2	16.4	11.3	6.3	10.0	
FUELS USED FOR ANY USE (MORE THAN ONE FUEL OFTEN USED)														
ELECTRICITY	83.1	8.8	20.9	21.6	19.5	12.2	9.6	8.3	21.2	16.4	11.3	6.3	10.0	
NATURAL GAS	53.4	4.6	15.8	13.3	13.4	6.4	5.2	6.2	16.1	8.3	5.9	3.3	8.5	
WOOD	23.9	3.6	5.8	6.5	6.0	1.9	3.3	1.7	5.9	5.1	1.8	3.0	3.1	
FUEL OIL	13.0	2.5	3.5	6.1	.6	.2	3.9	4.6	2.0	1.7	.2	.4	Q	
KEROSENE	2.0	.3	.4	.6	.5	.3	.3	.4	.3	.6	.3	Q	.1	
LPG	7.3	1.6	1.2	1.4	1.6	1.7	1.1	.1	2.1	1.9	1.5	.3	.4	
SOLAR COLLECTORS	.4	Q	Q	.1	.2	.1	Q	Q	Q	Q	Q	Q	.2	
MAIN HEATING FUEL AND HEATING EQUIPMENT														
NATURAL GAS	46.2	4.1	14.3	9.8	12.2	5.8	3.9	3.1	15.4	7.6	5.4	3.0	7.8	
CENTRAL WARM-AIR FURNACE	28.5	2.7	10.0	6.4	6.4	3.0	1.8	1.2	11.8	4.5	2.7	2.2	4.2	
STEAM OR HOT WATER SYSTEM	7.2	.9	3.5	2.5	.3	.1	1.8	1.8	2.3	.7	.1	.4	.1	
FLOOR, WALL, OR PIPELESS FURNACE	5.9	.3	.3	.5	4.0	.9	Q	Q	.6	1.1	.7	.2	3.1	
ROOM HEATER	4.7	.3	.5	.5	1.5	1.9	.2	.1	.7	1.3	1.8	.1	.4	
ELECTRICITY	14.2	.5	2.1	3.6	3.9	4.1	1.0	.6	1.6	3.8	3.9	2.1	1.3	
BUILT-IN ELECTRIC UNITS	5.5	.3	1.5	1.9	1.4	.4	.8	.3	1.0	1.3	.4	1.1	.6	
CENTRAL WARM-AIR FURNACE	5.1	.1	.5	1.1	1.4	2.0	.1	.1	.5	1.5	2.0	.7	.3	
HEAT PUMP	2.7	Q	.1	.5	.8	1.3	Q	.2	Q	.8	1.2	.2	.2	
OTHER	.9	.1	.1	.1	.3	.4	Q	Q	.1	.2	.4	.1	.2	
FUEL OIL	11.3	1.8	3.2	5.5	.5	.2	3.4	4.3	1.6	1.3	.2	.4	Q	
STEAM OR HOT WATER SYSTEM	6.7	.6	2.0	3.9	.1	Q	2.4	3.6	.2	.3	Q	Q	Q	
CENTRAL WARM-AIR FURNACE	4.1	1.0	1.1	1.6	.3	.1	1.0	.7	1.2	.8	.1	.3	Q	
OTHER	.6	.2	.1	.1	.1	.1	Q	Q	.2	.2	.1	Q	Q	
WOOD	5.4	1.6	0.6	1.5	1.3	0.3	1.0	0.1	1.2	1.9	0.3	0.6	0.2	
HEATING STOVE	4.6	1.3	.5	1.4	1.1	.2	.9	.1	.9	1.8	.2	.5	.2	
OTHER	.8	.3	.1	.1	.2	.1	.1	Q	.3	.1	.1	.1	.1	
LPG	3.7	.4	.5	.6	1.1	1.2	.1	Q	1.0	1.0	1.2	.2	.3	
CENTRAL WARM-AIR FURNACE	1.9	.2	.3	.3	.5	.6	Q	Q	.6	.4	.6	.1	.2	
ROOM HEATER	1.2	.1	.1	.2	.3	.5	Q	Q	.2	.4	.5	.1	Q	
OTHER	.6	.1	.1	.1	.2	.1	Q	Q	.2	.1	.1	Q	.1	
KEROSENE	.8	.1	Q	.1	.3	.2	.1	Q	Q	.4	.2	Q	Q	
OTHER	1.0	.3	.2	.4	.1	Q	.1	.1	.3	.4	Q	Q	Q	
NONE	.4	Q	Q	Q	.1	.3	Q	Q	Q	Q	Q	Q	.4	
SECONDARY HEATING FUEL AND HEATING EQUIPMENT														
WOOD	15.7	1.7	4.2	4.2	4.1	1.4	1.8	1.2	3.9	2.6	1.4	2.2	2.5	
FIREPLACE	12.2	.8	3.1	3.2	3.7	1.3	1.2	1.0	2.6	2.0	1.3	1.8	2.5	
HEATING STOVE	3.4	.9	1.1	1.0	.3	.1	.7	.2	1.3	.6	.1	.5	.1	
OTHER	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
ELECTRICITY	9.0	.9	1.9	2.3	2.8	1.2	1.2	.7	1.7	2.2	1.1	.7	1.3	
PORTABLE HEATER	5.8	.5	1.3	1.3	1.8	.9	1.0	.5	.9	1.4	.9	.3	.9	
BUILT-IN ELECTRIC UNITS	2.6	.3	.5	.8	.7	.2	.3	.1	.7	.6	.2	.3	.4	
HEAT PUMP	.3	Q	Q	.1	.1	Q	Q	Q	.1	.1	Q	Q	Q	
OTHER	.4	Q	Q	.2	.1	.1	Q	.1	Q	.2	Q	.1	Q	
NATURAL GAS	2.8	.2	.7	.5	.7	.7	.2	Q	.8	.6	.6	.2	.3	
ROOM HEATER	1.3	.1	.3	.3	.3	.4	.1	Q	.3	.4	.4	Q	Q	
OTHER	1.6	.2	.5	.2	.5	.3	.1	Q	.5	.2	.2	.2	.3	

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Heating and Cooling Degree-Days and Census Regions

Table 16. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)-- LONG-TERM AVERAGE																	
								CENSUS REGIONS											
		<2,000 CDD AND >7,000 HDD		<2,000 CDD AND 5,500 TO 7,000 HDD		<2,000 CDD AND 4,000 TO 5,499 HDD		<2,000 CDD AND <4,000 HDD		>2,000 CDD AND <4,000 HDD		NORTHEAST		NORTH CENTRAL		SOUTH		WEST	
<b>SECONDARY HEATING FUEL AND HEATING EQUIPMENT</b>																			
FUEL OIL.....	1.6	0.6	0.2	0.5	0.2	Q	0.5	0.2	0.4	0.4	Q	Q	Q						
CENTRAL WARM-AIR FURNACE OR STEAM OR HOT WATER SYSTEM.....	1.3	.6	.2	.4	.1	Q	.5	.2	.3	.3	Q	Q	Q						
OTHER.....	.3	.1	Q	.1	Q	Q	Q	Q	.1	.1	Q	Q	Q						
KEROSENE.....	1.1	.2	.3	.5	.2	Q	.2	.4	.3	.2	Q	Q	Q						
PORTABLE HEATER.....	.6	.1	.1	.3	.1	Q	Q	.3	.2	.1	Q	Q	Q						
ROOM HEATER/OTHER.....	.5	.1	.2	.2	.1	Q	.2	.1	.1	.1	Q	Q	Q						
LPG.....	.8	.3	.1	.1	.2	0.1	.1	Q	.3	.2	0.1	Q	Q						
OTHER.....	.4	Q	.2	.1	.1	Q	.1	Q	Q	.1	Q	0.1	Q						
NONE.....	51.7	4.9	13.3	13.4	11.4	8.7	5.5	5.6	13.8	10.1	7.9	3.0	5.8						
<b>FUEL COMBINATIONS</b>																			
USE NATURAL GAS FOR HEATING... AND HAVE A/C.....	46.2	4.1	14.3	9.8	12.2	5.8	3.9	3.1	15.4	7.6	5.4	3.0	7.8						
NATURAL GAS FOR HOT WATER AND NO A/C.....	25.1	1.3	7.5	6.9	4.9	4.5	1.5	2.2	9.0	4.6	4.2	.7	2.8						
ELECTRICITY FOR HOT WATER AND NO A/C.....	17.0	2.2	5.9	2.1	6.0	.8	2.2	.8	5.1	1.6	.6	1.8	4.9						
OTHER.....	2.6	.2	.5	.4	1.0	.4	.1	Q	.8	1.1	.4	.1	Q						
USE ELECTRICITY FOR HEATING... AND HAVE A/C.....	14.2	0.5	2.1	3.6	3.9	4.1	1.0	0.6	1.6	3.8	3.9	2.1	1.3						
ELECTRICITY FOR HOT WATER AND NO A/C.....	9.5	.2	1.3	2.0	2.6	3.4	.4	.4	1.2	3.0	3.3	.7	.4						
OTHER.....	3.2	.2	.7	1.4	.6	.2	.5	.1	.2	.5	.2	1.3	.4						
USE FUEL OIL FOR MAIN HEAT... AND HAVE A/C.....	11.3	1.8	3.2	5.5	.5	.2	3.4	4.3	1.6	1.3	.2	.4	Q						
ELECTRICITY FOR HOT WATER AND NO A/C.....	2.9	.1	.8	1.9	.1	Q	.9	1.7	Q	.2	Q	Q	Q						
OTHER.....	2.8	.3	.7	1.7	Q	Q	1.0	1.7	Q	Q	Q	Q	Q						
USE FUEL OIL FOR MAIN HEAT... AND HAVE A/C.....	1.8	.4	.5	.6	.2	.1	.3	.2	.6	.6	.1	.1	Q						
ELECTRICITY FOR HOT WATER AND NO A/C.....	2.2	.9	.5	.7	.1	Q	.6	.2	.8	.3	Q	.3	Q						
OTHER.....	1.6	.1	.7	.7	.1	Q	.6	.5	.2	.2	Q	Q	Q						
USE WOOD FOR MAIN HEAT.....	5.4	1.6	.6	1.5	1.3	.3	1.0	.1	1.2	1.9	.3	.6	.2						
USE LPG FOR MAIN HEAT.....	3.7	.4	.5	.6	1.1	1.2	.1	Q	1.0	1.0	1.2	.2	.3						
USE KEROSENE FOR MAIN HEAT.....	.8	.1	Q	.1	.3	.2	.1	Q	Q	.4	.2	Q	Q						
USE COAL FOR MAIN HEAT.....	.7	.2	.1	.3	.1	Q	.1	.1	.2	.3	Q	Q	Q						
NO HEATING FUEL.....	.4	Q	Q	Q	.1	.3	Q	Q	Q	Q	Q	Q	Q						
OTHER FUEL.....	.3	.1	.1	.1	Q	Q	.1	Q	.1	.2	Q	Q	Q						

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Heating and Cooling Degree-Days and Census Regions

Table 16. (Continued)

HOUSEHOLD CHARACTERISTICS	ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)-- LONG-TERM AVERAGE																
	TOTAL						CENSUS REGIONS										
		<2,000 CDD AND >7,000 HDD		<2,000 CDD AND 5,500 TO 7,000 HDD		<2,000 CDD AND 4,000 TO 5,499 HDD		>2,000 CDD AND <4,000 HDD		NORTHEAST		NORTH CENTRAL		SOUTH		WEST	
										5,500 OR MORE HDD	LESS THAN 5,500 HDD	4,000 OR MORE CDD	LESS THAN 2,000 CDD OR MORE	2,000 OR MORE CDD	4,000 OR MORE CDD	LESS THAN 4,000 HDD	
<b>WATER HEATING FUEL</b>																	
NATURAL GAS.....	45.6	3.7	14.3	9.9	11.9	5.7	4.4	3.7	14.5	6.7	5.2	2.8	8.4				
ELECTRICITY.....	27.1	3.4	4.3	7.1	6.7	5.5	2.6	1.1	5.2	8.6	5.3	3.2	1.1				
FUEL OIL OR KEROSENE.....	6.1	.6	1.7	3.8	.1	Q	2.2	3.5	.1	.3	Q	Q	Q				
LIQUID PETROLEUM GAS.....	3.4	.8	.5	.7	.7	.7	.4	Q	1.2	.7	.7	.2	.3				
WOOD.....	.3	.1	Q	.1	.1	.1	.1	Q	Q	.1	Q	Q	.1				
COAL.....	.3	.2	.1	Q	Q	Q	Q	Q	.2	.1	Q	Q	Q				
SOLAR.....	.1	Q	Q	Q	.1	.1	Q	Q	Q	Q	Q	Q	Q				
NONE.....	.2	.1	Q	Q	Q	Q	Q	Q	.1	Q	Q	Q	Q				
<b>MAIN COOKING FUEL</b>																	
ELECTRICITY.....	45.4	5.6	10.5	11.6	11.3	6.4	5.2	2.7	11.0	10.9	6.0	5.2	4.5				
NATURAL GAS.....	32.2	1.9	9.5	8.9	7.4	4.4	3.5	5.5	8.8	4.2	4.0	.8	5.3				
LIQUID PETROLEUM GAS.....	5.1	1.2	.8	1.0	.8	1.3	.9	.1	1.3	1.2	1.2	.2	.2				
WOOD.....	.2	Q	Q	.1	Q	Q	Q	Q	Q	.1	Q	Q	Q				
OTHER/NONE.....	.2	Q	.1	Q	Q	Q	Q	Q	.1	Q	Q	Q	Q				
<b>CLOTHES DRYING FUEL</b>																	
WITH CLOTHES DRYER.....	50.4	5.9	13.6	13.0	11.4	6.6	5.6	3.8	14.8	9.9	6.2	4.4	5.8				
ELECTRICITY.....	37.5	5.0	8.6	10.0	8.5	5.5	3.9	2.2	10.2	8.7	5.1	4.0	3.3				
NATURAL GAS.....	12.5	.8	4.9	2.9	2.9	1.1	1.6	1.6	4.3	1.1	1.0	.3	2.5				
LPG.....	.5	.1	.1	.1	.1	.1	.1	Q	.2	Q	Q	Q	.1				
WITHOUT CLOTHES DRYER.....	32.7	2.9	7.4	8.7	8.2	5.6	4.0	4.5	6.4	6.5	5.1	1.9	4.2				
<b>AIR CONDITIONING (A/C)</b>																	
CENTRAL A/C ONLY.....	22.0	0.6	4.0	5.6	5.5	6.3	0.5	1.2	5.5	5.7	5.9	1.0	2.2				
INDIVIDUAL ROOM UNITS ONLY.....	26.0	2.0	7.3	7.7	5.4	3.6	3.1	3.9	7.3	5.8	3.6	.7	1.6				
CENTRAL A/C AND ROOM UNITS.....	.4	Q	.1	.1	.1	.1	Q	Q	.1	.1	.1	Q	.1				
NO AIR CONDITIONING.....	34.7	6.2	9.5	8.3	8.6	2.2	6.0	3.1	8.4	4.9	1.6	4.5	6.2				
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>																	
ALL.....	30.7	1.3	5.8	7.8	7.6	6.2	1.2	2.0	7.8	8.2	7.8	1.2	2.4				
SOME.....	17.7	1.3	5.6	5.5	3.4	1.8	2.4	3.1	5.1	3.3	1.8	.6	1.4				
NONE.....	34.7	6.2	9.5	8.3	8.6	2.2	6.0	3.2	8.4	4.9	1.6	4.5	6.2				
<b>WOOD BURNED IN PAST 12 MONTHS</b>																	
YES.....	22.8	3.4	5.5	6.3	5.7	1.8	3.3	1.7	5.5	4.8	1.7	2.9	2.9				
LESS THAN 1/3 CORD.....	7.2	.6	1.9	1.7	2.4	.5	.9	.6	1.6	1.1	.5	.9	1.5				
1/3 CORD OR MORE.....	15.6	2.8	3.6	4.6	3.4	1.2	2.4	1.1	3.9	3.7	1.2	2.0	1.4				
NO.....	60.4	5.4	15.4	15.3	13.8	10.4	6.4	6.6	15.7	11.6	9.6	3.4	7.1				
<b>MAIN FUEL IN NOVEMBER 1980</b>																	
SAME FUEL AS IN NOV. 1981.....	80.2	8.5	20.4	20.7	19.0	11.6	9.2	8.0	20.6	15.9	11.0	6.1	9.4				
DIFFERENT FUEL.....	1.9	.3	.5	.7	.3	.1	.4	.3	.4	.4	.1	.2	.1				
<b>FUEL IN NOVEMBER 1980</b>																	
FUEL OIL OR KEROSENE.....	1.1	.1	.4	.4	.1	Q	.2	.2	.2	.3	Q	.1	Q				
NATURAL GAS.....	.3	.1	Q	Q	.1	Q	Q	Q	.1	Q	Q	Q	Q				
LIQUID PETROLEUM GAS.....	.1	Q	Q	Q	Q	Q	Q	Q	.1	Q	Q	Q	Q				
ELECTRICITY.....	.1	Q	Q	.1	Q	Q	Q	Q	Q	Q	Q	Q	Q				
OTHER/NO FUEL.....	.2	Q	.1	.1	Q	Q	Q	.1	Q	Q	Q	Q	Q				
NOT HEATED IN NOV. 1981.....	.4	Q	Q	Q	.1	.3	Q	Q	Q	Q	Q	Q	Q				
BUILT IN 1981/1982.....	.7	.1	.1	.3	.1	.1	.1	Q	.2	.1	.1	Q	.1				

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Heating and Cooling Degree-Days and Census Regions

Table 16. (Continued)

HOUSEHOLD CHARACTERISTICS	ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)-- LONG-TERM AVERAGE																
	TOTAL	CENSUS REGIONS															
		<2,000 CDD AND >7,000 HDD		<2,000 CDD AND 5,500 TO 4,000 HDD		<2,000 CDD AND <4,000 HDD		>2,000 CDD AND <4,000 HDD		NORTHEAST		NORTH CENTRAL		SOUTH		WEST	
TOTAL SINGLE-FAMILY UNITS AND MOBILE HOMES.....	61.8	6.9	14.7	15.3	14.8	10.1	6.2	4.3	16.3	13.4	9.2	5.1	7.2				
AVAILABILITY OF NATURAL GAS IN THE NEIGHBORHOOD (SINGLE-FAMILY UNITS AND MOBILE HOMES)																	
USES ANY NATURAL GAS.....	38.3	3.3	10.7	8.5	10.1	5.7	2.8	2.8	12.1	6.4	5.3	2.6	6.3				
DOES NOT USE NATURAL GAS.....	23.5	3.6	4.0	6.8	4.7	4.4	3.5	1.5	4.2	7.0	4.0	2.5	.9				
GAS IS AVAILABLE.....	6.0	.7	1.2	1.8	1.4	.9	.6	.6	1.1	1.3	.9	1.3	.3				
(PERCENT).....	25.4	18.4	30.7	26.3	28.9	21.3	17.1	40.1	25.0	18.5	21.7	52.6	30.2				
GAS IS NOT AVAILABLE.....	17.5	2.9	2.7	5.0	3.4	3.5	2.9	.9	3.2	5.7	3.1	1.2	.7				
(PERCENT).....	74.6	81.6	69.3	73.7	71.1	78.7	82.9	59.9	75.0	81.5	78.3	47.4	69.8				
TOTAL HOUSEHOLDS IN 2-OR-MORE UNIT BUILDINGS.....	21.4	1.9	6.3	6.3	4.7	2.1	3.4	3.9	4.9	3.1	2.0	1.2	2.8				
CENTRAL MAIN HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)																	
YES.....	8.9	1.0	3.2	3.9	.6	.2	1.8	3.3	2.2	.9	.2	.4	.2				
NO/NO MAIN HEATING SYSTEM.....	12.5	.9	3.1	2.4	4.1	1.9	1.7	.7	2.7	2.1	1.9	.9	2.6				
CENTRAL WATER HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)																	
YES.....	11.4	1.2	3.7	4.3	1.8	.5	1.9	3.4	2.8	1.3	.5	.5	1.2				
NO/NO WATER HEATING FUEL NO HOT RUNNING WATER.....	9.9	.8	2.6	2.0	2.9	1.6	1.6	.5	2.1	1.8	1.6	.8	1.6				
CENTRAL AIR CONDITIONING SYSTEM FOR THE BUILDING (2-OR-MORE UNIT BUILDINGS)																	
YES.....	0.6	0.1	0.1	0.3	0.1	0.1	Q	0.1	0.1	0.2	0.1	0.1	0.1				
NO.....	11.5	.6	3.1	3.7	2.3	1.8	1.3	2.2	2.6	2.1	1.8	.4	1.0				
NO AIR CONDITIONING.....	9.2	1.3	3.2	2.3	2.3	.1	2.1	1.7	2.2	.8	.1	.8	1.7				

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Fuel Use by Heating and Cooling Degree-Days and Census Regions

**Table 17. Fuel Use by Heating and Cooling Degree-Days and Census Regions, as of November 1981  
(Percentage of Households)**

HOUSEHOLD CHARACTERISTICS	ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)--- LONG-TERM AVERAGE													
	TOTAL	<2,000 CDD AND >7,000 HDD					CENSUS REGIONS				>2,000 CDD AND <4,000 HDD			
		<2,000 CDD AND 5,500 TO 7,000 HDD		2,000 CDD AND 4,000 TO 5,499 HDD		>2,000 CDD AND <4,000 HDD	NORTHEAST		NORTH CENTRAL		SOUTH		WEST	
		5,500 TO 7,000 HDD	4,000 TO 5,499 HDD	>2,000 CDD AND <4,000 HDD	5,500 OR MORE HDD	LESS THAN 5,500 OR MORE HDD	4,000 OR MORE CDD	LESS THAN 2,000 OR MORE CDD	4,000 OR MORE CDD	LESS THAN 4,000 OR MORE CDD				
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	
FUELS USED FOR ANY USE (MORE THAN ONE FUEL OFTEN USED)														
ELECTRICITY	100.0	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	99.6	100.0	
NATURAL GAS	64.2	51.8	75.2	61.3	68.5	52.8	53.4	74.8	75.8	50.3	52.6	51.7	85.3	
WOOD	28.8	41.2	27.7	30.2	30.9	15.5	34.6	20.3	27.8	30.7	15.7	48.3	31.5	
FUEL OIL	15.6	28.3	16.8	28.0	3.3	2.0	40.7	55.2	9.6	10.5	2.0	7.0	.2	
KEROSENE	2.4	2.9	1.8	2.7	2.7	2.1	3.6	4.7	1.3	3.9	2.2	.6	.5	
LPG	8.8	18.0	5.6	6.3	8.0	13.6	11.0	1.4	9.8	11.3	13.5	4.4	4.4	
SOLAR COLLECTORS	.4	.4	Q	.3	.9	.7	.1	.5	.1	.1	.2	.5	2.2	
MAIN HEATING FUEL AND HEATING EQUIPMENT														
NATURAL GAS	55.6	46.4	68.1	45.5	62.4	47.8	40.5	37.8	72.7	46.2	47.8	47.5	77.8	
CENTRAL WARM-AIR FURNACE	34.3	30.5	47.9	29.5	32.8	24.3	18.9	14.9	55.7	27.4	24.1	34.9	42.0	
STEAM OR HOT WATER SYSTEM FLOOR, WALL, OR PIPELESS FURNACE	8.7	9.7	16.5	11.5	1.5	.9	18.7	21.6	10.9	4.1	1.0	6.6	.9	
ROOM HEATER	7.0	3.2	1.3	2.1	20.3	7.2	.4	.3	2.9	6.7	6.4	3.9	31.0	
ELECTRICITY	5.6	3.0	2.3	2.4	7.8	15.4	2.4	1.0	3.2	8.0	16.2	2.1	3.9	
BUILT-IN ELECTRIC UNITS	17.1	5.2	10.3	16.7	20.0	33.6	9.9	7.0	7.5	23.0	34.8	33.6	12.8	
CENTRAL WARM-AIR FURNACE	6.6	3.3	7.2	9.0	7.2	3.1	8.7	3.8	4.6	8.0	3.3	17.8	5.8	
HEAT PUMP	6.1	1.2	2.3	5.3	7.1	16.2	.7	1.0	2.3	9.1	17.6	10.9	3.1	
OTHER	3.3	Q	.5	2.1	4.2	10.8	.2	2.3	.2	5.0	10.4	4.0	2.2	
FUEL OIL	1.1	.7	.3	.4	1.4	3.5	.4	Q	.4	1.0	3.5	.9	1.7	
STEAM OR HOT WATER SYSTEM	13.6	20.9	15.5	25.6	2.5	1.7	35.5	52.3	7.7	8.1	1.8	6.5	Q	
CENTRAL WARM-AIR FURNACE	8.0	7.4	9.8	17.8	.5	.2	25.3	43.3	1.1	2.1	.3	.5	Q	
OTHER	4.9	11.7	5.3	7.4	1.4	.4	10.0	9.0	5.6	4.9	.5	5.5	Q	
WOOD	.7	1.9	.3	.4	.6	1.0	.2	Q	1.0	1.0	1.1	.4	Q	
HEATING STOVE	6.4	18.5	2.7	7.1	6.7	2.7	10.3	1.4	5.6	11.6	2.7	9.4	2.5	
OTHER	5.5	14.6	2.4	6.6	5.8	1.8	9.2	1.4	4.1	10.8	1.8	8.5	1.8	
LPG	1.0	3.9	.3	.5	.9	.9	1.2	Q	1.5	.8	.9	.9	.7	
CENTRAL WARM-AIR FURNACE	4.4	4.5	2.3	2.6	5.5	9.7	1.1	Q	4.8	5.8	10.5	2.6	2.6	
ROOM HEATER	2.3	2.4	1.4	1.3	2.8	4.8	.2	Q	2.8	2.6	5.2	1.5	1.9	
OTHER	1.4	1.1	.3	.9	1.8	3.8	.4	Q	.9	2.5	4.2	1.1	Q	
KEROSENE	.7	1.1	.6	.4	.9	1.1	.4	Q	1.2	.7	1.2	.1	.7	
OTHER	1.0	1.1	.2	.6	1.7	1.9	1.2	.2	.1	2.6	2.1	Q	.2	
NONE	1.2	3.3	.9	1.9	.6	Q	1.5	1.3	1.5	2.6	Q	.5	Q	
SECONDARY HEATING FUEL AND HEATING EQUIPMENT														
WOOD	18.8	19.7	20.2	19.4	20.9	11.6	19.0	14.7	18.3	15.8	12.1	35.5	25.2	
FIREPLACE	14.7	9.3	15.0	14.7	19.1	10.9	12.0	12.6	12.0	12.0	11.4	27.9	24.5	
HEATING STOVE	4.1	10.4	5.2	4.7	1.8	.7	6.9	2.1	6.3	3.8	.7	7.6	.7	
OTHER	Q	Q	.1	Q	Q	Q	.1	Q	Q	Q	Q	Q	Q	
ELECTRICITY	10.8	9.7	8.9	10.7	14.2	9.9	12.5	9.0	8.0	13.7	10.2	10.9	13.1	
PORTABLE HEATER	7.0	5.5	6.1	6.0	9.4	7.3	9.9	6.5	4.1	8.5	7.6	4.7	8.6	
BUILT-IN ELECTRIC UNITS	3.1	3.7	2.5	3.5	3.6	2.0	2.6	1.8	3.1	3.3	2.0	5.1	4.0	
HEAT PUMP	.4	.5	.1	.3	.7	.1	Q	Q	.7	.7	.2	Q	.2	
OTHER	.5	.1	.2	.8	.6	.5	Q	.7	.1	1.1	.4	1.1	.2	
NATURAL GAS	3.4	2.5	3.5	2.3	3.7	5.4	2.0	.6	3.9	3.6	5.7	3.4	3.3	
ROOM HEATER	1.5	.7	1.3	1.3	1.3	3.2	1.0	Q	1.5	2.4	3.5	.6	.2	
OTHER	1.9	1.9	2.2	1.1	2.4	2.1	.9	.6	2.4	1.2	2.2	2.7	3.1	

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Heating and Cooling Degree-Days and Census Regions

Table 17. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)-- LONG-TERM AVERAGE												
		CENSUS REGIONS												
		<2,000 CDD AND >7,000 HDD	<2,000 CDD AND 5,500 HDD	<2,000 CDD AND 4,000 HDD	<2,000 CDD AND 5,499 HDD	>2,000 CDD AND <4,000 HDD	NORTHEAST		NORTH CENTRAL		SOUTH		WEST	
							5,500 HDD OR MORE	LESS THAN 5,500 HDD	4,000 HDD OR MORE	LESS THAN 2,000 CDD OR MORE	2,000 CDD OR MORE	4,000 HDD OR MORE	LESS THAN 4,000 HDD	
<b>SECONDARY HEATING FUEL AND HEATING EQUIPMENT</b>														
FUEL OIL.....	1.9	7.1	1.2	2.5	0.8	0.2	5.0	2.9	1.6	2.6	0.2	0.5	Q	
CENTRAL WARM-AIR FURNACE OR STEAM OR HOT WATER SYSTEM.....	1.6	6.3	1.1	2.0	.5	.2	4.7	2.4	1.4	2.0	.2	.5	Q	
OTHER.....	.3	.9	.1	.5	.2	Q	.2	.5	.4	.6	Q	Q	Q	
KEROSENE.....	1.4	1.8	1.6	2.1	.9	.1	2.2	4.5	1.3	1.2	.2	.6	0.2	
PORTABLE HEATER.....	.7	.8	.6	1.4	.7	Q	.4	3.1	.8	.7	Q	.4	.2	
ROOM HEATER/OTHER.....	.6	1.0	1.0	.7	.3	.1	1.8	1.4	.5	.6	.2	.2	Q	
LPG.....	.9	3.2	.4	.6	.9	1.0	1.0	.2	1.5	1.1	1.1	.3	.2	
OTHER.....	.5	.4	.8	.4	.4	.1	1.3	.6	.1	.5	.1	1.5	.2	
NONE.....	62.2	55.6	63.5	62.0	58.1	71.7	57.0	67.6	65.1	61.5	70.4	47.4	57.9	
<b>FUEL COMBINATIONS</b>														
USE NATURAL GAS FOR HEATING... NATURAL GAS FOR HOT WATER AND HAVE A/C.....	55.6	46.4	68.1	45.5	62.4	47.8	40.5	37.8	72.7	46.2	47.8	47.5	77.8	
NATURAL GAS FOR HOT WATER AND NO A/C.....	30.1	14.9	36.0	31.8	25.0	36.5	15.8	26.6	42.4	28.1	37.4	11.8	27.7	
ELECTRICITY FOR HOT WATER AND HAVE A/C.....	3.1	2.8	2.2	2.1	5.1	3.5	.8	.5	3.8	6.9	3.8	1.1	.4	
ELECTRICITY FOR HOT WATER AND NO A/C.....	1.7	4.1	1.6	1.5	1.4	1.2	1.0	.3	2.5	1.7	1.3	5.4	.4	
OTHER.....	.2	Q	.1	.3	.1	.2	Q	.9	.1	Q	.2	Q	.2	
USE ELECTRICITY FOR HEATING... ELECTRICITY FOR HOT WATER AND HAVE A/C.....	17.1	5.2	10.3	16.7	20.0	33.6	9.9	7.0	7.5	23.0	34.8	33.6	12.8	
ELECTRICITY FOR HOT WATER AND NO A/C.....	11.4	1.8	6.1	9.2	13.4	28.2	4.4	4.9	5.8	18.3	29.5	10.6	4.2	
OTHER.....	3.9	2.6	3.4	6.7	3.1	1.9	4.9	1.4	1.1	3.1	1.9	21.1	3.7	
USE FUEL OIL FOR MAIN HEAT... FUEL OIL FOR HOT WATER AND HAVE A/C.....	13.6	20.9	15.5	25.6	2.5	1.7	35.5	52.3	7.7	8.1	1.8	6.5	Q	
FUEL OIL FOR HOT WATER AND NO A/C.....	3.5	1.1	4.0	8.6	.4	Q	9.2	20.5	.2	1.5	Q	.1	Q	
OTHER.....	3.3	3.8	3.5	7.9	Q	Q	10.8	20.1	Q	.2	Q	.4	Q	
ELECTRICITY FOR HOT WATER AND HAVE A/C.....	2.2	4.4	2.2	2.9	1.2	1.1	2.6	2.9	2.7	3.4	1.2	1.0	Q	
ELECTRICITY FOR HOT WATER AND NO A/C.....	2.6	10.0	2.5	3.1	.5	.2	6.6	2.2	3.6	1.7	.2	5.0	Q	
OTHER.....	2.0	1.6	3.3	3.2	.4	.4	6.2	6.5	1.1	1.2	.4	.1	Q	
USE WOOD FOR MAIN HEAT.....	6.4	18.5	2.7	7.1	6.7	2.7	10.3	1.4	5.6	11.6	2.7	9.4	2.5	
USE LPG FOR MAIN HEAT.....	4.4	4.5	2.3	2.6	5.5	9.7	1.1	Q	4.8	5.8	10.5	2.6	2.6	
USE KEROSENE FOR MAIN HEAT....	1.0	1.1	.2	.6	1.7	1.9	1.2	.2	.1	2.6	2.1	Q	.2	
USE COAL FOR MAIN HEAT.....	.8	2.7	.4	1.3	.4	Q	.7	1.2	1.1	1.6	Q	.2	Q	
NO HEATING FUEL.....	.5	Q	Q	Q	.6	2.6	Q	Q	Q	Q	.2	Q	4.1	
OTHER FUEL.....	.4	.6	.5	.6	.2	Q	.8	.1	.3	1.1	Q	.3	Q	

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Heating and Cooling Degree-Days and Census Regions

Table 17. (Continued)

HOUSEHOLD CHARACTERISTICS	ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)-- LONG-TERM AVERAGE												
	TOTAL	<2,000 CDD AND >7,000 HDD					CENSUS REGIONS						
		<2,000 CDD AND >7,000 HDD	<2,000 CDD AND 5,500 TO 7,000 HDD	<2,000 CDD AND 4,000 TO 5,499 HDD	<2,000 CDD AND <4,000 HDD	>2,000 CDD AND <4,000 HDD	NORTHEAST		NORTH CENTRAL	SOUTH		WEST	
							5,500 HDD OR MORE	LESS THAN 5,500 HDD	4,000 HDD OR MORE	LESS THAN 2,000 CDD OR MORE	2,000 CDD OR MORE	4,000 HDD OR MORE	LESS THAN 4,000 HDD
<b>WATER HEATING FUEL</b>													
NATURAL GAS.....	54.8	41.8	68.2	45.8	61.1	47.0	45.4	44.2	68.1	40.5	46.4	44.3	84.2
ELECTRICITY.....	32.6	38.5	20.7	32.9	34.2	45.5	26.6	12.9	24.5	52.2	47.3	51.6	10.8
FUEL OIL OR KEROSENE.....	7.4	6.4	8.2	17.4	.4	Q	22.5	42.8	.4	1.7	Q	.5	Q
LIQUID PETROLEUM GAS.....	4.1	8.7	2.6	3.2	3.4	6.1	4.2	Q	5.4	4.2	5.8	2.9	3.3
WOOD.....	.4	1.2	.1	.4	.3	.6	.8	Q	.2	.7	.1	.4	.5
COAL.....	.4	2.5	.3	.1	.2	Q	.4	.1	1.1	.3	Q	Q	Q
SOLAR.....	.2	Q	Q	Q	.3	.5	Q	Q	Q	.1	Q	.1	1.1
NONE.....	.2	.7	Q	.2	.1	.3	Q	Q	.3	.3	.4	Q	Q
<b>MAIN COOKING FUEL</b>													
ELECTRICITY.....	54.7	63.6	50.2	53.5	58.1	52.5	53.4	33.0	51.8	66.5	52.9	83.1	44.5
NATURAL GAS.....	38.7	22.0	45.5	41.3	37.7	36.1	36.3	66.4	41.6	25.4	35.7	13.4	53.2
LIQUID PETROLEUM GAS.....	6.2	13.7	3.8	4.6	4.0	11.0	9.8	.6	6.1	7.3	11.0	2.9	2.2
WOOD.....	.2	.3	.1	.4	.2	.1	.2	Q	Q	.6	.2	.5	Q
OTHER/NONE.....	.2	.4	.4	.2	.1	.2	.3	Q	.5	.2	.2	.1	.1
<b>CLOTHES DRYING FUEL</b>													
<b>WITH CLOTHES DRYER.....</b>													
ELECTRICITY.....	60.7	67.1	64.9	59.9	58.3	53.9	58.1	45.5	69.7	60.2	55.1	70.1	57.8
NATURAL GAS.....	45.1	56.8	41.1	46.1	43.3	44.8	40.7	26.1	48.3	53.0	45.7	64.3	32.8
LIQUID PETROLEUM GAS.....	15.1	8.6	23.3	13.4	14.7	9.1	16.2	19.8	20.4	7.0	9.3	5.3	24.8
LPG.....	.6	1.7	.6	.6	.4	.5	1.1	Q	1.1	.2	.4	.4	.8
<b>WITHOUT CLOTHES DRYER.....</b>													
ELECTRICITY.....	39.3	32.9	35.1	40.1	41.7	46.1	41.9	54.5	30.3	39.8	44.9	29.9	42.2
<b>AIR CONDITIONING (A/C)</b>													
<b>CENTRAL A/C ONLY.....</b>													
INDIVIDUAL ROOM UNITS ONLY.....	26.4	7.0	19.0	26.1	28.0	51.4	5.3	14.4	25.7	34.8	52.5	16.3	21.8
CENTRAL A/C AND ROOM UNITS.....	31.3	22.5	35.0	35.4	27.7	29.9	32.1	47.7	34.3	35.2	32.2	11.8	15.6
NO AIR CONDITIONING.....	.5	Q	.6	.2	.5	.9	.2	Q	.6	.4	.9	Q	.5
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>													
ALL.....	41.8	70.5	45.3	38.3	43.8	17.8	62.3	37.9	39.4	29.6	14.3	71.9	62.1
SOME.....	36.9	14.8	27.8	36.0	38.9	67.2	12.3	24.6	36.8	50.1	69.7	19.1	24.1
NONE.....	21.3	14.7	26.9	25.6	17.3	14.9	25.3	37.3	23.8	20.3	16.0	9.0	13.8
<b>WOOD BURNED IN PAST 12 MONTHS</b>													
YES.....	41.8	70.5	45.3	38.4	43.8	17.8	62.3	38.2	39.4	29.6	14.3	71.9	62.1
LESS THAN 1/3 CORD.....	27.4	39.2	26.4	29.2	29.2	14.4	34.1	19.9	26.0	29.2	14.7	46.4	29.3
1/3 CORD OR MORE.....	8.6	7.0	9.2	8.0	12.0	4.3	9.1	6.9	7.6	6.8	4.4	14.7	15.4
NO.....	18.8	32.1	17.2	21.2	17.2	10.1	25.0	13.0	18.4	22.4	10.2	31.7	13.9
<b>MAIN FUEL IN NOVEMBER 1980</b>													
SAME FUEL AS IN NOV. 1981.....	72.6	60.8	73.6	70.8	70.8	85.6	65.9	80.1	74.0	70.8	85.3	53.6	70.7
DIFFERENT FUEL.....	27.4	39.2	26.4	29.2	29.2	14.4	34.1	19.9	26.0	29.2	14.7	46.4	29.3
FUEL IN NOVEMBER 1980	8.6	7.0	9.2	8.0	12.0	4.3	9.1	6.9	7.6	6.8	4.4	14.7	15.4
FUEL OIL OR KEROSENE.....	18.8	32.1	17.2	21.2	17.2	10.1	25.0	13.0	18.4	22.4	10.2	31.7	13.9
NATURAL GAS.....	1.3	1.1	1.8	2.0	.6	.3	2.5	2.9	1.1	1.6	.3	.9	Q
LIQUID PETROLEUM GAS.....	.3	.7	.2	.1	.5	.4	.2	Q	.3	.3	.4	.5	.7
ELECTRICITY.....	.2	.5	.2	.1	Q	.1	.4	Q	.3	Q	.2	.4	Q
OTHER/NO FUEL.....	.2	.4	.1	.3	.1	Q	.3	.2	.1	.2	.1	.4	Q
NOT HEATED IN NOV. 1981.....	.3	.2	.3	.5	.2	.2	.4	.8	.2	.2	.2	.5	.2
BUILT IN 1981/1982.....	.5	Q	Q	Q	.6	2.6	Q	Q	Q	Q	.2	Q	4.1
	.8	1.0	.3	1.2	.6	1.1	.6	Q	1.1	.8	1.2	.5	.6

SEE FOOTNOTES AT END OF TABLE.





# Fuel Use by Heating and Cooling Degree-Days and Census Regions

Table 17. (Continued)

HOUSEHOLD CHARACTERISTICS	ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)-- LONG-TERM AVERAGE														
	TOTAL	<2,000 CDD AND >7,000 HDD						CENSUS REGIONS							
		<2,000 CDD AND >7,000 HDD		<2,000 CDD AND 5,500 TO 7,000 HDD		>2,000 CDD AND <4,000 HDD		NORTHEAST		NORTH CENTRAL		SOUTH		WEST	
		<2,000 CDD AND >7,000 HDD	<2,000 CDD AND 5,500 TO 7,000 HDD	<2,000 CDD AND 5,500 TO 7,000 HDD	<2,000 CDD AND 5,500 TO 7,000 HDD	>2,000 CDD AND <4,000 HDD	>2,000 CDD AND <4,000 HDD	5,500 OR MORE HDD	LESS THAN 5,500 HDD	4,000 OR MORE HDD	LESS THAN 2,000 CDD OR MORE	2,000 CDD OR MORE	4,000 OR MORE HDD	LESS THAN 4,000 HDD	
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	100.0	
AVAILABILITY OF NATURAL GAS IN THE NEIGHBORHOOD (SINGLE-FAMILY UNITS AND MOBILE HOMES)															
USES ANY NATURAL GAS.....	61.9	47.6	73.0	55.3	68.1	56.5	44.4	64.8	74.3	47.9	57.0	51.6	86.9		
DOES NOT USE NATURAL GAS.....	38.1	52.4	27.0	44.7	31.9	43.5	55.6	35.2	25.7	52.1	43.0	48.4	13.1		
GAS IS AVAILABLE.....	9.7	9.6	8.3	11.7	9.2	9.3	9.5	14.1	6.4	9.6	9.3	25.5	4.0		
GAS IS NOT AVAILABLE.....	28.4	42.7	18.7	32.9	22.7	34.3	46.1	21.1	19.3	42.4	33.7	23.0	9.2		
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		
CENTRAL MAIN HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)															
YES.....	41.5	51.9	50.0	61.7	12.6	10.5	51.0	83.3	44.8	30.4	8.1	29.1	7.1		
NO/NO MAIN HEATING SYSTEM.....	58.5	48.1	50.0	38.3	87.4	89.5	49.0	16.7	55.2	69.6	91.9	70.9	92.9		
CENTRAL WATER HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)															
YES.....	53.5	59.8	59.0	68.0	37.9	22.2	54.4	86.8	56.3	41.8	23.0	37.2	42.3		
NO/NO WATER HEATING FUEL NO HOT RUNNING WATER.....	46.5	40.2	41.0	32.0	62.1	77.8	45.6	13.2	43.7	58.2	77.0	62.8	57.7		
CENTRAL AIR CONDITIONING SYSTEM FOR THE BUILDING (2-OR-MORE UNIT BUILDINGS)															
YES.....	3.0	2.9	1.4	4.8	1.3	6.0	0.6	1.9	1.5	7.8	3.4	5.6	3.2		
NO.....	53.8	29.5	48.6	58.5	49.6	37.3	39.1	56.1	54.1	67.7	89.6	32.5	36.4		
NO AIR CONDITIONING.....	43.2	67.7	50.0	36.7	49.1	6.7	60.2	42.0	44.5	24.5	7.0	61.9	60.5		

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Fuel Use by Year House Built

**Table 18. Fuel Use by Year House Built, as of November 1981**  
(Million Households)

HOUSEHOLD CHARACTERISTICS	TOTAL	YEAR HOUSE BUILT							
		1979 OR LATER	1975 TO 1978	1970 TO 1974	1965 TO 1969	1960 TO 1964	1950 TO 1959	1940 TO 1949	1939 OR EARLIER
TOTAL HOUSEHOLDS .....	83.1	4.0	7.7	10.7	8.5	7.6	13.5	6.9	24.2
<b>FUELS USED FOR ANY USE (MORE THAN ONE FUEL OFTEN USED)</b>									
ELECTRICITY.....	83.1	4.0	7.7	10.7	8.5	7.6	13.5	6.9	24.2
NATURAL GAS.....	53.4	1.4	3.3	5.1	5.4	5.4	10.0	5.0	17.8
WOOD.....	23.9	1.5	3.2	3.1	2.2	2.3	4.0	1.7	5.8
FUEL OIL.....	13.0	.1	.4	1.2	1.1	1.1	2.2	1.2	5.6
KEROSENE.....	2.0	Q	.1	.3	.1	.2	.4	.2	.7
LPG.....	7.3	.4	.7	1.3	.6	.7	.7	.5	2.6
SOLAR COLLECTORS.....	.4	Q	Q	.1	.1	Q	.1	.1	Q
<b>MAIN HEATING FUEL AND HEATING EQUIPMENT</b>									
NATURAL GAS.....	46.2	1.2	2.9	4.8	4.8	4.8	9.0	4.4	14.2
CENTRAL WARM-AIR FURNACE... STEAM OR HOT WATER SYSTEM... FLOOR, WALL, OR PIPELESS FURNACE.....	28.5 7.2 5.9	1.0 Q .1	2.5 .3 .1	4.0 .4 .4	3.2 1.0 .4	3.3 .7 .5	6.0 .6 1.4	2.1 .5 .9	6.2 3.5 2.1
ROOM HEATER.....	4.7	Q	Q	.1	.2	.3	.9	.8	2.3
ELECTRICITY.....	14.2	2.1	3.2	3.3	1.8	.9	1.1	.5	1.2
BUILT-IN ELECTRIC UNITS.....	5.5	.7	1.1	1.2	.8	.5	.5	.2	.6
CENTRAL WARM-AIR FURNACE... HEAT PUMP.....	5.1 2.7	.8 .6	1.3 .9	1.7 .3	.7 .3	.1 .2	.3 .2	.1 .1	.2 .1
OTHER.....	.9	Q	.1	.1	Q	.1	.1	.1	.3
FUEL OIL.....	11.3	.1	.3	.9	1.0	1.0	2.0	1.1	5.0
STEAM OR HOT WATER SYSTEM... CENTRAL WARM-AIR FURNACE... OTHER.....	6.7 4.1 .6	Q .1 Q	.1 .2 Q	.4 .5 Q	.6 .3 .1	.6 .3 Q	1.0 .8 .2	.6 .4 .1	3.3 1.6 .2
WOOD.....	5.4	Q	.7	.7	.4	.4	.6	.6	1.8
HEATING STOVE.....	4.6	.3	.6	.6	.4	.3	.6	.5	1.5
OTHER.....	.8	Q	.1	.1	Q	.1	Q	.1	.3
LPG.....	3.7	.2	.4	.7	.3	.4	.3	.2	1.2
CENTRAL WARM-AIR FURNACE... ROOM HEATER.....	1.9 1.2	.2 Q	.3 Q	.6 Q	.2 .1	.2 .2	.1 .1	.1 .1	.3 .6
OTHER.....	.6	Q	.1	.1	Q	Q	.1	Q	.3
KEROSENE.....	.8	Q	.1	.2	.1	.1	.2	.1	.2
OTHER.....	1.0	Q	Q	Q	.1	.1	.3	.1	.4
NONE.....	.4	Q	Q	.1	Q	Q	Q	Q	.2
<b>SECONDARY HEATING FUEL AND HEATING EQUIPMENT</b>									
WOOD.....	15.7	1.1	2.3	2.2	1.6	1.7	2.9	0.9	3.0
FIREPLACE.....	12.2	.8	1.9	1.7	1.3	1.4	2.5	.7	1.8
HEATING STOVE.....	3.4	.2	.4	.5	.3	.3	.3	.2	1.2
OTHER.....	Q	Q	Q	Q	Q	Q	Q	Q	Q
ELECTRICITY.....	9.0	.4	.7	1.0	.9	.8	1.6	1.2	2.5
PORTABLE HEATER.....	5.8	.1	.3	.6	.6	.5	.9	.9	1.8
BUILT-IN ELECTRIC UNITS.....	2.6	.1	.2	.3	.3	.2	.6	.3	.7
HEAT PUMP.....	.3	.1	.1	Q	Q	Q	Q	Q	Q
OTHER.....	.4	Q	.1	.1	Q	Q	.1	Q	Q
NATURAL GAS.....	2.8	Q	.2	.2	.3	.3	.6	.4	.9
ROOM HEATER.....	1.3	Q	Q	Q	.1	.1	.3	.2	.5
OTHER.....	1.6	Q	.2	.2	.1	.2	.3	.1	.4
FUEL OIL.....	1.6	Q	.1	.3	.2	.1	.2	.1	.6
CENTRAL WARM-AIR FURNACE OR STEAM OR HOT WATER SYSTEM.....	1.3	Q	.1	.2	.1	Q	.2	.1	.5
OTHER.....	.3	Q	Q	Q	Q	Q	Q	Q	.1
KEROSENE.....	1.1	Q	Q	.1	.1	.1	.2	.1	.5
PORTABLE HEATER.....	.6	Q	Q	.1	Q	Q	.1	.1	.3
ROOM HEATER/OTHER.....	.5	Q	Q	Q	Q	Q	.1	Q	.3
LPG.....	.8	Q	.1	.2	Q	Q	.1	.1	.3
OTHER.....	.4	Q	.1	.1	Q	Q	Q	Q	.2
NONE.....	51.7	2.4	4.2	6.6	5.4	4.6	7.9	4.3	16.3

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Year House Built

Table 18. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	YEAR HOUSE BUILT							
		1979 OR LATER	1975 TO 1978	1970 TO 1974	1965 TO 1969	1960 TO 1964	1950 TO 1959	1940 TO 1949	1939 OR EARLIER
<b>FUEL COMBINATIONS</b>									
USE NATURAL GAS FOR HEATING...	46.2	1.2	2.9	4.8	4.8	4.8	9.0	4.4	14.2
NATURAL GAS FOR HOT WATER AND HAVE A/C.....	25.1	.6	1.8	3.2	3.3	3.0	5.2	2.2	5.7
NATURAL GAS FOR HOT WATER AND NO A/C.....	17.0	.5	.7	1.2	1.3	1.5	3.2	1.5	7.2
ELECTRICITY FOR HOT WATER AND HAVE A/C.....	2.6	.1	.3	.3	.2	.2	.4	.3	.7
ELECTRICITY FOR HOT WATER AND NO A/C.....	1.4	.1	.1	.1	.1	.1	.1	.3	.6
OTHER.....	.1	Q	Q	Q	Q	Q	Q	Q	Q
USE ELECTRICITY FOR HEATING... ELECTRICITY FOR HOT WATER AND HAVE A/C.....	14.2	2.1	3.2	3.3	1.8	.9	1.1	.5	1.2
ELECTRICITY FOR HOT WATER AND NO A/C.....	9.5	1.4	2.3	2.5	1.2	.7	.6	.2	.5
OTHER.....	3.2	.6	.7	.6	.4	.1	.3	.2	.4
USE FUEL OIL FOR MAIN HEAT... FUEL OIL FOR HOT WATER AND HAVE A/C.....	11.3	.1	.3	.9	1.0	1.0	2.0	1.1	5.0
FUEL OIL FOR HOT WATER AND NO A/C.....	2.9	Q	Q	.3	.3	.4	.7	.3	.9
OTHER.....	2.8	Q	.1	.1	.2	.2	.3	.2	1.6
ELECTRICITY FOR HOT WATER AND HAVE A/C.....	1.8	Q	.1	.3	.2	.2	.4	.3	.4
ELECTRICITY FOR HOT WATER AND NO A/C.....	2.2	Q	.1	.2	.2	.2	.5	.3	.8
OTHER.....	1.6	Q	Q	Q	Q	.1	.2	.1	1.3
USE WOOD FOR MAIN HEAT.....	5.4	.3	.7	.7	.4	.4	.6	.6	1.8
USE LPG FOR MAIN HEAT.....	3.7	.2	.4	.7	.3	.4	.3	.2	1.2
USE KEROSENE FOR MAIN HEAT....	.8	Q	.1	.2	.1	.1	.2	.1	.2
USE COAL FOR MAIN HEAT.....	.7	Q	Q	Q	Q	Q	.3	Q	.2
NO HEATING FUEL.....	.4	Q	Q	.1	Q	Q	Q	Q	.2
OTHER FUEL.....	.3	Q	Q	Q	Q	Q	Q	Q	.2
<b>WATER HEATING FUEL</b>									
NATURAL GAS.....	45.6	1.2	2.8	4.6	4.9	4.7	8.7	4.0	14.6
ELECTRICITY.....	27.1	2.6	4.4	4.9	2.8	2.0	3.1	2.1	5.1
FUEL OIL OR KEROSENE.....	6.1	Q	.2	.5	.6	.6	1.1	.5	2.7
LIQUID PETROLEUM GAS.....	3.4	.1	.3	.6	.2	.3	.3	.2	1.4
WOOD.....	.3	Q	Q	Q	Q	Q	Q	Q	.3
COAL.....	.3	Q	Q	Q	Q	Q	.2	Q	.1
SOLAR.....	.1	Q	Q	Q	Q	Q	Q	Q	Q
NONE.....	.2	Q	Q	Q	Q	Q	Q	Q	.1
<b>MAIN COOKING FUEL</b>									
ELECTRICITY.....	45.4	3.3	6.0	7.3	5.2	4.3	7.0	3.3	9.0
NATURAL GAS.....	32.2	.4	1.3	2.5	2.8	2.9	6.0	3.3	13.1
LIQUID PETROLEUM GAS.....	5.1	.3	.4	.9	.4	.4	.4	.3	1.9
WOOD.....	.2	Q	Q	Q	Q	Q	Q	Q	.1
OTHER/NONE.....	.2	Q	Q	Q	Q	Q	Q	Q	.1
<b>CLOTHES DRYING FUEL</b>									
WITH CLOTHES DRYER.....	50.4	3.0	5.4	6.6	5.0	5.3	8.8	4.1	12.3
ELECTRICITY.....	37.5	2.7	4.5	5.4	3.7	3.7	6.2	2.8	8.5
NATURAL GAS.....	12.5	.3	.9	1.0	1.2	1.6	2.7	1.2	3.7
LPG.....	.5	Q	.1	.1	.1	.1	Q	.1	.1
WITHOUT CLOTHES DRYER.....	32.7	1.0	2.3	4.1	3.5	2.3	4.6	2.9	11.9
<b>AIR CONDITIONING (A/C)</b>									
CENTRAL A/C ONLY.....	22.0	2.1	4.0	4.9	3.1	2.3	3.0	1.0	1.7
INDIVIDUAL ROOM UNITS ONLY....	26.0	.5	1.5	2.8	2.8	2.6	4.9	2.8	8.2
CENTRAL A/C AND ROOM UNITS....	.4	Q	Q	Q	Q	Q	.1	.1	.1
NO AIR CONDITIONING.....	34.7	1.4	2.3	3.0	2.6	2.7	5.5	3.1	14.2
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>									
ALL.....	30.7	2.3	4.5	6.0	4.3	3.4	4.7	2.1	3.5
SOME.....	17.7	.3	.9	1.7	1.7	1.6	3.3	1.8	6.5
NONE.....	34.7	1.4	2.3	3.0	2.6	2.7	5.5	3.1	14.2

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Year House Built

Table 18. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	YEAR HOUSE BUILT							
		1979 OR LATER	1975 TO 1978	1970 TO 1974	1965 TO 1969	1960 TO 1964	1950 TO 1959	1940 TO 1949	1939 OR EARLIER
<b>WOOD BURNED IN PAST 12 MONTHS</b>									
YES.....	22.8	1.3	3.1	3.0	2.1	2.2	3.8	1.6	5.6
LESS THAN 1/3 CORD.....	7.2	.5	1.0	.8	.6	.7	1.4	.5	1.6
1/3 CORD OR MORE.....	15.6	.8	2.1	2.2	1.5	1.4	2.3	1.1	4.0
NO.....	60.4	2.7	4.6	7.7	6.4	5.4	9.7	5.3	18.6
<b>MAIN FUEL IN NOVEMBER 1980</b>									
SAME FUEL AS IN NOV. 1981.....	80.2	3.3	7.6	10.5	8.3	7.4	13.3	6.7	23.1
DIFFERENT FUEL.....	1.9	Q	.1	.1	.2	.2	.2	.2	.9
<b>FUEL IN NOVEMBER 1980</b>									
FUEL OIL OR KEROSENE.....	1.1	Q	Q	Q	Q	.1	.1	.1	.6
NATURAL GAS.....	.5	Q	Q	Q	.1	.1	Q	Q	Q
LIQUID PETROLEUM GAS.....	.1	Q	Q	Q	Q	Q	Q	Q	.1
ELECTRICITY.....	.1	Q	Q	Q	.1	Q	Q	Q	Q
OTHER/NO FUEL.....	.2	Q	Q	Q	Q	Q	Q	Q	.1
NOT HEATED IN NOV. 1981.....	.4	Q	Q	.1	Q	Q	Q	Q	.2
BUILT IN 1981/1982.....	.7	.7	-	-	-	-	-	-	-
TOTAL SINGLE-FAMILY UNITS AND MOBILE HOMES.....	61.8	3.0	5.4	7.5	5.9	6.0	11.3	5.8	16.9
<b>AVAILABILITY OF NATURAL GAS IN THE NEIGHBORHOOD (SINGLE-FAMILY UNITS AND MOBILE HOMES)</b>									
USES ANY NATURAL GAS.....	38.3	1.1	2.3	3.6	3.6	4.2	8.2	4.0	11.3
DOES NOT USE NATURAL GAS.....	23.5	1.9	3.2	3.9	2.2	1.7	3.1	1.8	5.6
GAS IS AVAILABLE.....	6.0	.4	.9	.9	.5	.4	1.0	.6	1.2
(PERCENT).....	25.4	22.9	27.4	22.5	23.5	23.7	31.5	35.8	21.8
GAS IS NOT AVAILABLE.....	17.5	1.5	2.3	3.1	1.7	1.3	2.1	1.2	4.4
(PERCENT).....	74.6	77.1	72.6	77.5	76.5	76.3	68.5	64.2	78.2
TOTAL HOUSEHOLDS IN 2-OR-MORE UNIT BUILDINGS.....	21.4	1.0	2.3	3.1	2.6	1.6	2.2	1.1	7.3
<b>CENTRAL MAIN HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>									
YES.....	8.9	Q	0.4	1.0	1.0	0.7	1.1	0.7	3.9
NO/NO MAIN HEATING SYSTEM.....	12.5	1.0	1.9	2.1	1.6	.9	1.1	.4	3.4
<b>CENTRAL WATER HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>									
YES.....	11.4	.2	.7	1.3	1.4	1.0	1.4	.8	4.5
NO/NO WATER HEATING FUEL NO HOT RUNNING WATER.....	9.9	.8	1.6	1.8	1.3	.6	.8	.3	2.8
<b>CENTRAL AIR CONDITIONING SYSTEM FOR THE BUILDING (2-OR-MORE UNIT BUILDINGS)</b>									
YES.....	.6	Q	Q	.3	.1	Q	.1	Q	.1
NO.....	11.5	.8	1.8	2.2	1.9	1.1	.9	.4	2.5
NO AIR CONDITIONING.....	9.2	.2	.5	.7	.6	.5	1.2	.7	4.8

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Fuel Use by Year House Built

**Table 19. Fuel Use by Year House Built, as of November 1981  
(Percentage of Households)**

HOUSEHOLD CHARACTERISTICS	TOTAL	YEAR HOUSE BUILT							
		1979 OR LATER	1975 TO 1978	1970 TO 1974	1965 TO 1969	1960 TO 1964	1950 TO 1959	1940 TO 1949	1939 OR EARLIER
TOTAL HOUSEHOLDS	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>FUELS USED FOR ANY USE (MORE THAN ONE FUEL OFTEN USED)</b>									
ELECTRICITY	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.0	99.9
NATURAL GAS	64.2	34.5	42.0	48.1	63.2	71.5	74.0	72.5	73.6
WOOD	28.8	36.8	41.8	29.1	26.3	30.6	29.8	24.3	24.1
FUEL OIL	15.6	3.5	5.4	11.2	12.8	14.1	16.7	17.1	23.1
KEROSENE	2.4	.6	1.9	2.6	1.6	2.0	2.7	2.8	2.9
LPG	8.8	9.2	8.7	11.9	6.7	9.1	5.1	6.9	10.7
SOLAR COLLECTORS	.4	.4	.5	.7	.9	.1	.5	.8	.1
<b>MAIN HEATING FUEL AND HEATING EQUIPMENT</b>									
NATURAL GAS	55.6	30.8	37.7	45.4	57.0	63.1	66.6	63.0	58.8
CENTRAL WARM-AIR FURNACE	34.3	26.0	32.8	37.3	37.8	43.9	44.7	30.6	25.7
STEAM OR HOT WATER SYSTEM	8.7	1.1	3.5	4.1	12.2	9.2	4.7	7.7	14.6
FLOOR, WALL, OR PIPELESS FURNACE	7.0	3.4	.9	3.4	4.7	6.4	10.4	12.5	8.8
ROOM HEATER	5.6	.3	.5	.6	2.3	3.5	6.7	12.2	9.7
ELECTRICITY	17.1	53.8	41.8	31.2	21.6	11.6	8.1	7.2	5.0
BUILT-IN ELECTRIC UNITS	6.6	17.2	13.7	11.6	9.4	6.2	3.7	2.8	2.4
CENTRAL WARM-AIR FURNACE	6.1	20.3	16.2	15.5	7.7	2.0	2.1	1.6	.8
HEAT PUMP	3.3	16.0	11.1	2.8	4.1	2.5	1.4	.8	.5
OTHER	1.1	.4	.8	1.3	.4	.9	.9	1.9	1.4
FUEL OIL	13.6	2.7	4.0	8.5	11.2	12.9	15.0	15.4	20.6
STEAM OR HOT WATER SYSTEM	8.0	.7	1.8	4.0	6.8	8.1	7.7	8.4	13.5
CENTRAL WARM-AIR FURNACE	4.9	2.0	2.2	4.5	3.7	4.2	6.0	5.2	6.5
OTHER	.7	Q	Q	Q	.7	.5	1.3	1.7	.6
WOOD	6.4	6.9	8.7	6.4	4.5	5.0	4.5	8.8	7.3
HEATING STOVE	5.5	6.4	7.8	5.2	4.2	3.9	4.2	6.7	6.1
OTHER	1.0	.5	.9	1.2	.3	1.1	.3	2.1	1.2
LPG	4.4	4.9	5.8	6.2	3.8	5.2	2.0	2.9	5.0
CENTRAL WARM-AIR FURNACE	2.3	4.9	4.2	5.3	2.8	2.2	.5	.9	1.3
ROOM HEATER	1.4	Q	.3	.2	.7	2.7	1.0	1.3	2.6
OTHER	.7	Q	1.3	.7	.4	.3	.5	.7	1.1
KEROSENE	1.0	.4	1.5	1.5	.8	1.1	1.2	1.3	.6
OTHER	1.2	.2	.4	.3	.8	.7	2.3	1.0	1.8
NONE	.5	.4	.2	.5	.2	.4	.3	.4	.9
<b>SECONDARY HEATING FUEL AND HEATING EQUIPMENT</b>									
WOOD	18.8	26.3	30.3	20.5	18.9	22.9	21.4	12.4	12.4
FIREPLACE	14.7	21.2	24.7	16.1	15.5	18.9	18.8	9.5	7.4
HEATING STOVE	4.1	4.9	5.6	4.4	3.4	4.0	2.5	2.7	5.0
OTHER	Q	.2	Q	Q	Q	Q	Q	.1	Q
ELECTRICITY	10.8	9.3	9.6	8.9	10.6	10.3	11.6	16.8	10.4
PORTABLE HEATER	7.0	2.5	4.4	5.9	7.1	7.0	6.6	12.6	7.4
BUILT-IN ELECTRIC UNITS	3.1	3.3	2.4	2.4	3.2	2.6	4.4	3.8	2.7
HEAT PUMP	.4	2.3	1.4	.1	Q	.4	.1	Q	.2
OTHER	.5	1.2	1.4	.5	.3	.3	.5	.4	.1
NATURAL GAS	3.4	1.0	2.4	2.3	3.0	4.0	4.1	5.3	3.6
ROOM HEATER	1.5	.3	.3	.4	1.4	1.1	1.9	3.4	2.1
OTHER	1.9	.7	2.1	2.0	1.6	2.9	2.2	1.9	1.6
FUEL OIL	1.9	.8	1.4	2.7	1.9	1.0	1.7	1.3	2.5
CENTRAL WARM-AIR FURNACE OR STEAM OR HOT WATER SYSTEM	1.6	.6	1.4	2.2	1.4	.6	1.4	1.3	2.2
OTHER	.3	.3	Q	.4	.5	.4	.3	Q	.3
KEROSENE	1.4	.2	.5	1.3	.7	.9	1.6	1.2	2.2
PORTABLE HEATER	.7	.2	Q	.9	.3	.5	.9	.9	1.1
ROOM HEATER/OTHER	.6	Q	.5	.5	.4	.4	.7	.3	1.1
LPG	.9	1.1	.8	1.5	.5	.5	.9	.7	1.1
OTHER	.5	.5	.8	.5	.5	.1	.2	.1	.7
NONE	62.2	60.7	54.2	62.3	63.9	60.3	58.5	62.1	67.1

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Year House Built

Table 19. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	YEAR HOUSE BUILT							
		1979 OR LATER	1975 TO 1978	1970 TO 1974	1965 TO 1969	1960 TO 1964	1950 TO 1959	1940 TO 1949	1939 OR EARLIER
<b>FUEL COMBINATIONS</b>									
USE NATURAL GAS FOR HEATING... AND HAVE A/C.....	55.6	30.8	37.7	45.4	57.0	63.1	66.6	63.0	58.8
NATURAL GAS FOR HOT WATER AND NO A/C.....	30.1	15.4	23.1	30.3	38.8	39.2	38.7	31.6	23.7
ELECTRICITY FOR HOT WATER AND HAVE A/C.....	20.5	12.1	8.8	10.9	14.8	19.5	23.9	22.3	29.6
ELECTRICITY FOR HOT WATER AND NO A/C.....	3.1	1.8	4.0	3.1	2.3	3.0	3.1	5.0	2.8
OTHER.....	1.7	1.5	1.8	.9	.7	1.2	.8	3.8	2.6
USE ELECTRICITY FOR HEATING... AND HAVE A/C.....	17.1	53.8	41.8	31.2	21.6	11.6	8.1	7.2	5.0
ELECTRICITY FOR HOT WATER AND NO A/C.....	11.4	35.8	29.8	23.3	14.1	8.7	4.8	3.4	2.1
OTHER.....	3.9	14.4	9.0	6.0	4.3	1.8	2.2	2.4	1.5
USE FUEL OIL FOR MAIN HEAT... AND HAVE A/C.....	1.8	3.6	2.9	1.9	3.3	1.2	1.1	1.4	1.4
FUEL OIL FOR HOT WATER AND NO A/C.....	13.6	2.7	4.0	8.5	11.2	12.9	15.0	15.4	20.6
ELECTRICITY FOR HOT WATER AND HAVE A/C.....	3.5	Q	.5	2.7	3.9	5.6	4.8	3.7	3.7
ELECTRICITY FOR HOT WATER AND NO A/C.....	3.3	.7	1.4	1.1	2.5	2.1	2.5	3.0	6.6
OTHER.....	2.2	1.2	1.2	2.8	2.4	2.1	3.0	3.8	1.6
USE WOOD FOR MAIN HEAT.....	2.6	.4	.8	1.8	2.3	2.3	3.5	3.6	3.5
USE LPG FOR MAIN HEAT.....	2.0	.4	.1	.2	.2	.8	1.2	1.2	5.3
USE KEROSENE FOR MAIN HEAT....	6.4	6.9	8.7	6.4	4.5	5.0	4.5	8.8	7.3
USE COAL FOR MAIN HEAT.....	4.4	4.9	5.8	6.2	3.8	5.2	2.0	2.9	5.0
NO HEATING FUEL.....	1.0	.4	1.5	1.5	.8	1.1	1.2	1.3	.6
OTHER FUEL.....	.8	Q	.2	.2	.5	.4	2.1	.6	.9
	.5	.4	.2	.5	.2	.4	.3	.4	.9
	.4	.2	.1	.1	.3	.3	.2	.4	.9
<b>WATER HEATING FUEL</b>									
NATURAL GAS.....	54.8	31.3	36.0	43.6	57.4	61.3	64.7	57.8	60.3
ELECTRICITY.....	32.6	65.3	56.9	46.1	32.7	26.6	22.7	30.8	21.2
FUEL OIL OR KEROSENE.....	7.4	.7	2.6	4.4	7.0	7.9	7.8	7.2	11.0
LIQUID PETROLEUM GAS.....	4.1	2.3	4.0	5.7	2.7	3.6	2.3	3.1	5.6
WOOD.....	.4	Q	.1	.2	Q	.3	.1	.3	1.0
COAL.....	.4	Q	Q	Q	Q	.1	1.8	Q	.4
SOLAR.....	.2	.4	.5	.1	.1	Q	.3	.2	Q
NONE.....	.2	Q	Q	Q	.1	Q	.3	.5	.3
<b>MAIN COOKING FUEL</b>									
ELECTRICITY.....	54.7	83.8	77.7	68.1	61.4	56.0	52.2	47.8	37.2
NATURAL GAS.....	38.7	9.3	16.5	23.4	33.4	38.1	44.5	47.3	53.9
LIQUID PETROLEUM GAS.....	6.2	6.9	5.6	8.5	4.9	5.9	3.1	4.5	7.9
WOOD.....	.2	Q	.1	.1	.1	Q	Q	.4	.5
OTHER/NONE.....	.2	Q	.2	Q	.2	Q	.3	Q	.6
<b>CLOTHES DRYING FUEL</b>									
WITH CLOTHES DRYER.....	60.7	74.4	70.0	61.4	58.7	69.6	65.5	58.6	50.9
ELECTRICITY.....	45.1	68.3	58.0	50.9	43.7	48.3	45.7	40.5	35.1
NATURAL GAS.....	15.1	6.3	11.0	9.7	14.2	20.7	19.8	17.3	15.4
LPG.....	.6	.2	1.0	1.0	.8	.9	.1	.8	.5
WITHOUT CLOTHES DRYER.....	39.3	25.6	30.0	38.6	41.3	30.4	34.5	41.4	49.1
<b>AIR CONDITIONING (A/C)</b>									
CENTRAL A/C ONLY.....	26.4	51.4	51.6	45.8	36.7	30.8	22.0	13.8	6.9
INDIVIDUAL ROOM UNITS ONLY....	31.3	12.4	19.0	26.1	32.5	33.9	36.7	40.4	33.9
CENTRAL A/C AND ROOM UNITS....	.5	Q	Q	.4	.5	.3	.8	.9	.5
NO AIR CONDITIONING.....	41.8	36.2	29.4	27.8	30.3	35.1	40.6	44.9	58.7
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>									
ALL.....	36.9	57.4	58.4	56.2	50.0	44.6	34.7	29.7	14.5
SOME.....	21.3	6.4	12.2	16.0	19.6	20.4	24.6	25.4	26.8
NONE.....	41.8	36.2	29.4	27.8	30.3	35.0	40.7	44.9	58.7

SEE FOOTNOTES AT END OF TABLE.



# Fuel Use by Year House Built

Table 19. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	YEAR HOUSE BUILT							
		1979 OR LATER	1975 TO 1978	1970 TO 1974	1965 TO 1969	1960 TO 1964	1950 TO 1959	1940 TO 1949	1939 OR EARLIER
<b>WOOD BURNED IN PAST 12 MONTHS</b>									
YES.....	27.4	32.3	40.2	27.9	25.1	28.8	28.1	23.7	23.2
LESS THAN 1/3 CORD.....	8.6	12.4	12.7	7.2	7.0	9.8	10.7	7.2	6.7
1/3 CORD OR MORE.....	18.8	19.9	27.5	20.7	18.1	19.0	17.4	16.5	16.5
NO.....	72.6	67.7	59.8	72.1	74.9	71.2	71.9	76.3	76.8
<b>MAIN FUEL IN NOVEMBER 1980</b>									
SAME FUEL AS IN NOV. 1981.....	96.5	81.8	98.7	98.5	97.9	97.2	98.4	96.6	95.4
DIFFERENT FUEL.....	2.2	1.2	1.1	1.0	1.9	2.4	1.3	3.1	3.7
<b>FUEL IN NOVEMBER 1980</b>									
FUEL OIL OR KEROSENE.....	1.3	Q	.2	.3	.4	1.5	.7	2.1	2.6
NATURAL GAS.....	.3	Q	.2	.2	.8	.7	.3	.5	.2
LIQUID PETROLEUM GAS.....	.2	Q	Q	.2	.1	.2	Q	Q	.4
ELECTRICITY.....	.2	.6	.5	.1	.6	Q	Q	.2	Q
OTHER/NO FUEL.....	.3	.6	.3	.1	Q	.1	.3	.2	.5
NOT HEATED IN NOV. 1981.....	.5	.4	.2	.5	.2	.4	.3	.4	.9
BUILT IN 1981/1982.....	.8	16.5	-	-	-	-	-	-	-
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
<b>AVAILABILITY OF NATURAL GAS IN THE NEIGHBORHOOD (SINGLE-FAMILY UNITS AND MOBILE HOMES)</b>									
USES ANY NATURAL GAS.....	61.9	35.6	41.5	47.6	61.8	70.8	72.7	68.7	67.0
DOES NOT USE NATURAL GAS.....	38.1	64.4	58.5	52.4	38.2	29.2	27.3	31.3	33.0
GAS IS AVAILABLE.....	9.7	14.7	16.0	11.8	9.0	6.9	8.6	11.2	7.2
GAS IS NOT AVAILABLE.....	28.4	49.7	42.5	40.6	29.2	22.2	18.7	20.1	25.8
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
<b>CENTRAL MAIN HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>									
YES.....	41.5	1.1	18.0	32.5	37.8	46.0	49.6	64.1	52.8
NO/NO MAIN HEATING SYSTEM.....	58.5	98.9	82.0	67.5	62.2	54.0	50.4	35.9	47.2
<b>CENTRAL WATER HEATING SYSTEM FOR THE BUILDING (2-OR-MORE BUILDINGS)</b>									
YES.....	53.5	24.0	30.5	42.2	52.1	64.8	64.3	69.8	61.8
NO/NO WATER HEATING FUEL NO HOT RUNNING WATER.....	46.5	76.0	69.5	57.8	47.9	35.2	35.7	30.2	38.2
<b>CENTRAL AIR CONDITIONING SYSTEM FOR THE BUILDING (2-OR-MORE UNIT BUILDINGS)</b>									
YES.....	3.0	1.1	Q	8.8	4.0	.6	5.8	1.8	1.1
NO.....	53.8	80.4	77.1	69.1	71.5	66.8	41.6	35.0	33.7
NO AIR CONDITIONING.....	43.2	18.5	22.9	22.1	24.6	32.6	52.7	63.2	65.2

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



Table 20. Appliance Use by Census Region, Area Type, and SMSA/Non-SMSA, as of November 1981 (Million Households)

# Appliance Use by Census Region, Area Type, and SMSA/Non-SMSA

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
TOTAL HOUSEHOLDS	83.1	17.9	21.2	27.7	16.3	57.3	25.9	56.6	26.5
TYPE OF APPLIANCES USED									
ELECTRIC APPLIANCES USED									
TELEVISION SET (COLOR)	68.4	15.0	17.9	21.8	13.7	47.6	20.8	47.4	21.0
TELEVISION SET (B/W)	39.5	9.6	10.7	12.9	6.4	27.5	12.0	27.7	11.8
CLOTHES WASHER (AUTOMATIC)	58.4	11.8	15.5	19.5	11.6	37.7	20.8	38.1	20.3
CLOTHES WASHER (WRINGER)	2.8	.7	1.0	.9	.2	1.4	1.4	1.5	1.3
RANGE (STOVE-TOP OR BURNERS)	45.2	7.8	11.0	16.7	9.6	28.0	17.2	28.9	16.3
CLOTHES DRYER	37.5	6.1	10.2	13.9	7.3	21.7	15.8	22.5	15.0
DISHWASHER	30.5	6.4	6.9	9.5	7.8	21.0	9.5	22.5	8.0
HUMIDIFIER	10.8	2.5	6.4	1.4	.5	7.0	3.8	7.1	3.7
DEHUMIDIFIER	7.8	2.6	4.0	1.1	.2	5.0	2.9	5.2	2.6
EVAPORATIVE COOLER	3.0	Q	.1	.7	2.2	2.4	.6	2.1	.9
GAS APPLIANCES USED									
RANGE (STOVE-TOP OR BURNERS)	38.2	10.2	10.5	10.9	6.7	29.6	8.6	27.9	10.3
CLOTHES DRYER	13.1	3.3	4.6	2.3	2.9	10.7	2.4	10.4	2.7
OUTDOOR GAS GRILL	7.4	2.2	2.4	1.8	1.0	5.0	2.5	5.4	2.0
OUTDOOR GAS LIGHT	1.4	.1	.5	.8	.1	1.1	.4	1.1	.3
SWIMMING POOL HEATER	.4	Q	Q	Q	.3	.4	Q	.4	Q
NUMBER OF REFRIGERATORS USED									
1	72.4	15.4	17.7	25.1	14.2	50.2	22.2	49.4	22.9
2 OR MORE	10.5	2.5	3.4	2.6	2.0	6.9	3.6	7.0	3.5
NONE	.2	Q	.1	.1	Q	.2	.1	.2	.1
MOST USED REFRIGERATOR									
ELECTRIC	82.5	17.8	21.0	27.5	16.1	56.8	25.7	56.2	26.3
FROST-FREE	51.9	10.1	13.4	18.0	10.4	34.4	17.5	34.9	17.0
NOT FROST-FREE	30.6	7.8	7.6	9.5	5.7	22.4	8.2	21.3	9.2
OTHER FUEL/NO REFRIGERATOR	.7	.1	.2	.2	.2	.5	.2	.4	.2
SECOND USED REFRIGERATOR									
ELECTRIC	10.4	2.5	3.4	2.6	2.0	6.9	3.5	6.9	3.5
FROST-FREE	3.4	.7	1.0	.8	.9	2.1	1.3	2.3	1.1
NOT FROST-FREE	7.0	1.8	2.4	1.7	1.1	4.8	2.3	4.6	2.4
NONE/OTHER FUEL	72.7	15.5	17.8	25.1	14.3	50.4	22.3	49.7	23.0
NUMBER OF SEPARATE FREEZERS USED									
1	29.5	4.7	9.1	10.9	4.8	16.2	13.3	16.5	13.0
2 OR MORE	2.4	.3	.7	1.0	.4	.7	1.7	.7	1.7
NONE	51.2	12.9	11.4	15.8	11.1	40.4	10.9	39.3	11.9
MOST USED FREEZER									
ELECTRIC	31.9	5.0	9.8	11.9	5.2	16.9	15.0	17.3	14.6
FROST-FREE	8.3	1.1	2.3	3.4	1.6	4.8	3.5	4.7	3.6
NOT FROST-FREE	23.5	3.9	7.6	8.5	3.5	12.1	11.5	12.5	11.0
NONE/OTHER FUEL	51.3	12.9	11.4	15.8	11.1	40.4	10.9	39.4	11.9
NUMBER OF OVENS USED									
1	57.1	13.3	13.6	19.8	10.3	39.2	17.9	38.0	19.0
2	17.3	2.4	4.9	5.3	4.6	11.4	5.9	11.9	5.5
3 OR MORE	2.2	.2	.5	.8	.8	1.6	.6	1.7	.5
NONE	6.5	2.0	2.2	1.8	.6	5.1	1.4	5.1	1.5
MOST USED OVEN									
ELECTRIC	44.3	7.5	10.6	16.5	9.7	27.4	16.9	28.3	16.0
MICROWAVE	4.1	.3	1.6	1.1	1.1	2.8	1.4	2.8	1.3
OTHER ELECTRIC	40.2	7.2	9.0	15.4	8.6	24.7	15.5	25.5	14.7
GAS	32.1	8.4	8.5	9.3	5.9	24.7	7.4	23.2	8.9
NONE/OTHER FUEL	6.7	2.0	2.2	1.9	.6	5.1	1.5	5.1	1.6
SECOND OVEN USED									
ELECTRIC	16.5	2.0	4.5	5.5	4.6	10.7	5.8	11.5	5.1
MICROWAVE	10.0	1.1	2.8	3.4	2.7	6.1	3.9	6.8	3.2
OTHER ELECTRIC	6.5	.9	1.7	2.1	1.9	4.6	1.9	4.7	1.9
GAS	2.9	.6	1.0	.6	.8	2.2	.7	2.1	.9
NONE/OTHER FUEL	63.7	15.4	15.8	21.6	10.9	44.3	19.4	43.1	20.6

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.





Table 21. Appliance Use by Census Region, Area Type, and SMSA/Non-SMSA, as of November 1981 (Percentage of Households)

# Appliance Use by Census Region, Area Type, and SMSA/Non-SMSA

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
TOTAL HOUSEHOLDS .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
TYPE OF APPLIANCES USED									
ELECTRIC APPLIANCES USED									
TELEVISION SET (COLOR).....	82.3	83.5	84.4	78.8	83.9	83.0	80.5	83.7	79.1
TELEVISION SET (B/W).....	47.5	53.4	50.2	46.4	39.3	48.1	46.3	49.0	44.3
CLOTHES WASHER (AUTOMATIC)...	70.3	65.7	72.8	70.5	71.5	65.8	80.3	67.3	76.6
CLOTHES WASHER (WRINGER)....	3.4	3.7	4.8	3.2	1.3	2.5	5.3	2.7	4.9
RANGE (STOVE-TOP OR BURNERS).....	54.4	43.7	51.9	60.5	58.9	48.8	66.6	51.1	61.4
CLOTHES DRYER.....	45.1	34.0	48.3	50.0	44.9	37.9	61.1	39.8	56.5
DISHWASHER.....	36.7	35.7	32.4	34.2	47.7	36.6	36.9	39.8	30.0
HUMIDIFIER.....	13.0	13.9	30.3	5.0	3.3	12.3	14.7	12.6	14.0
DEHUMIDIFIER.....	9.4	14.4	18.7	4.0	1.2	8.7	11.1	9.2	10.0
EVAPORATIVE COOLER.....	3.6	Q	.6	2.4	13.4	4.2	2.4	3.8	3.2
GAS APPLIANCES USED									
RANGE (STOVE-TOP OR BURNERS).....	46.0	56.7	49.3	39.2	41.2	51.7	33.4	49.2	39.0
CLOTHES DRYER.....	15.8	18.5	21.6	8.2	18.0	18.6	9.4	18.3	10.2
OUTDOOR GAS GRILL.....	9.0	12.4	11.2	6.5	6.4	8.6	9.6	9.5	7.7
OUTDOOR GAS LIGHT.....	1.7	.5	2.6	2.7	.4	1.9	1.4	2.0	1.3
SWIMMING POOL HEATER.....	.4	.2	.2	Q	1.6	.6	Q	.6	Q
NUMBER OF REFRIGERATORS USED									
1.....	87.1	86.0	83.3	90.5	87.3	87.6	85.9	87.3	86.5
2 OR MORE.....	12.6	14.0	16.1	9.2	12.4	12.1	13.9	12.4	13.2
NONE.....	.3	Q	.5	.3	.3	.3	.3	.3	.2
MOST USED REFRIGERATOR									
ELECTRIC.....	99.2	99.5	99.1	99.3	99.0	99.2	99.3	99.3	99.1
FROST-FREE.....	62.5	56.1	63.2	65.0	64.1	60.1	67.6	61.6	64.2
NOT FROST-FREE.....	36.8	43.4	35.9	34.2	34.9	39.1	31.7	37.7	34.9
OTHER FUEL/NO REFRIGERATOR....	.8	.5	.9	.7	1.0	.8	.7	.7	.9
SECOND USED REFRIGERATOR									
ELECTRIC.....	12.5	13.7	16.0	9.2	12.2	12.0	13.7	12.2	13.2
FROST-FREE.....	4.1	3.8	4.5	3.1	5.5	3.7	5.0	4.0	4.1
NOT FROST-FREE.....	8.4	10.0	11.5	6.2	6.7	8.3	8.8	8.2	9.1
NONE/OTHER FUEL.....	87.5	86.3	84.0	90.8	87.8	88.0	86.3	87.8	86.8
NUMBER OF SEPARATE FREEZERS USED									
1.....	35.5	26.5	42.9	39.2	29.3	28.4	51.2	29.2	48.8
2 OR MORE.....	2.9	1.4	3.5	3.7	2.4	1.1	6.8	1.3	6.3
NONE.....	61.6	72.1	53.6	57.1	68.3	70.5	42.0	69.5	44.9
MOST USED FREEZER									
ELECTRIC.....	38.3	27.9	46.4	42.9	31.7	29.5	58.0	30.5	55.1
FROST-FREE.....	10.0	6.1	10.6	12.2	9.9	8.4	13.6	8.4	13.5
NOT FROST-FREE.....	28.3	21.8	35.8	30.7	21.8	21.1	44.4	22.1	41.6
NONE/OTHER FUEL.....	61.7	72.1	53.6	57.1	68.3	70.5	42.0	69.5	44.9
NUMBER OF OVENS USED									
1.....	68.6	74.4	64.1	71.5	63.2	68.4	69.2	67.1	71.8
2.....	20.8	13.5	23.3	19.3	28.4	19.9	22.9	20.9	20.6
3 OR MORE.....	2.7	.9	2.5	2.7	4.8	2.8	2.4	3.0	2.0
NONE.....	7.9	11.1	10.1	6.5	3.7	9.0	5.5	8.9	5.6
MOST USED OVEN									
ELECTRIC.....	53.3	41.8	49.9	59.6	59.7	47.9	65.4	50.1	60.3
MICROWAVE.....	5.0	1.8	7.7	4.0	6.6	4.8	5.3	5.0	5.0
OTHER ELECTRIC.....	48.3	40.0	42.2	55.6	53.1	43.0	60.1	45.1	55.3
GAS.....	38.7	47.0	39.9	33.6	36.5	43.1	28.7	41.0	33.7
NONE/OTHER FUEL.....	8.0	11.3	10.1	6.8	3.8	9.0	5.9	9.0	6.0
SECOND OVEN USED									
ELECTRIC.....	19.9	11.0	21.1	19.8	28.3	18.8	22.3	20.3	19.1
MICROWAVE.....	12.0	6.0	13.1	12.2	16.8	10.7	14.9	12.0	12.0
OTHER ELECTRIC.....	7.9	4.9	7.9	7.6	11.5	8.1	7.4	8.2	7.1
GAS.....	3.5	3.3	4.6	2.1	4.8	3.9	2.7	3.6	3.3
NONE/OTHER FUEL.....	76.6	85.7	74.3	78.2	66.9	77.4	74.9	76.1	77.7

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Thermal Characteristics by Census Region, Area Type, and SMSA/Non-SMSA

**Table 22. Thermal Characteristics by Census Region, Area Type, and SMSA/Non-SMSA, as of November 1981**  
 [Million Households, Except Where Averages Are Indicated]

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
TOTAL HOUSEHOLDS .....	83.1	17.9	21.2	27.7	16.3	57.3	25.9	56.6	26.5
<b>NUMBER OF WINDOWS</b>									
1 TO 6 .....	15.0	3.9	2.8	4.5	3.7	12.8	2.2	12.4	2.6
7 TO 12 .....	34.7	5.4	8.6	13.2	7.5	21.9	12.8	21.6	13.1
13 TO 18 .....	20.7	4.9	6.0	6.7	3.2	13.7	6.9	13.7	6.9
19 OR MORE .....	12.7	3.8	3.8	3.3	1.8	8.8	3.9	8.8	3.9
NONE .....	.2	0	0	0	.1	.1	0	.1	0
AVERAGE NUMBER OF WINDOWS .....	12.5	13.7	13.4	11.8	11.2	12.3	13.0	12.4	12.7
<b>NUMBER OF STORM WINDOWS</b>									
1 TO 6 .....	9.3	2.8	3.2	2.4	.9	6.8	2.5	6.5	2.8
7 TO 12 .....	19.3	4.8	8.0	4.6	1.9	11.6	7.7	11.0	8.3
13 TO 18 .....	12.5	4.2	5.3	2.5	.5	8.2	4.3	8.2	4.3
19 OR MORE .....	7.7	2.9	2.9	1.4	.4	5.2	2.4	5.3	2.4
NONE/NO WINDOWS .....	34.3	3.2	1.8	16.8	12.6	25.5	8.8	25.6	8.7
AVERAGE NUMBER OF STORM WINDOWS .....	7.4	11.3	11.6	4.5	2.4	7.0	8.2	7.0	8.1
<b>PERCENT OF WINDOWS WITH STORM WINDOWS</b>									
100 PERCENT .....	35.9	10.7	15.2	7.6	2.4	23.4	12.5	22.5	13.4
76 TO 99 PERCENT .....	5.8	2.1	2.0	1.4	.3	3.9	2.0	3.8	2.0
51 TO 75 PERCENT .....	3.6	1.2	1.3	.8	.3	2.3	1.3	2.4	1.2
1 TO 50 PERCENT .....	3.6	.8	.9	1.1	.7	2.3	1.3	2.3	1.3
NONE/NO WINDOWS .....	34.3	3.2	1.8	16.8	12.6	25.5	8.8	25.6	8.7
<b>NUMBER OF OUTSIDE DOORS</b>									
1 .....	7.7	2.7	1.6	1.9	1.7	6.6	1.2	6.3	1.4
2 .....	36.9	5.8	10.4	14.0	6.7	25.3	11.6	23.4	13.5
3 .....	23.2	4.4	5.5	8.0	5.2	14.8	8.4	15.7	7.5
4 OR MORE .....	11.5	2.5	2.8	3.5	2.6	6.9	4.6	7.7	3.8
NONE .....	3.8	2.6	.9	.3	.1	3.7	.2	3.6	.3
AVERAGE NUMBER OF DOORS .....	2.4	2.2	2.4	2.5	2.6	2.3	2.7	2.4	2.5
<b>TYPE AND NUMBER OF OUTSIDE DOORS</b>									
<b>STANDARD DOORS</b>									
1 .....	12.2	2.8	2.4	3.6	3.5	9.7	2.5	9.9	2.3
2 .....	41.6	6.4	11.4	15.3	8.5	27.5	14.0	26.9	14.7
3 .....	17.6	4.0	4.6	6.3	2.8	11.0	6.6	11.0	6.6
4 OR MORE .....	6.2	1.7	1.6	1.9	.9	3.8	2.4	3.8	2.4
NONE/NO DOORS .....	5.5	3.1	1.3	.7	.6	5.3	.3	5.0	.5
AVERAGE NUMBER OF STANDARD DOORS .....	2.1	1.9	2.2	2.2	2.0	2.0	2.4	2.0	2.3
<b>SLIDING GLASS DOORS</b>									
1 .....	17.3	2.6	3.7	5.4	5.6	11.8	5.5	13.5	3.8
2 OR MORE .....	4.3	.5	.8	1.2	1.8	3.0	1.4	3.5	.9
NONE/NO DOORS .....	61.5	14.8	16.8	21.0	8.9	42.6	18.9	39.7	21.8
AVERAGE NUMBER OF SLIDING GLASS DOORS .....	.3	.2	.3	.3	.6	.3	.4	.4	.2
<b>NUMBER OF STORM DOORS</b>									
1 .....	12.9	2.8	3.7	4.6	1.9	8.6	4.3	8.0	4.9
2 .....	23.0	5.8	9.5	6.2	1.5	14.8	8.3	14.1	8.9
3 .....	8.7	2.6	3.4	2.2	.5	5.2	3.5	5.4	3.3
4 OR MORE .....	3.3	1.0	1.4	.7	.2	1.7	1.6	2.0	1.4
NONE .....	31.3	3.2	2.3	13.7	12.1	23.3	8.0	23.5	7.8
NO OUTSIDE DOORS .....	3.8	2.6	.9	.3	.1	3.7	.2	3.6	.3
AVERAGE NUMBER OF STORM DOORS .....	1.2	1.5	1.8	1.0	.5	1.1	1.5	1.1	1.5
AVERAGE NUMBER OF STANDARD STORM DOORS .....	1.0	1.3	1.6	.8	.3	.9	1.3	.9	1.3
AVERAGE NUMBER OF SLIDING GLASS STORM DOORS .....	.2	.2	.2	.1	.1	.1	.2	.2	.2
<b>PERCENT OF OUTSIDE DOORS WITH STORM DOORS</b>									
100 PERCENT .....	27.8	7.6	12.2	6.4	1.6	17.9	9.9	16.8	11.0
51 TO 99 PERCENT .....	8.0	2.5	2.5	2.3	.7	4.7	3.4	5.3	2.7
1 TO 50 PERCENT .....	12.1	2.1	3.3	5.0	1.8	7.7	4.4	7.4	4.8
NONE/NO DOORS .....	35.2	5.8	3.2	14.0	12.2	27.0	8.2	27.1	8.0

SEE FOOTNOTES AT END OF TABLE.



# Thermal Characteristics by Census Region, Area Type, and SMSA/Non-SMSA

Table 22. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
TOTAL SINGLE-FAMILY UNITS.....	57.6	10.1	15.5	20.5	11.5	36.3	21.3	36.3	21.3
HAVE ROOF OR CEILING INSULATION (SINGLE-FAMILY UNITS)									
YES.....	44.7	7.8	13.3	15.3	8.3	27.4	17.2	27.9	16.7
ALL INSULATED.....	38.8	6.6	11.5	13.4	7.2	23.8	14.9	24.0	14.7
PART INSULATED.....	4.3	1.0	1.1	1.4	.8	2.6	1.7	2.8	1.5
NONE, VERY LITTLE INSULATED.....	.8	.1	.3	.2	.1	.5	.3	.5	.2
DON'T KNOW AMOUNT/NOT REPORTED.....	.8	.1	.3	.3	.1	.5	.3	.5	.3
NO.....	7.9	1.4	1.0	3.6	1.9	4.9	3.0	4.6	3.4
DON'T KNOW/NOT REPORTED.....	5.0	.9	1.2	1.6	1.3	4.0	1.0	3.8	1.2
TYPE OF INSULATION									
BATTS ONLY.....	22.5	5.4	6.1	7.8	3.3	13.0	9.5	13.1	9.4
AVERAGE NUMBER OF INCHES.....	5.5	5.8	5.7	5.2	5.0	5.2	5.8	5.4	5.6
LOOSE FILL ONLY.....	10.8	1.0	3.2	4.4	2.2	7.0	3.8	7.3	3.5
AVERAGE NUMBER OF INCHES.....	6.3	6.7	6.9	6.1	5.7	6.0	6.9	6.1	6.6
BATTS AND LOOSE FILL ONLY.....	4.8	.7	2.3	1.2	.6	3.0	1.8	3.0	1.8
AVERAGE NUMBER OF INCHES.....	10.3	9.5	10.9	10.1	10.0	10.0	10.9	10.2	10.5
OTHER/COMBINATION.....	3.7	.5	.9	1.1	1.2	2.5	1.3	2.5	1.2
DON'T KNOW TYPE/NOT REPORTED..	2.6	.2	.6	.9	.9	1.8	.9	1.9	.7
NO INSULATION/DON'T KNOW/NOT REPORTED.....	12.9	2.3	2.2	5.2	3.2	8.9	4.0	8.4	4.6
HAVE WALL INSULATION (SINGLE-FAMILY UNITS)									
YES.....	35.3	6.9	11.7	11.3	5.5	20.0	15.3	20.8	14.5
ALL WALLS.....	29.5	5.3	10.1	9.6	4.5	16.3	13.2	17.1	12.5
SOME WALLS.....	5.8	1.6	1.6	1.7	1.0	3.7	2.1	3.8	2.1
NO.....	12.5	1.8	1.9	5.4	3.4	8.3	4.1	7.8	4.6
DON'T KNOW/NOT REPORTED.....	9.8	1.5	1.9	3.8	2.6	8.0	1.8	7.6	2.1
FLOOR INSULATION (SINGLE-FAMILY UNITS)									
HAVE BASEMENT/CRAWL SPACE.....	45.7	9.3	14.5	14.2	7.7	28.1	17.7	27.1	18.7
HEATED.....	12.6	3.3	6.7	1.6	1.0	8.3	4.3	8.2	4.4
NONE OR PART HEATED.....	33.1	6.0	7.8	12.6	6.7	19.8	13.4	18.8	14.3
HAVE FLOOR INSULATION.....	6.4	1.4	1.5	2.4	1.1	3.5	2.9	3.8	2.6
ALL PARTS INSULATED.....	4.7	.9	1.0	2.0	.9	2.5	2.2	2.7	2.0
SOME PARTS INSULATED.....	1.6	.5	.5	.4	.2	1.0	.7	1.1	.5
NO FLOOR INSULATION.....	20.4	3.4	4.8	8.3	4.0	11.9	8.6	11.1	9.3
DON'T KNOW/NOT REPORTED ...	6.3	1.3	1.5	1.9	1.6	4.4	1.9	3.9	2.4
NO BASEMENT/CRAWL SPACE.....	11.8	.8	1.0	6.3	3.7	8.2	3.6	9.2	2.6
INSULATION CHARACTERISTICS (SINGLE-FAMILY UNITS)									
UNITS WITH SOME OR ALL STORM WINDOWS, AND SOME OR ALL STORM DOORS, AND ROOF OR CEILING INSULATION....	28.0	7.1	11.9	6.9	2.1	16.5	11.5	16.4	11.6
UNITS WITH ONE OR MORE OF THESE TYPES OF INSULATION..	51.5	10.0	15.3	17.5	8.7	32.1	19.3	32.4	19.1
UNITS WITH NONE OF THESE TYPES OF INSULATION.....	6.1	.1	.1	3.1	2.8	4.2	1.9	3.9	2.2

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Thermal Characteristics by Census Region, Area Type, and SMSA/Non-SMSA

**Table 23. Thermal Characteristics by Census Region, Area Type, and SMSA/Non-SMSA, as of November 1981 (Percentage of Households)**

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
TOTAL HOUSEHOLDS .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>NUMBER OF WINDOWS</b>									
1 TO 6.....	18.0	21.7	13.3	16.3	23.0	22.3	8.4	21.9	9.8
7 TO 12.....	41.7	29.9	40.6	47.7	46.2	38.2	49.6	38.1	49.5
13 TO 18.....	24.8	27.1	28.1	24.0	19.5	23.9	26.9	24.2	26.1
19 OR MORE.....	15.2	21.3	17.9	11.8	10.9	15.3	15.0	15.6	14.5
NONE.....	.2	Q	.2	.1	.5	.2	.1	.2	.1
<b>NUMBER OF STORM WINDOWS</b>									
1 TO 6.....	11.2	15.7	15.0	8.7	5.6	11.9	9.8	11.5	10.7
7 TO 12.....	23.3	26.6	37.9	16.7	11.7	20.3	29.9	19.5	31.4
13 TO 18.....	15.0	23.5	24.9	9.0	3.1	14.3	16.7	14.5	16.2
19 OR MORE.....	9.2	16.4	13.8	5.1	2.3	9.1	9.4	9.3	9.0
NONE/NO WINDOWS.....	41.3	17.8	8.4	60.5	77.2	44.5	34.2	45.3	32.7
<b>PERCENT OF WINDOWS WITH STORM WINDOWS</b>									
100 PERCENT.....	43.1	59.4	71.5	27.5	14.8	40.8	48.4	39.7	50.5
76 TO 99 PERCENT.....	7.0	11.5	9.5	5.1	1.9	6.7	7.6	6.8	7.5
51 TO 75 PERCENT.....	4.3	6.7	6.1	2.8	2.0	4.0	5.0	4.2	4.5
1 TO 50 PERCENT.....	4.3	4.7	4.4	4.1	4.1	4.0	4.9	4.1	4.7
NONE/NO WINDOWS.....	41.3	17.8	8.4	60.5	77.2	44.5	34.2	45.3	32.7
<b>NUMBER OF OUTSIDE DOORS</b>									
1.....	9.3	14.8	7.3	6.7	10.2	11.5	4.5	11.1	5.4
2.....	44.4	32.1	49.1	50.4	41.3	44.2	44.8	41.3	51.0
3.....	27.9	24.5	26.1	29.0	31.9	25.9	32.3	27.7	28.3
4 OR MORE.....	13.9	14.2	13.2	12.8	16.1	12.1	17.8	13.6	14.3
NONE.....	4.6	14.4	4.2	1.0	.5	6.4	.6	6.3	1.0
<b>TYPE AND NUMBER OF OUTSIDE DOORS</b>									
<b>STANDARD DOORS</b>									
1.....	14.7	15.6	11.1	12.8	21.5	17.0	9.6	17.4	8.9
2.....	50.0	35.4	53.6	55.3	52.4	48.1	54.3	47.5	55.4
3.....	21.2	22.3	21.6	22.6	16.9	19.2	25.6	19.5	24.8
4 OR MORE.....	7.5	9.6	7.7	7.0	5.8	6.6	9.4	6.7	9.1
NONE/NO DOORS.....	6.7	17.1	5.9	2.4	3.5	9.2	1.1	8.9	1.9
<b>SLIDING GLASS DOORS</b>									
1.....	20.8	14.6	17.3	19.6	34.2	20.5	21.4	23.8	14.4
2 OR MORE.....	5.2	2.8	3.6	4.5	11.2	5.2	5.3	6.2	3.2
NONE/NO DOORS.....	74.0	82.6	79.0	75.9	54.6	74.3	73.3	70.0	82.4
<b>NUMBER OF STORM DOORS</b>									
1.....	15.5	15.5	17.2	16.7	11.4	15.0	16.6	14.2	18.4
2.....	27.7	32.3	44.8	22.3	9.5	25.8	31.9	24.9	33.6
3.....	10.5	14.5	16.2	8.0	3.1	9.2	13.6	9.6	12.5
4 OR MORE.....	4.0	5.6	6.6	2.6	1.3	3.0	6.3	3.5	5.2
NONE.....	37.7	17.8	11.0	49.5	74.2	40.7	31.1	41.6	29.3
NO OUTSIDE DOORS.....	4.6	14.4	4.2	1.0	.5	6.4	.6	6.3	1.0
<b>PERCENT OF OUTSIDE DOORS WITH STORM DOORS</b>									
100 PERCENT.....	33.4	42.2	57.7	23.1	9.7	31.3	38.1	29.7	41.4
51 TO 99 PERCENT.....	9.7	13.9	11.8	8.3	4.5	8.1	13.1	9.4	10.3
1 TO 50 PERCENT.....	14.6	11.7	15.3	18.1	11.0	13.4	17.2	13.0	18.0
NONE/NO DOORS.....	42.3	32.1	15.2	50.5	74.7	47.1	31.6	47.9	30.3

SEE FOOTNOTES AT END OF TABLE.



# Thermal Characteristics by Census Region, Area Type, and SMSA/Non-SMSA

Table 23. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
TOTAL SINGLE-FAMILY UNITS.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
HAVE ROOF OR CEILING INSULATION (SINGLE-FAMILY UNITS)									
YES.....	77.6	77.0	85.7	74.7	72.2	75.5	81.1	77.0	78.6
ALL INSULATED.....	67.3	65.6	74.6	65.1	62.8	65.6	70.2	66.2	69.1
PART INSULATED.....	7.5	9.6	7.2	6.9	7.3	7.3	8.0	7.8	7.0
NONE, VERY LITTLE INSULATED.....	1.4	.9	2.2	1.1	1.0	1.4	1.3	1.5	1.1
DON'T KNOW AMOUNT/NOT REPORTED.....	1.4	.8	1.7	1.5	1.0	1.2	1.5	1.4	1.3
NO.....	13.8	13.8	6.5	17.6	16.8	13.6	14.2	12.6	15.8
DON'T KNOW/NOT REPORTED.....	8.6	9.2	7.9	7.7	11.0	11.0	4.7	10.4	5.6
TYPE OF INSULATION									
BATTS ONLY.....	39.1	53.2	39.3	37.8	28.8	35.8	44.8	36.1	44.3
LOOSE FILL ONLY.....	18.8	10.1	20.6	21.4	19.1	19.4	17.7	20.2	16.4
BATTS AND LOOSE FILL ONLY.....	8.3	6.5	14.8	5.8	5.5	8.3	8.3	8.1	8.5
OTHER/COMBINATION.....	6.5	4.7	6.1	5.5	10.3	6.8	6.0	6.9	5.7
DON'T KNOW TYPE NOT REPORTED..	4.6	2.3	4.1	4.2	8.1	4.9	4.1	5.3	3.5
NO INSULATION/DON'T KNOW/NOT REPORTED.....	22.4	23.0	14.3	25.3	27.8	24.5	18.9	23.0	21.4
HAVE WALL INSULATION (SINGLE-FAMILY UNITS)									
YES.....	61.4	68.2	75.3	55.1	48.0	55.1	72.1	57.4	68.2
ALL WALLS.....	51.3	52.2	65.2	46.9	39.4	44.9	62.2	47.0	58.5
SOME WALLS.....	10.1	16.0	10.0	8.1	8.5	10.2	9.9	10.4	9.6
NO.....	21.6	17.3	12.4	26.3	29.5	22.9	19.5	21.6	21.7
DON'T KNOW/NOT REPORTED.....	17.0	14.5	12.3	18.6	22.6	22.0	8.4	21.0	10.1
FLOOR INSULATION (SINGLE-FAMILY UNITS)									
HAVE BASEMENT/CRAWL SPACE.....	79.4	92.0	93.4	69.3	67.6	77.3	83.0	74.5	87.8
HEATED.....	21.9	32.5	43.0	8.0	9.0	22.9	20.3	22.7	20.6
NONE OR PART HEATED.....	57.5	59.4	50.4	61.4	58.7	54.5	62.8	51.8	67.2
HAVE FLOOR INSULATION.....	11.0	13.6	9.7	11.7	9.4	9.5	13.7	10.4	12.2
ALL PARTS INSULATED.....	8.2	9.0	6.4	9.6	7.6	6.9	10.6	7.4	9.6
SOME PARTS INSULATED.....	2.8	4.6	3.3	2.2	1.8	2.7	3.1	3.0	2.6
NO FLOOR INSULATION.....	35.5	33.2	31.0	40.4	35.0	32.8	40.2	30.7	43.8
DON'T KNOW/NOT REPORTED ...	11.0	12.6	9.7	9.2	14.3	12.2	8.9	10.8	11.2
NO BASEMENT/CRAWL SPACE.....	20.6	8.0	6.6	30.7	32.4	22.7	17.0	25.5	12.2
INSULATION CHARACTERISTICS (SINGLE-FAMILY UNITS)									
UNITS WITH SOME OR ALL STORM WINDOWS, AND SOME OR ALL STORM DOORS, AND ROOF OR CEILING INSULATION....	48.6	70.3	77.0	33.6	18.1	45.4	54.2	45.2	54.5
UNITS WITH ONE OR MORE OF THESE TYPES OF INSULATION..	89.4	98.6	99.1	85.0	76.0	88.5	90.9	89.1	89.8
UNITS WITH NONE OF THESE TYPES OF INSULATION.....	10.6	1.4	.9	15.0	24.0	11.5	9.1	10.9	10.2

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Thermal Characteristics by Housing Structure and Ownership

**Table 24. Thermal Characteristics by Housing Structure and Ownership, as of November 1981 (Million Households, Except Where Averages Are Indicated)**

HOUSEHOLD CHARACTERISTICS	TOTAL	HOUSING STRUCTURE BY OWNERSHIP														
		SINGLE-FAMILY DETACHED			SINGLE-FAMILY ATTACHED			BUILDING WITH 2 TO 4 UNITS			BUILDING WITH 5 OR MORE UNITS			MOBILE HOME		
		TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT
TOTAL HOUSEHOLDS	83.1	54.6	46.4	8.2	3.0	2.1	0.9	9.3	2.1	7.2	12.0	1.0	11.0	4.2	3.6	0.6
NUMBER OF WINDOWS																
1 TO 6	15.0	2.3	1.6	.7	.7	.4	.4	3.1	.3	2.7	8.8	.7	8.1	.1	.1	Q
7 TO 12	34.7	23.4	19.0	4.4	1.3	1.0	.4	4.5	1.2	3.4	2.9	.3	2.6	2.5	2.1	.4
13 TO 18	20.7	17.3	15.3	2.0	.6	.4	.2	1.3	.3	.9	.1	Q	.1	1.3	1.2	.2
19 OR MORE	12.7	11.6	10.5	1.1	.4	.3	Q	.5	.3	.2	.1	Q	.1	.2	.2	Q
NONE	.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	.1	Q	.1	Q	Q	Q
AVERAGE NUMBER OF WINDOWS	12.5	14.8	15.1	12.8	11.2	12.1	9.3	9.2	11.8	8.4	5.1	5.6	5.1	12.1	12.4	10.6
NUMBER OF STORM WINDOWS																
1 TO 6	9.3	3.4	2.8	.6	.4	.2	.2	1.8	.4	1.5	3.6	.3	3.3	.1	.1	Q
7 TO 12	19.3	13.5	12.2	1.3	.7	.6	.1	2.7	.8	1.8	1.3	.1	1.2	1.1	1.0	.1
13 TO 18	12.5	10.5	9.8	.7	.4	.3	.1	.9	.4	.5	Q	Q	Q	.7	.6	.1
19 OR MORE	7.7	7.1	6.7	.4	.3	.2	Q	.1	Q	.1	Q	Q	Q	.1	.1	Q
NONE/NO WINDOWS	34.3	20.0	14.8	5.2	1.3	.8	.5	3.8	.4	3.4	7.1	.6	6.5	2.1	1.8	.4
AVERAGE NUMBER OF STORM WINDOWS	7.4	9.0	9.8	4.3	6.8	8.0	4.1	5.5	8.4	4.6	2.2	2.4	2.2	6.1	6.4	3.8
PERCENT OF WINDOWS WITH STORM WINDOWS																
100 PERCENT	35.9	24.1	22.1	2.0	1.2	1.0	.2	4.4	1.2	3.2	4.5	.4	4.1	1.7	1.5	.2
76 TO 99 PERCENT	5.8	4.8	4.5	.4	.2	.1	.1	.5	.1	.3	.1	Q	.1	.2	.2	Q
51 TO 75 PERCENT	3.6	2.7	2.5	.2	.2	.1	.1	.4	.2	.2	.2	Q	.1	.1	.1	Q
1 TO 50 PERCENT	3.6	2.9	2.4	.5	.2	.1	.1	.3	.1	.2	.1	Q	.1	.1	Q	Q
NONE/NO WINDOWS	34.3	20.0	14.8	5.2	1.3	.8	.5	3.8	.4	3.4	7.1	.6	6.5	2.1	1.8	.4
NUMBER OF OUTSIDE DOORS																
1	7.7	.6	.4	.2	.1	Q	Q	2.4	.4	2.0	4.5	.2	4.3	.2	.1	Q
2	36.9	23.6	18.5	5.1	1.5	.9	.5	4.5	.8	3.6	4.0	.5	3.5	3.3	2.8	.5
3	23.2	19.7	17.6	2.1	.9	.7	.3	1.1	.5	.7	.7	.1	.5	.7	.6	.1
4 OR MORE	11.5	10.6	9.9	.8	.5	.4	.1	.3	.2	.1	.1	Q	Q	Q	Q	Q
NONE	3.8	-	-	-	Q	Q	Q	1.1	.2	.8	2.8	.1	2.7	-	-	-
AVERAGE NUMBER OF DOORS	2.4	2.8	2.9	2.4	2.7	2.8	2.5	1.7	2.0	1.6	1.2	1.9	1.2	2.1	2.1	2.2
TYPE AND NUMBER OF OUTSIDE DOORS																
STANDARD DOORS																
1	12.2	2.6	2.0	0.6	0.6	0.3	0.3	2.9	0.3	2.6	5.9	0.7	5.2	0.3	0.3	Q
2	41.6	30.3	24.9	5.4	1.7	1.2	.5	4.1	1.0	3.1	2.0	.1	2.0	3.5	3.0	0.5
3	17.6	15.7	14.0	1.7	.6	.5	.1	.9	.3	.5	.1	Q	.1	.4	.3	.1
4 OR MORE	6.2	5.8	5.3	.5	.1	.1	Q	.3	.2	.1	Q	Q	Q	Q	Q	Q
NONE/NO DOORS	5.5	.3	.2	Q	Q	Q	Q	1.2	.3	.9	4.0	.2	3.8	Q	Q	Q
AVERAGE NUMBER OF STANDARD DOORS	2.1	2.5	2.5	2.3	2.1	2.2	1.8	1.6	1.9	1.5	.8	.9	.8	2.0	2.0	2.1
SLIDING GLASS DOORS																
1	17.3	11.6	10.6	.9	.8	.5	.3	1.0	.2	.8	3.5	.6	2.9	.4	.4	Q
2 OR MORE	4.3	3.3	3.1	.2	.4	.3	.1	.1	Q	.1	.5	.2	.3	Q	Q	Q
NONE/NO DOORS	61.5	39.7	32.7	7.1	1.8	1.3	.5	8.2	1.8	6.3	8.0	.2	7.8	3.8	3.2	.6
AVERAGE NUMBER OF SLIDING GLASS DOORS	.3	.4	.4	.2	.6	.6	.7	.1	.1	.1	.4	1.1	.3	.1	.1	Q
NUMBER OF STORM DOORS																
1	12.9	7.5	6.4	1.1	.4	.3	.2	2.0	.6	1.4	1.7	.2	1.5	1.3	1.1	.2
2	23.0	18.6	17.0	1.6	1.1	.8	.3	1.7	.5	1.2	.8	.1	.7	.8	.7	.1
3	8.7	7.9	7.5	.4	.3	.3	Q	.3	.1	.1	.1	.1	.1	.2	.1	Q
4 OR MORE	3.3	3.3	3.2	.1	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
NONE	31.3	17.3	12.3	5.0	1.2	.7	.4	4.3	.6	3.7	6.6	.5	6.1	1.9	1.6	.3
NO OUTSIDE DOORS	3.8	-	-	-	Q	Q	Q	1.1	.2	.8	2.8	.1	2.7	-	-	-
AVERAGE NUMBER OF STORM DOORS	1.2	1.5	1.7	.7	1.2	1.3	.9	.7	1.0	.6	.3	.6	.3	.8	.8	.7
AVERAGE NUMBER OF STANDARD STORM DOORS	1.0	1.3	1.4	.7	1.0	1.2	.7	.6	.9	.5	.2	.2	.2	.8	.8	.7
AVERAGE NUMBER OF SLIDING GLASS STORM DOORS	.2	.2	.2	.1	.2	.1	.2	Q	.1	Q	.1	.4	.1	.1	.1	Q

SEE FOOTNOTES AT END OF TABLE.



# Thermal Characteristics by Housing Structure and Ownership

Table 24. (Continued)

HOUSEHOLD CHARACTERISTICS	HOUSING STRUCTURE BY OWNERSHIP															
	TOTAL	SINGLE-FAMILY DETACHED			SINGLE-FAMILY ATTACHED			BUILDING WITH 2 TO 4 UNITS			BUILDING WITH 5 OR MORE UNITS			MOBILE HOME		
		TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT
<b>PERCENT OF OUTSIDE DOORS WITH STORM DOORS</b>																
100 PERCENT.....	27.8	21.1	19.4	1.7	1.1	0.8	0.3	2.7	0.8	1.9	2.0	0.2	1.8	1.0	0.9	0.1
51 TO 99 PERCENT.....	8.0	7.4	6.9	.4	.3	.2	.1	.3	.1	.2	Q	Q	Q	Q	Q	Q
1 TO 50 PERCENT.....	12.1	8.8	7.7	1.1	.5	.3	.2	.9	.3	.6	.6	.2	.5	1.3	1.1	.1
NONE/NO DOORS.....	35.2	17.3	12.3	5.0	1.2	.7	.4	5.4	.9	4.5	9.4	.6	8.7	1.9	1.6	.3
<b>TOTAL SINGLE-FAMILY UNITS AND MOBILE HOMES.....</b>																
	61.8	54.6	46.4	8.2	3.0	2.1	.9	-	-	-	-	-	-	4.2	3.6	.6
<b>HAVE ROOF OR CEILING INSULATION (SINGLE-FAMILY UNITS AND MOBILE UNITS)</b>																
YES.....	47.8	42.9	39.2	3.7	1.8	1.4	.4	-	-	-	-	-	-	3.2	2.8	.4
ALL INSULATED.....	41.8	37.4	34.3	3.0	1.4	1.1	.3	-	-	-	-	-	-	3.0	2.7	.4
PART INSULATED.....	4.4	4.0	3.6	.4	.3	.3	Q	-	-	-	-	-	-	.1	.1	Q
NONE, VERY LITTLE INSULATED.....	.8	.7	.6	.1	Q	Q	Q	-	-	-	-	-	-	Q	Q	Q
DON'T KNOW AMOUNT/NOT REPORTED.....	.8	.8	.7	.1	Q	Q	Q	-	-	-	-	-	-	Q	Q	Q
NO.....	8.2	7.4	4.9	2.5	.5	.4	.2	-	-	-	-	-	-	.2	.1	.1
DON'T KNOW/NOT REPORTED.....	5.8	4.3	2.3	2.0	.7	.3	.4	-	-	-	-	-	-	.8	.6	.2
<b>TYPE OF INSULATION</b>																
BATTS ONLY.....	24.5	21.7	19.6	2.1	.8	.7	.2	-	-	-	-	-	-	1.9	1.7	.2
AVERAGE NUMBER OF INCHES....	5.4	5.5	5.5	4.9	5.1	5.1	4.9	-	-	-	-	-	-	4.3	4.3	3.4
LOOSE FILL ONLY.....	10.9	10.4	9.7	.7	.4	.4	Q	-	-	-	-	-	-	.1	.1	Q
AVERAGE NUMBER OF INCHES....	6.3	6.3	6.5	4.6	4.6	4.5	6.0	-	-	-	-	-	-	6.7	6.7	Q
BATTS AND LOOSE FILL ONLY.....	4.8	4.6	4.5	.2	.1	.1	Q	-	-	-	-	-	-	Q	Q	Q
AVERAGE NUMBER OF INCHES....	10.3	10.4	10.3	11.6	9.8	9.3	16.0	-	-	-	-	-	-	9.8	9.8	Q
OTHER/COMBINATION.....	4.1	3.6	3.3	.3	.1	.1	Q	-	-	-	-	-	-	.4	.3	Q
DON'T KNOW TYPE/NOT REPORTED..	3.4	2.4	2.0	.4	.2	.1	.1	-	-	-	-	-	-	.8	.7	.1
NO INSULATION/DON'T KNOW/NOT REPORTED.....	13.9	11.7	7.2	4.5	1.2	.7	.6	-	-	-	-	-	-	1.0	.8	.2

SEE FOOTNOTES AT END OF TABLE.



# Thermal Characteristics by Housing Structure and Ownership

Table 24. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	HOUSING STRUCTURE BY OWNERSHIP															
		SINGLE-FAMILY DETACHED			SINGLE-FAMILY ATTACHED			BUILDING WITH 2 TO 4 UNITS			BUILDING WITH 5 OR MORE UNITS			MOBILE HOME			
		TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	
<b>HAVE WALL INSULATION (SINGLE-FAMILY UNITS AND MOBILE UNITS)</b>																	
YES.....	38.8	34.2	31.5	2.7	1.2	0.9	0.3	-	-	-	-	-	-	-	3.5	3.0	0.5
ALL WALLS.....	32.7	28.5	26.5	2.0	1.0	.8	.2	-	-	-	-	-	-	-	3.2	2.8	.4
SOME WALLS.....	6.1	5.6	5.0	.7	.2	.1	Q	-	-	-	-	-	-	-	.3	.3	.1
NO.....	12.6	11.6	8.8	2.8	.8	.7	.2	-	-	-	-	-	-	-	.1	.1	Q
DON'T KNOW/NOT REPORTED.....	10.4	8.8	6.1	2.7	1.0	.5	.5	-	-	-	-	-	-	-	.6	.5	.1
<b>FLOOR INSULATION (SINGLE-FAMILY UNITS AND MOBILE UNITS)</b>																	
HAVE BASEMENT/CRAWL SPACE.....	49.6	43.9	37.6	6.3	1.9	1.4	.5	-	-	-	-	-	-	-	3.8	3.3	.6
HEATED.....	12.7	12.0	11.1	.8	.6	.5	.1	-	-	-	-	-	-	-	.1	Q	Q
NONE OR PART HEATED.....	36.9	31.9	26.5	5.4	1.3	.9	.4	-	-	-	-	-	-	-	3.8	3.2	.6
HAVE FLOOR INSULATION.....	8.2	6.2	5.7	.5	.2	.1	Q	-	-	-	-	-	-	-	1.9	1.7	.2
ALL PARTS INSULATED.....	6.5	4.6	4.2	.4	.1	.1	Q	-	-	-	-	-	-	-	1.8	1.6	.2
SOME PARTS INSULATED.....	1.7	1.6	1.5	.1	Q	Q	Q	-	-	-	-	-	-	-	.1	.1	Q
NO FLOOR INSULATION.....	21.2	19.7	16.1	3.6	.7	.6	.2	-	-	-	-	-	-	-	.7	.5	.2
DON'T KNOW/NOT REPORTED ...	7.5	5.9	4.6	1.3	.4	.2	.2	-	-	-	-	-	-	-	1.2	1.0	.2
NO BASEMENT/CRAWL SPACE.....	12.2	10.7	8.8	2.0	1.1	.7	.4	-	-	-	-	-	-	-	.4	.3	Q
<b>INSULATION CHARACTERISTICS (SINGLE-FAMILY UNITS AND MOBILE UNITS)</b>																	
UNITS WITH SOME OR ALL STORM WINDOWS, AND SOME OR ALL STORM DOORS, AND ROOF OR CEILING INSULATION....	29.4	27.1	25.6	1.4	.9	.8	.1	-	-	-	-	-	-	-	1.4	1.3	.1
UNITS WITH ONE OR MORE OF THESE TYPES OF INSULATION..	55.1	48.9	43.5	5.3	2.6	1.8	.8	-	-	-	-	-	-	-	3.7	3.2	.5
UNITS WITH NONE OF THESE TYPES OF INSULATION.....	6.7	5.7	2.8	2.9	.4	.2	.2	-	-	-	-	-	-	-	.5	.4	.1

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.





# Thermal Characteristics by Housing Structure and Ownership

**Table 25. Thermal Characteristics by Housing Structure and Ownership, as of November 1981 (Percentage of Households)**

HOUSEHOLD CHARACTERISTICS	TOTAL	HOUSING STRUCTURE BY OWNERSHIP														
		SINGLE-FAMILY DETACHED			SINGLE-FAMILY ATTACHED			BUILDING WITH 2 TO 4 UNITS			BUILDING WITH 5 OR MORE UNITS			MOBILE HOME		
		TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT
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	100.0	100.0	100.0
NUMBER OF WINDOWS																
1 TO 6.....	18.0	4.2	3.5	8.3	23.7	17.3	38.0	32.7	14.7	37.9	73.1	65.3	73.8	2.9	2.9	3.0
7 TO 12.....	41.7	42.8	41.0	53.4	44.0	46.1	39.1	48.8	56.4	46.5	24.4	32.7	23.7	60.0	58.2	70.8
13 TO 18.....	24.8	31.8	33.0	24.8	20.4	20.7	19.7	13.4	16.8	12.4	.9	Q	1.0	31.8	32.8	26.1
19 OR MORE.....	15.2	21.2	22.5	13.6	12.0	15.9	3.3	4.9	12.1	2.8	.5	Q	.6	5.3	6.2	Q
NONE.....	.2	Q	Q	Q	Q	Q	Q	.2	Q	.3	1.0	2.0	.9	Q	Q	Q
NUMBER OF STORM WINDOWS																
1 TO 6.....	11.2	6.3	6.1	7.4	12.5	7.7	23.2	19.5	17.4	20.1	29.7	31.6	29.5	2.9	2.8	3.5
7 TO 12.....	23.3	24.7	26.3	15.7	24.7	30.4	12.1	28.6	39.9	25.4	11.0	12.3	10.9	26.4	27.2	21.5
13 TO 18.....	15.0	19.2	21.1	8.8	12.2	14.1	7.8	9.6	20.2	6.6	.2	Q	.2	16.6	17.5	11.6
19 OR MORE.....	9.2	13.1	14.5	5.1	8.5	10.8	3.3	1.6	1.8	1.5	Q	Q	.1	3.2	3.7	Q
NONE/NO WINDOWS.....	41.3	36.7	32.0	62.9	42.1	37.0	53.6	40.7	20.7	46.4	59.0	56.1	59.3	51.0	48.9	63.5
PERCENT OF WINDOWS WITH STORM WINDOWS																
100 PERCENT.....	43.1	44.1	47.6	24.4	39.0	46.2	22.8	47.0	57.8	43.9	37.7	40.4	37.5	39.9	41.8	28.3
76 TO 99 PERCENT.....	7.0	8.8	9.6	4.4	6.7	7.0	6.0	4.9	5.3	4.7	1.1	Q	1.2	4.9	5.3	2.3
51 TO 75 PERCENT.....	4.3	5.0	5.5	2.5	5.7	4.6	8.0	4.3	10.9	2.4	1.3	3.4	1.1	2.7	2.7	2.5
1 TO 50 PERCENT.....	4.3	5.3	5.3	5.8	6.4	5.1	9.5	3.2	5.3	2.6	.8	Q	.9	1.6	1.3	3.5
NONE/NO WINDOWS.....	41.3	36.7	32.0	62.9	42.1	37.0	53.6	40.7	20.7	46.4	59.0	56.1	59.3	51.0	48.9	63.5
NUMBER OF OUTSIDE DOORS																
1.....	9.3	1.2	.9	2.8	2.3	1.3	4.7	25.3	18.0	27.3	37.6	19.3	39.3	3.7	4.0	1.5
2.....	44.4	43.2	39.8	62.4	49.3	45.1	58.8	47.9	39.6	50.2	33.3	52.8	31.5	79.6	79.1	82.9
3.....	27.9	36.2	38.0	25.6	31.6	33.6	27.0	12.3	21.8	9.5	5.5	14.8	4.7	16.0	16.2	14.4
4 OR MORE.....	13.9	19.4	21.3	9.2	16.6	20.0	9.0	3.3	9.3	1.5	.6	4.5	.2	.7	.6	1.1
NONE.....	4.6	-	-	-	.2	Q	.6	11.3	11.2	11.4	23.0	8.5	24.3	-	-	-
TYPE AND NUMBER OF OUTSIDE DOORS																
STANDARD DOORS																
1.....	14.7	4.7	4.3	7.1	19.1	13.3	32.2	31.2	15.4	35.7	49.1	70.3	47.1	6.5	7.0	3.4
2.....	50.0	55.5	53.7	65.6	56.5	58.2	52.7	43.6	46.2	42.8	16.8	7.4	17.7	83.2	83.6	81.0
3.....	21.2	28.7	30.1	20.6	20.6	23.7	13.5	9.2	15.0	7.5	.6	Q	.6	9.4	8.6	14.4
4 OR MORE.....	7.5	10.6	11.4	6.2	3.6	4.8	1.0	3.1	8.6	1.5	Q	Q	Q	.4	.2	1.1
NONE/NO DOORS.....	6.7	.5	.5	.5	.2	Q	.6	13.0	14.8	12.4	33.5	22.3	34.5	.5	.5	Q
SLIDING GLASS DOORS																
1.....	20.8	21.2	22.9	11.2	25.2	23.0	30.1	11.2	11.3	11.2	29.2	61.1	26.3	10.3	11.7	1.9
2 OR MORE.....	5.2	6.0	6.6	2.9	13.9	14.1	13.4	1.0	.4	1.2	4.3	17.3	3.1	.3	.4	Q
NONE/NO DOORS.....	74.0	72.8	70.5	85.9	60.9	62.9	56.5	87.8	88.2	87.6	66.5	21.6	70.7	89.4	87.9	98.1
NUMBER OF STORM DOORS																
1.....	15.5	13.7	13.7	13.5	14.0	12.2	18.1	21.2	27.5	19.4	14.2	23.8	13.4	30.6	31.5	25.5
2.....	27.7	34.1	36.7	19.4	35.1	36.6	31.7	18.1	24.1	16.4	6.9	9.0	6.7	20.1	20.6	16.8
3.....	10.5	14.4	16.2	4.4	11.1	14.3	3.9	2.9	6.7	1.8	.9	5.0	.6	3.8	3.6	4.9
4 OR MORE.....	4.0	6.0	6.8	1.6	.9	1.3	Q	.1	.4	Q	Q	Q	Q	Q	Q	Q
NONE.....	37.7	31.7	26.5	61.1	38.7	35.6	45.7	46.3	30.0	51.0	54.9	53.7	55.0	45.6	44.3	52.7
NO OUTSIDE DOORS.....	4.6	-	-	-	.2	Q	.6	11.3	11.2	11.4	23.0	8.5	24.3	-	-	-
PERCENT OF OUTSIDE DOORS WITH STORM DOORS																
100 PERCENT.....	33.4	38.6	41.8	20.5	35.4	39.0	27.1	28.8	38.9	25.8	16.5	21.1	16.1	23.9	24.0	23.3
51 TO 99 PERCENT.....	9.7	13.5	15.0	5.0	9.3	10.9	5.8	3.7	6.2	3.0	.9	1.8	.2	.5	.6	Q
1 TO 50 PERCENT.....	14.6	16.2	16.7	13.5	16.5	14.5	20.8	9.9	13.7	8.8	5.2	14.9	4.3	30.1	31.1	24.0
NONE/NO DOORS.....	42.3	31.7	26.5	61.1	38.9	35.6	46.3	57.6	41.2	62.4	77.9	62.2	79.3	45.6	44.3	52.7

SEE FOOTNOTES AT END OF TABLE.



# Thermal Characteristics by Housing Structure and Ownership

Table 25. (Continued)

HOUSEHOLD CHARACTERISTICS	HOUSING STRUCTURE BY OWNERSHIP															
	TOTAL	SINGLE-FAMILY DETACHED			SINGLE-FAMILY ATTACHED			BUILDING WITH 2 TO 4 UNITS			BUILDING WITH 5 OR MORE UNITS			MOBILE HOME		
		TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT	TOTAL	OWN	RENT
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
<b>HAVE ROOF OR CEILING INSULATION (SINGLE-FAMILY UNITS AND MOBILE UNITS)</b>																
YES.....	77.4	78.6	84.5	45.5	58.5	66.5	40.6	-	-	-	-	-	-	75.7	78.2	60.8
ALL INSULATED.....	67.7	68.5	74.0	37.1	46.5	50.6	37.1	-	-	-	-	-	-	72.4	74.4	60.8
PART INSULATED.....	7.2	7.4	7.8	5.1	10.7	14.2	2.7	-	-	-	-	-	-	1.9	2.2	Q
NONE, VERY LITTLE INSULATED.....	1.3	1.4	1.3	1.7	1.4	1.6	.8	-	-	-	-	-	-	.4	.4	Q
DON'T KNOW AMOUNT/NOT REPORTED.....	1.3	1.4	1.4	1.6	Q	Q	Q	-	-	-	-	-	-	1.0	1.1	Q
NO.....	13.2	13.6	10.7	30.0	17.9	18.3	16.9	-	-	-	-	-	-	5.0	4.2	10.2
DON'T KNOW/NOT REPORTED.....	9.4	7.8	4.9	24.5	23.6	15.2	42.5	-	-	-	-	-	-	19.3	17.7	29.0
<b>TYPE OF INSULATION</b>																
BATTS ONLY.....	39.6	39.7	42.2	25.6	28.0	32.6	17.8	-	-	-	-	-	-	45.7	46.7	40.0
LOOSE FILL ONLY.....	17.6	19.1	20.9	8.6	13.2	17.9	2.6	-	-	-	-	-	-	1.6	1.8	Q
BATTS AND LOOSE FILL ONLY.....	7.8	8.5	9.6	1.9	5.0	6.8	1.0	-	-	-	-	-	-	.9	1.1	Q
OTHER/COMBINATION.....	6.6	6.6	7.1	4.0	4.2	4.5	3.5	-	-	-	-	-	-	6.8	9.0	7.4
DON'T KNOW TYPE NOT REPORTED..	5.6	4.4	4.3	5.3	8.1	4.7	15.7	-	-	-	-	-	-	18.7	19.6	13.4
NO INSULATION/DON'T KNOW/NOT REPORTED.....	22.6	21.4	15.5	54.5	41.5	33.5	59.4	-	-	-	-	-	-	24.3	21.8	39.2
<b>HAVE WALL INSULATION (SINGLE-FAMILY UNITS AND MOBILE UNITS)</b>																
YES.....	62.8	62.6	67.9	33.0	39.1	42.5	31.4	-	-	-	-	-	-	82.7	84.0	74.8
ALL WALLS.....	52.9	52.3	57.1	24.9	33.2	36.3	26.3	-	-	-	-	-	-	75.1	76.9	64.8
SOME WALLS.....	9.9	10.3	10.7	8.1	5.9	6.2	5.0	-	-	-	-	-	-	7.6	7.1	10.1
NO.....	20.3	21.3	19.1	33.7	28.3	32.3	19.3	-	-	-	-	-	-	2.7	1.9	7.5
DON'T KNOW/NOT REPORTED.....	16.8	16.1	13.1	33.3	32.6	25.2	49.3	-	-	-	-	-	-	14.6	14.1	17.6
<b>FLOOR INSULATION (SINGLE-FAMILY UNITS AND MOBILE UNITS)</b>																
HAVE BASEMENT/CRAWL SPACE.....	80.2	80.4	81.1	76.2	62.6	67.0	52.6	-	-	-	-	-	-	91.0	90.7	92.9
HEATED.....	20.5	22.0	24.0	10.3	20.9	24.0	13.9	-	-	-	-	-	-	1.3	1.3	1.7
NONE OR PART HEATED.....	59.7	58.4	57.1	65.9	41.7	43.1	38.6	-	-	-	-	-	-	89.7	89.5	91.2
HAVE FLOOR INSULATION.....	13.3	11.4	12.3	6.1	5.4	6.5	2.8	-	-	-	-	-	-	44.3	47.4	26.2
ALL PARTS INSULATED.....	10.5	8.4	9.0	5.0	4.3	5.0	2.8	-	-	-	-	-	-	41.9	44.8	25.3
SOME PARTS INSULATED.....	2.8	2.9	3.3	1.1	1.0	1.5	Q	-	-	-	-	-	-	2.4	2.7	.9
NO FLOOR INSULATION.....	34.2	36.1	34.8	43.8	24.1	27.1	17.4	-	-	-	-	-	-	16.9	14.3	32.2
DON'T KNOW/NOT REPORTED ...	12.2	10.9	10.0	16.0	12.2	9.5	18.4	-	-	-	-	-	-	28.5	27.8	32.9
NO BASEMENT/CRAWL SPACE.....	19.8	19.6	18.9	23.8	37.4	33.0	47.4	-	-	-	-	-	-	9.0	9.3	7.1
<b>INSULATION CHARACTERISTICS (SINGLE-FAMILY UNITS AND MOBILE UNITS)</b>																
UNITS WITH SOME OR ALL STORM WINDOWS, AND SOME OR ALL STORM DOORS, AND ROOF OR CEILING INSULATION....	47.5	49.6	55.3	17.5	31.5	40.1	12.2	-	-	-	-	-	-	32.3	35.0	16.6
UNITS WITH ONE OR MORE OF THESE TYPES OF INSULATION..	89.2	89.5	93.9	64.9	86.3	88.6	80.9	-	-	-	-	-	-	87.1	88.6	78.3
UNITS WITH NONE OF THESE TYPES OF INSULATION.....	10.8	10.5	6.1	35.1	13.7	11.4	19.1	-	-	-	-	-	-	12.9	11.4	21.7

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Thermal Characteristics by Heating and Cooling Degree-Days

**Table 26. Thermal Characteristics by Heating and Cooling Degree-Days, as of November 1981 (Million Households, Except Where Averages Are Indicated)**

HOUSEHOLD CHARACTERISTICS	TOTAL	ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)--LONG-TERM AVERAGE													
		<2,000 CDD AND >7,000 HDD						CENSUS REGIONS							
		<2,000 CDD AND >7,000 HDD		<2,000 CDD AND 5,500 TO 7,000 HDD		<2,000 CDD AND 4,000 TO 5,499 HDD		NORTHEAST		NORTH-CENTRAL		SOUTH		WEST	
		<2,000 CDD AND >7,000 HDD	<2,000 CDD AND 5,500 TO 7,000 HDD	<2,000 CDD AND 4,000 TO 5,499 HDD	<2,000 CDD AND >7,000 HDD	<2,000 CDD AND 4,000 TO 5,499 HDD	>2,000 CDD AND <4,000 HDD	5,500 HDD OR MORE	LESS THAN 5,500 HDD	4,000 HDD OR MORE	LESS THAN 2,000 CDD	2,000 CDD OR MORE	4,000 HDD OR MORE	LESS THAN 4,000 HDD	
TOTAL HOUSEHOLDS	83.1	8.6	21.0	21.6	19.5	12.2	9.6	8.3	21.2	16.4	11.3	6.3	10.0		
NUMBER OF WINDOWS															
1 TO 6	15.0	.9	3.1	5.1	3.7	2.2	1.4	2.5	2.8	2.6	1.9	1.3	2.5		
7 TO 12	34.7	4.1	7.1	8.2	9.3	6.0	3.0	2.4	8.6	7.7	5.6	3.0	4.5		
13 TO 18	20.7	2.4	6.2	5.0	4.3	2.7	3.1	1.8	6.0	4.0	2.6	1.4	1.8		
19 OR MORE	12.7	1.4	4.5	3.4	2.2	1.2	2.2	1.6	3.8	2.1	1.1	.6	1.2		
NONE	.2	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		
AVERAGE NUMBER OF WINDOWS	12.5	13.1	14.0	12.4	11.6	11.3	14.4	12.9	13.4	12.1	11.4	11.2	11.2		
NUMBER OF STORM WINDOWS															
1 TO 6	9.3	1.2	3.0	3.5	1.2	.5	1.3	1.6	3.2	2.0	.4	.7	.2		
7 TO 12	19.3	3.7	6.3	6.4	2.5	.5	2.7	2.1	8.0	4.1	.5	1.7	.2		
13 TO 18	12.5	2.1	5.3	3.6	1.2	.3	2.6	1.6	5.3	2.2	.3	.5	Q		
19 OR MORE	7.7	1.2	3.3	2.4	.7	.1	1.7	1.2	2.9	1.3	.1	.3	.1		
NONE/NO WINDOWS	34.3	.7	3.0	5.8	14.0	10.8	1.4	1.8	1.8	6.9	9.9	3.1	9.5		
AVERAGE NUMBER OF STORM WINDOWS	7.4	11.4	11.4	9.0	3.2	1.2	11.9	10.5	11.6	6.8	1.3	5.3	.6		
PERCENT OF WINDOWS WITH STORM WINDOWS															
100 PERCENT	35.9	6.4	13.2	11.4	4.0	.9	5.9	4.8	15.2	6.7	.9	2.1	.3		
76 TO 99 PERCENT	5.8	.8	2.3	2.0	.6	.1	1.2	.8	2.0	1.3	.1	.3	Q		
51 TO 75 PERCENT	3.6	.5	1.4	1.3	.2	.1	.7	.5	1.3	.6	.1	.3	Q		
1 TO 50 PERCENT	3.6	.4	1.0	1.1	.7	.3	.5	.4	.9	.8	.3	.5	.2		
NONE/NO WINDOWS	34.3	.7	3.0	5.8	14.0	10.8	1.4	1.8	1.8	6.9	9.9	3.1	9.5		
NUMBER OF OUTSIDE DOORS															
1	7.7	0.8	2.0	2.5	1.6	0.8	1.2	1.5	1.6	1.1	0.7	0.6	1.0		
2	36.9	4.4	8.8	8.6	9.0	6.1	3.4	2.4	10.4	8.3	5.6	2.8	3.9		
3	23.2	2.3	5.5	5.8	5.8	3.7	2.7	1.7	5.5	4.6	3.4	1.9	3.2		
4 OR MORE	11.5	1.0	3.3	2.7	3.0	1.5	1.6	.9	2.8	2.1	1.4	.8	1.8		
NONE	3.8	.2	1.4	2.0	.2	Q	.8	1.8	.9	.2	Q	.1	Q		
AVERAGE NUMBER OF DOORS	2.4	2.4	2.4	2.3	2.6	2.5	2.4	1.8	2.4	2.5	2.5	2.5	2.7		
TYPE AND NUMBER OF OUTSIDE DOORS															
STANDARD DOORS															
1	12.2	1.1	2.5	3.6	3.2	1.7	1.3	1.5	2.4	1.9	1.6	1.2	2.3		
2	41.6	4.6	10.0	9.3	10.6	6.9	4.0	2.4	11.4	8.9	6.4	3.5	5.1		
3	17.6	1.9	4.6	4.7	3.7	2.6	2.3	1.7	4.6	3.8	2.5	1.1	1.6		
4 OR MORE	6.2	.7	2.1	1.4	1.5	.6	1.2	.5	1.6	1.3	.6	.3	.7		
NONE/NO DOORS	5.5	.5	1.8	2.6	.5	.3	.9	2.2	1.3	.4	.2	.3	.3		
AVERAGE NUMBER OF STANDARD DOORS	2.1	2.2	2.2	2.0	2.1	2.1	2.2	1.6	2.2	2.2	2.2	2.0	2.0		
SLIDING GLASS DOORS															
1	17.3	1.3	3.5	4.7	4.9	2.9	1.0	1.6	3.7	2.8	2.7	1.9	3.7		
2 OR MORE	4.3	.4	.8	.9	1.5	.7	.3	.1	.8	.6	.7	.6	1.2		
NONE/NO DOORS	61.5	7.2	16.6	16.1	13.1	8.5	8.3	6.6	16.8	13.1	7.9	3.8	5.1		
AVERAGE NUMBER OF SLIDING GLASS DOORS	.3	.2	.3	.3	.5	.4	.2	.2	.3	.2	.4	.5	.7		

SEE FOOTNOTES AT END OF TABLE.



# Thermal Characteristics by Heating and Cooling Degree-Days

Table 26. (Continued)

HOUSEHOLD CHARACTERISTICS	ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)-- LONG-TERM AVERAGE														
	TOTAL							CENSUS REGIONS							
		<2,000 CDD AND >7,000 TO HDD		<2,000 CDD AND 4,000 TO 5,499 HDD		>2,000 CDD AND <4,000 TO HDD		NORTHEAST		NORTH CENTRAL		SOUTH		WEST	
		5,500 OR MORE HDD	LESS THAN 5,500 HDD	4,000 OR MORE HDD	LESS THAN 2,000 CDD OR MORE	2,000 OR MORE CDD	4,000 OR MORE HDD	LESS THAN 4,000 HDD	2,000 OR MORE HDD	LESS THAN 2,000 CDD OR MORE HDD	4,000 OR MORE HDD	LESS THAN 4,000 HDD			
NUMBER OF STORM DOORS															
1.....	12.9	1.7	3.2	3.7	2.3	2.0	1.3	1.5	3.7	2.8	1.8	1.4	0.4		
2.....	23.0	3.7	8.2	7.2	2.8	1.1	3.3	2.5	9.5	5.1	1.1	1.4	.1		
3.....	8.7	1.3	3.5	2.7	.9	.4	1.6	1.0	3.4	1.8	.4	.4	.1		
4 OR MORE.....	3.3	.5	1.4	1.0	.4	.1	.7	.3	1.4	.6	.1	.1	.1		
NONE.....	31.3	1.4	3.3	5.0	13.1	8.6	2.0	1.2	2.3	5.9	7.8	2.9	9.2		
NO OUTSIDE DOORS.....	3.8	.2	1.4	2.0	.2	0	.8	1.8	.9	.2	0	.1	0		
AVERAGE NUMBER OF STORM DOORS.....	1.2	1.7	1.7	1.4	.6	.5	1.6	1.3	1.8	1.3	.5	1.0	.2		
AVERAGE NUMBER OF STANDARD STORM DOORS.....	1.0	1.5	1.5	1.2	.5	.4	1.4	1.1	1.6	1.2	.4	.7	.1		
AVERAGE NUMBER OF SLIDING GLASS STORM DOORS.....	.2	.2	.2	.2	.1	.1	.2	.2	.2	.1	.1	.2	.1		
PERCENT OF OUTSIDE DOORS WITH STORM DOORS															
100 PERCENT.....	27.8	4.7	10.4	8.6	3.0	1.0	4.1	3.5	12.2	5.5	.9	1.2	.4		
51 TO 99 PERCENT.....	8.0	1.0	2.8	2.8	.9	.5	1.4	1.1	2.5	1.8	.5	.6	.1		
1 TO 50 PERCENT.....	12.1	1.5	3.1	3.2	2.3	2.0	1.3	.8	3.3	3.1	1.9	1.5	.3		
NONE/NO DOORS.....	35.2	1.6	4.7	7.0	13.3	8.6	2.8	3.0	3.2	6.2	7.8	2.9	9.2		
TOTAL SINGLE-FAMILY UNITS.....	57.6	6.3	14.0	14.4	13.9	9.0	5.8	4.3	15.5	12.4	8.2	4.6	6.9		
HAVE ROOF OR CEILING INSULATION (SINGLE-FAMILY UNITS)															
YES.....	44.7	5.5	11.7	11.4	10.0	6.1	4.5	3.3	13.3	9.6	5.7	3.7	4.5		
ALL INSULATED.....	38.8	4.9	10.1	9.7	8.8	5.3	4.0	2.7	11.5	8.4	4.9	3.3	3.9		
PART INSULATED.....	4.3	.5	1.1	1.3	.9	.6	.5	.5	1.1	.9	.6	.3	.5		
NONE, VERY LITTLE INSULATED.....	.8	.1	.3	.1	.2	.1	.1	0	.3	.1	.1	0	.1		
DON'T KNOW AMOUNT/ NOT REPORTED.....	.8	.1	.2	.3	.2	.1	0	.1	.3	.2	.1	.1	.1		
NO.....	7.9	.4	1.1	1.6	2.6	2.2	.8	.6	1.0	1.8	1.8	.4	1.6		
DON'T KNOW/NOT REPORTED.....	5.0	.3	1.2	1.4	1.4	.7	.4	.5	1.2	.9	.6	.5	.8		
TYPE OF INSULATION															
BATTS ONLY.....	22.5	2.7	6.1	6.4	4.6	2.7	3.1	2.3	6.1	5.2	2.5	1.4	1.9		
AVERAGE NUMBER OF INCHES.....	5.5	6.0	5.7	5.2	5.5	4.8	5.9	5.6	5.7	5.4	4.7	4.9	5.0		
LOOSE FILL ONLY.....	10.8	1.2	2.4	2.5	2.7	2.0	.6	.4	3.2	2.5	1.9	1.1	1.1		
AVERAGE NUMBER OF INCHES.....	6.3	7.5	6.7	6.4	5.7	5.7	7.2	5.9	6.9	6.3	5.7	6.6	4.6		
BATTS AND LOOSE FILL ONLY.....	4.8	1.1	1.5	1.1	.8	.4	.4	.2	2.3	.8	.4	.3	.3		
AVERAGE NUMBER OF INCHES.....	10.3	11.3	10.2	10.0	9.1	11.3	9.5	9.4	10.9	9.4	11.3	11.1	8.6		
OTHER/COMBINATION.....	3.7	.4	.9	.7	1.0	.7	.3	.2	.9	.5	.6	.4	.8		
DON'T KNOW TYPE/NOT REPORTED.....	2.6	.1	.6	.7	.8	.4	.1	.1	.6	.5	.3	.5	.5		
NO INSULATION/DON'T KNOW/ NOT REPORTED.....	12.9	.8	2.3	3.0	4.0	2.9	1.2	1.1	2.2	2.8	2.4	.8	2.3		

SEE FOOTNOTES AT END OF TABLE.



# Thermal Characteristics by Heating and Cooling Degree-Days

Table 26. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)-- LONG-TERM AVERAGE												
		CENSUS REGIONS												
		<2,000 CDD AND >7,000 HDD	<2,000 CDD AND 5,500 TO 7,000 HDD	<2,000 CDD AND 4,000 TO 5,499 HDD	<2,000 CDD AND <4,000 HDD	>2,000 CDD AND <4,000 HDD	NORTHEAST		NORTH CENTRAL		SOUTH		WEST	
							5,500 HDD OR MORE	LESS THAN 5,500 HDD	4,000 HDD OR MORE	LESS THAN 2,000 CDD	2,000 OR MORE	4,000 HDD OR MORE	LESS THAN 4,000 HDD	
<b>HAVE WALL INSULATION (SINGLE-FAMILY UNITS)</b>														
YES.....	35.3	5.1	10.1	9.4	6.7	4.1	4.3	2.6	11.7	7.5	3.8	3.0	2.5	
ALL WALLS.....	29.5	4.3	8.4	7.8	5.7	3.4	3.2	2.1	10.1	6.4	3.2	2.5	2.0	
SOME WALLS.....	5.8	.8	1.7	1.6	1.0	.7	1.1	.5	1.6	1.0	.6	.5	.5	
NO.....	12.5	.6	2.1	2.6	4.2	3.0	.9	.8	1.9	2.9	2.5	.6	2.7	
DON'T KNOW/NOT REPORTED.....	9.8	.5	1.8	2.5	3.0	2.0	.5	1.0	1.9	2.0	1.8	.9	1.7	
<b>FLOOR INSULATION (SINGLE-FAMILY UNITS)</b>														
HAVE BASEMENT/CRAWL SPACE.....	45.7	5.8	13.2	12.6	10.1	4.0	5.5	3.8	14.5	10.5	3.8	3.7	4.0	
HEATED.....	12.6	2.5	5.8	4.0	.3	Q	1.9	1.4	6.7	1.6	Q	.9	.1	
NONE OR PART HEATED.....	33.1	3.3	7.4	8.6	9.8	4.0	3.6	2.4	7.8	8.8	3.8	2.8	3.9	
HAVE FLOOR INSULATION.....	6.4	.6	1.6	2.0	1.9	.3	.7	.6	1.5	2.1	.3	.6	.4	
ALL PARTS INSULATED.....	4.7	.5	1.0	1.5	1.5	.2	.4	.5	1.0	1.8	.2	.5	.3	
SOME PARTS INSULATED.....	1.6	.1	.6	.4	.4	.1	.3	.2	.5	.4	.1	.1	.1	
NO FLOOR INSULATION.....	20.4	2.2	4.3	4.6	6.1	3.3	2.1	1.2	4.8	5.3	3.0	1.4	2.6	
DON'T KNOW/NOT REPORTED ...	6.3	.5	1.5	2.0	1.8	.5	.8	.5	1.5	1.4	.5	.7	.9	
NO BASEMENT/CRAWL SPACE.....	11.8	.5	.8	1.8	3.8	4.9	.3	.5	1.0	1.9	4.4	.8	2.9	
<b>INSULATION CHARACTERISTICS (SINGLE-FAMILY UNITS)</b>														
UNITS WITH SOME OR ALL STORM WINDOWS, AND SOME OR ALL STORM DOORS, AND ROOF OR CEILING INSULATION....	28.0	4.8	10.2	9.1	3.1	0.8	4.1	3.0	11.9	6.1	0.8	1.9	0.2	
UNITS WITH ONE OR MORE OF THESE TYPES OF INSULATION..	51.5	6.2	13.8	13.9	11.0	6.7	5.7	4.3	15.3	11.2	6.3	4.2	4.5	
UNITS WITH NONE OF THESE TYPES OF INSULATION.....	6.1	.1	.2	.6	3.0	2.3	.1	Q	.1	1.2	1.9	.4	2.3	

"-" = DATA NOT APPLICABLE.  
 "Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.  
 NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Thermal Characteristics by Heating and Cooling Degree-Days

**Table 27. Thermal Characteristics by Heating and Cooling Degree-Days, as of November 1981 (Percentage of Households)**

HOUSEHOLD CHARACTERISTICS	ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)--LONG-TERM AVERAGE												
	TOTAL							CENSUS REGIONS					
		<2,000 CDD AND >7,000 HDD	<2,000 CDD AND 5,500 TO 7,000 HDD	<2,000 CDD AND 4,000 TO 5,499 HDD	<2,000 CDD AND <4,000 HDD	>2,000 CDD AND <4,000 HDD	NORTHEAST		NORTH CENTRAL	SOUTH		WEST	
							5,500 HDD OR MORE	LESS THAN 5,500 HDD	4,000 HDD OR MORE	LESS THAN 2,000 CDD OR MORE	2,000 CDD OR MORE	4,000 HDD OR MORE	LESS THAN 4,000 HDD
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
NUMBER OF WINDOWS													
1 TO 6	18.0	10.0	14.9	23.4	18.7	18.4	14.1	30.5	13.3	15.7	17.3	20.0	24.8
7 TO 12	41.7	46.2	34.0	37.7	47.8	49.3	30.9	28.8	40.6	46.6	49.3	48.1	45.0
13 TO 18	24.8	27.5	29.5	22.9	22.2	22.4	31.7	21.7	28.1	24.5	23.4	21.8	18.1
19 OR MORE	15.2	16.2	21.3	15.8	11.0	9.9	23.2	19.1	17.9	13.1	10.0	9.6	11.7
NONE	.2	.2	.2	.2	.3	Q	Q	Q	.2	.2	Q	.6	.4
NUMBER OF STORM WINDOWS													
1 TO 6	11.2	13.4	14.4	16.1	6.1	3.8	13.1	18.8	15.0	11.9	4.0	11.7	1.8
7 TO 12	23.3	42.0	30.1	29.4	12.7	4.2	27.8	25.2	37.9	25.0	4.6	26.5	2.4
13 TO 18	15.0	23.5	25.2	16.7	6.2	2.4	27.2	19.2	24.9	13.4	2.6	7.5	.4
19 OR MORE	9.2	13.2	16.0	11.0	3.4	1.0	17.6	15.1	13.8	7.8	1.1	4.7	.8
NONE/NO WINDOWS	41.3	8.0	14.3	26.9	71.6	88.6	14.4	21.7	8.4	41.9	87.7	49.6	94.6
PERCENT OF WINDOWS WITH STORM WINDOWS													
100 PERCENT	43.1	72.2	62.9	52.6	20.7	7.3	61.0	57.6	71.5	41.0	7.8	33.3	3.1
76 TO 99 PERCENT	7.0	9.5	11.1	9.3	2.9	.5	12.9	9.9	9.5	8.2	.6	5.0	Q
51 TO 75 PERCENT	4.3	5.6	6.9	6.0	1.1	1.1	7.1	6.2	6.1	3.9	1.1	4.8	.3
1 TO 50 PERCENT	4.3	4.6	4.8	5.3	3.7	2.5	4.7	4.6	4.4	5.0	2.7	7.4	2.1
NONE/NO WINDOWS	41.3	8.0	14.3	26.9	71.6	88.6	14.4	21.7	8.4	41.9	87.7	49.6	94.6
NUMBER OF OUTSIDE DOORS													
1	9.3	9.1	9.4	11.7	8.3	6.7	12.0	18.0	7.3	6.8	6.6	9.8	10.4
2	44.4	50.2	42.0	39.7	45.9	50.0	34.8	29.1	49.1	50.7	50.0	45.0	39.0
3	27.9	26.5	26.2	26.9	29.6	30.7	28.1	20.3	26.1	28.0	30.5	30.9	32.5
4 OR MORE	13.9	11.6	15.7	12.4	15.4	12.3	17.0	10.9	13.2	12.9	12.6	13.3	17.8
NONE	4.6	2.6	6.7	9.3	.8	.3	8.1	21.7	4.2	1.4	.3	.9	.3
TYPE AND NUMBER OF OUTSIDE DOORS													
STANDARD DOORS													
1	14.7	12.6	11.9	16.8	16.6	14.2	13.3	18.3	11.1	11.8	14.3	18.5	23.4
2	50.0	52.6	47.9	43.1	54.4	56.9	41.3	28.6	53.6	54.2	56.8	55.1	50.6
3	21.2	22.1	21.9	21.7	19.1	21.7	24.2	20.0	21.6	23.1	21.8	17.8	16.4
4 OR MORE	7.5	7.4	9.9	6.4	7.6	5.0	12.3	6.3	7.7	8.1	5.3	4.4	6.6
NONE/NO DOORS	6.7	5.3	8.5	12.0	2.3	2.2	8.8	26.8	5.9	2.7	1.8	4.2	3.0
SLIDING GLASS DOORS													
1	20.8	14.4	16.7	21.6	25.1	24.2	10.8	19.1	17.3	16.9	23.6	29.6	37.0
2 OR MORE	5.2	4.1	4.0	4.2	7.8	5.9	3.6	1.8	3.6	3.6	5.8	9.5	12.2
NONE/NO DOORS	74.0	81.5	79.3	74.2	67.1	69.9	85.5	79.2	79.0	79.5	70.5	60.8	50.8

SEE FOOTNOTES AT END OF TABLE.



# Thermal Characteristics by Heating and Cooling Degree-Days

Table 27. (Continued)

HOUSEHOLD CHARACTERISTICS	ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)-- LONG-TERM AVERAGE														
	TOTAL	<2,000 CDD AND >7,000 HDD				>2,000 CDD AND <4,000 HDD				CENSUS REGIONS					
		<2,000 CDD AND 5,500 TO 7,000 HDD		<2,000 CDD AND 4,000 TO 5,499 HDD		>2,000 CDD AND <4,000 HDD		NORTHEAST		NORTH CENTRAL		SOUTH		WEST	
		5,500 TO 7,000 HDD	4,000 TO 5,499 HDD	>2,000 CDD AND <4,000 HDD	5,500 OR MORE HDD	4,000 OR MORE HDD	2,000 OR MORE CDD	4,000 OR MORE HDD	5,500 OR MORE HDD	4,000 OR MORE CDD	2,000 OR MORE CDD	4,000 OR MORE HDD	5,500 OR MORE HDD	4,000 OR MORE HDD	LESS THAN 4,000 HDD
<b>NUMBER OF STORM DOORS</b>															
1.....	15.5	19.4	15.3	17.2	11.6	16.3	13.7	17.5	17.2	16.9	16.4	22.6	4.3		
2.....	27.7	42.3	39.1	33.4	14.3	9.0	33.7	30.6	44.8	31.0	9.6	22.3	1.4		
3.....	10.5	14.4	16.6	12.4	4.4	3.7	16.7	11.9	16.2	10.7	4.0	6.4	1.0		
4 OR MORE.....	4.0	5.8	6.8	4.5	1.9	.5	6.9	4.1	6.6	3.9	.6	2.0	.8		
NONE.....	37.7	15.6	15.6	23.3	67.1	70.1	20.9	14.2	11.0	36.1	69.2	45.8	92.2		
NO OUTSIDE DOORS.....	4.6	2.6	6.7	9.3	.8	.3	8.1	21.7	4.2	1.4	.3	.9	.3		
<b>PERCENT OF OUTSIDE DOORS WITH STORM DOORS</b>															
100 PERCENT.....	33.4	53.8	49.6	39.8	15.5	8.3	42.6	41.8	57.7	33.2	8.4	19.6	3.5		
51 TO 99 PERCENT.....	9.7	11.2	13.4	12.8	4.8	4.5	14.7	13.1	11.8	10.7	4.8	9.8	1.2		
1 TO 50 PERCENT.....	14.6	16.9	14.6	14.8	12.0	16.7	13.7	9.3	15.3	18.6	17.3	23.9	2.9		
NONE/NO DOORS.....	42.3	18.1	22.3	32.5	67.8	70.4	29.0	35.8	15.2	37.6	69.5	46.7	92.4		
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		
<b>HAVE ROOF OR CEILING INSULATION (SINGLE-FAMILY UNITS)</b>															
YES.....	77.6	87.9	83.4	79.1	71.5	68.0	78.5	74.9	85.7	77.7	70.1	81.6	66.0		
ALL INSULATED.....	67.3	77.7	72.5	67.2	62.9	58.9	68.9	61.4	74.6	68.2	60.6	73.1	56.1		
PART INSULATED.....	7.5	7.5	7.7	9.2	6.4	6.5	8.1	11.6	7.2	6.9	6.8	6.5	7.8		
NONE, VERY LITTLE INSULATED.....	1.4	1.2	2.1	.7	1.2	1.7	1.2	.4	2.2	.6	1.8	.7	1.2		
DON'T KNOW AMOUNT/NOT REPORTED.....	1.4	1.4	1.2	2.0	1.1	.9	.3	1.5	1.7	2.0	.9	1.3	.8		
NO.....	13.8	7.0	8.1	11.4	18.4	24.2	14.6	12.7	6.5	14.7	22.0	8.0	22.7		
DON'T KNOW/NOT REPORTED.....	8.6	5.1	8.5	9.5	10.0	7.8	6.8	12.4	7.9	7.5	7.9	10.4	11.3		
<b>TYPE OF INSULATION</b>															
BATTS ONLY.....	39.1	43.3	43.9	44.2	33.0	30.1	53.2	53.3	39.3	42.2	31.1	31.1	27.3		
LOOSE FILL ONLY.....	18.8	18.5	17.2	17.6	19.3	22.3	10.8	9.1	20.6	20.2	23.2	24.7	15.4		
BATTS AND LOOSE FILL ONLY.....	8.3	17.2	10.7	7.3	5.4	4.3	7.1	5.7	14.8	6.5	4.7	6.9	4.6		
OTHER/COMBINATION.....	6.5	5.9	6.5	5.1	7.5	7.3	5.3	3.9	6.1	4.4	7.1	8.6	11.5		
DON'T KNOW TYPE NOT REPORTED..	4.6	2.1	4.5	4.7	6.1	4.0	2.0	2.8	4.1	4.3	3.9	9.9	6.9		
NO INSULATION/DON'T KNOW/NOT REPORTED.....	22.4	12.1	16.6	20.9	28.5	32.0	21.5	25.1	14.3	22.3	29.9	18.4	34.0		

SEE FOOTNOTES AT END OF TABLE.



# Thermal Characteristics by Heating and Cooling Degree-Days

Table 27. (Continued)

HOUSEHOLD CHARACTERISTICS	ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)-- LONG-TERM AVERAGE														
	TOTAL	<2,000 CDD AND >7,000 HDD				<2,000 CDD AND <4,000 HDD				CENSUS REGIONS					
		<2,000 CDD AND >7,000 HDD		<2,000 CDD AND 5,499 HDD		<2,000 CDD AND <4,000 HDD		NORTHEAST		NORTH CENTRAL		SOUTH		WEST	
		TO	TO	TO	TO	TO	TO	5,500 OR MORE HDD	LESS THAN 5,500 HDD	4,000 OR MORE CDD	LESS THAN 2,000 CDD	4,000 OR MORE CDD	4,000 OR MORE CDD	LESS THAN 4,000 CDD	
<b>HAVE WALL INSULATION (SINGLE-FAMILY UNITS)</b>															
YES.....	61.4	81.6	72.2	65.2	47.9	45.2	74.8	59.4	75.3	60.4	46.9	65.8	36.2		
ALL WALLS.....	51.3	69.0	59.8	54.1	40.5	37.8	55.0	48.4	65.2	52.1	39.0	55.7	28.7		
SOME WALLS.....	10.1	12.6	12.4	11.1	7.4	7.4	19.8	11.0	10.0	8.3	7.9	10.0	7.5		
NO.....	21.6	10.4	14.7	17.8	30.4	32.9	16.3	18.7	12.4	23.4	30.8	14.2	39.6		
DON'T KNOW/NOT REPORTED.....	17.0	8.0	13.1	17.0	21.6	21.9	8.9	21.9	12.3	16.1	22.4	20.0	24.2		
<b>FLOOR INSULATION (SINGLE-FAMILY UNITS)</b>															
HAVE BASEMENT/CRAWL SPACE.....	79.4	92.4	94.4	87.3	72.7	44.9	95.1	87.8	93.4	84.7	46.1	81.8	58.2		
HEATED.....	21.9	39.7	41.8	27.4	2.3	.1	32.2	33.0	43.0	13.1	.1	20.4	1.4		
NONE OR PART HEATED.....	57.5	52.7	52.6	59.8	70.5	44.8	62.9	54.7	50.4	71.5	46.0	61.5	56.8		
HAVE FLOOR INSULATION.....	11.0	10.0	11.3	13.6	13.8	3.0	12.8	14.5	9.7	17.3	3.3	14.1	6.3		
ALL PARTS INSULATED.....	8.2	7.7	6.9	10.6	11.0	2.4	7.6	10.7	6.4	14.2	2.6	11.7	4.9		
SOME PARTS INSULATED.....	2.8	2.3	4.4	3.0	2.7	.7	5.2	3.8	3.3	3.1	.7	2.4	1.4		
NO FLOOR INSULATION.....	35.5	34.4	30.5	32.2	44.0	36.2	36.8	28.4	31.0	42.8	36.8	31.6	37.2		
DON'T KNOW/NOT REPORTED ..	11.0	8.3	10.7	14.1	12.7	5.5	13.3	11.8	9.7	11.4	5.9	15.8	13.3		
NO BASEMENT/CRAWL SPACE.....	20.6	7.6	5.6	12.7	27.3	55.1	4.9	12.2	6.6	15.3	53.9	18.2	41.8		
<b>INSULATION CHARACTERISTICS (SINGLE-FAMILY UNITS)</b>															
UNITS WITH SOME OR ALL STORM WINDOWS, AND SOME OR ALL STORM DOORS, AND ROOF OR CEILING INSULATION....	48.6	77.4	72.7	63.4	21.9	9.0	71.1	69.3	77.0	49.4	9.7	41.0	3.0		
UNITS WITH ONE OR MORE OF THESE TYPES OF INSULATION..	89.4	98.6	98.8	96.1	78.6	74.2	98.2	99.1	99.1	90.4	76.9	91.0	66.0		
UNITS WITH NONE OF THESE TYPES OF INSULATION.....	10.6	1.4	1.2	3.9	21.4	25.8	1.8	.9	.9	9.6	23.1	9.0	34.0		

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.





# Thermal Characteristics by Year House Built

**Table 28. Thermal Characteristics by Year House Built, as of November 1981 (Million Households, Except Where Averages Are Indicated)**

HOUSEHOLD CHARACTERISTICS	TOTAL	YEAR HOUSE BUILT							
		1979 OR LATER	1975 TO 1978	1970 TO 1974	1965 TO 1969	1960 TO 1964	1950 TO 1959	1940 TO 1949	1939 OR EARLIER
TOTAL HOUSEHOLDS .....	83.1	4.0	7.7	10.7	8.5	7.6	13.5	6.9	24.2
<b>NUMBER OF WINDOWS</b>									
1 TO 6.....	15.0	1.0	2.2	3.2	2.0	1.2	1.3	.8	3.3
7 TO 12.....	34.7	2.0	3.5	4.5	3.6	3.7	6.1	3.0	8.5
13 TO 18.....	20.7	.8	1.4	2.0	2.1	2.0	3.6	1.9	6.8
19 OR MORE.....	12.7	.2	.6	.9	.7	.7	2.5	1.3	5.7
NONE.....	.2	Q	Q	.1	Q	Q	Q	Q	Q
AVERAGE NUMBER OF WINDOWS...	12.5	9.8	10.1	10.3	10.9	11.6	13.8	13.4	14.6
<b>NUMBER OF STORM WINDOWS</b>									
1 TO 6.....	9.3	.5	1.5	1.5	1.0	.7	.7	.6	2.8
7 TO 12.....	19.3	1.1	1.9	2.4	1.9	1.8	3.1	1.4	5.7
13 TO 18.....	12.5	.4	.7	1.0	1.3	.9	2.2	1.2	4.6
19 OR MORE.....	7.7	.2	.4	.7	.5	.5	1.4	.7	3.3
NONE/NO WINDOWS.....	34.3	1.7	3.2	5.0	3.8	3.7	6.1	3.0	7.8
AVERAGE NUMBER OF STORM WINDOWS.....	7.4	5.9	5.9	6.0	6.4	6.2	7.7	7.6	9.1
<b>PERCENT OF WINDOWS WITH STORM WINDOWS</b>									
100 PERCENT.....	35.9	2.0	4.0	4.6	3.7	2.8	5.4	2.9	10.5
76 TO 99 PERCENT.....	5.8	.1	.2	.6	.5	.4	.9	.5	2.6
51 TO 75 PERCENT.....	3.6	.1	.2	.3	.3	.4	.5	.3	1.5
1 TO 50 PERCENT.....	3.6	.1	.2	.1	.2	.3	.6	.3	1.7
NONE/NO WINDOWS.....	34.3	1.7	3.2	5.0	3.8	3.7	6.1	3.0	7.8
<b>NUMBER OF OUTSIDE DOORS</b>									
1.....	7.7	.4	.8	1.3	1.4	.7	.6	.4	2.1
2.....	36.9	1.6	2.9	4.4	3.3	3.1	7.1	3.6	10.9
3.....	23.2	1.3	2.4	3.0	2.5	2.3	3.6	1.8	6.2
4 OR MORE.....	11.5	.6	1.3	1.6	1.0	1.2	1.8	.8	3.2
NONE.....	3.8	Q	.3	.4	.3	.2	.3	.4	1.9
AVERAGE NUMBER OF DOORS.....	2.4	2.6	2.6	2.5	2.4	2.5	2.5	2.4	2.3
<b>TYPE AND NUMBER OF OUTSIDE DOORS</b>									
<b>STANDARD DOORS</b>									
1.....	12.2	0.8	1.6	2.4	1.9	1.2	1.4	0.5	2.4
2.....	41.6	2.2	4.0	5.2	4.0	3.8	7.6	3.8	11.0
3.....	17.6	.7	1.3	1.6	1.6	1.6	3.2	1.6	5.9
4 OR MORE.....	6.2	.1	.3	.6	.3	.5	.8	.6	2.9
NONE/NO DOORS.....	5.5	.1	.6	.9	.7	.5	.4	.4	2.0
AVERAGE NUMBER OF STANDARD DOORS.....	2.1	2.0	1.9	1.9	1.9	2.1	2.2	2.3	2.3
<b>SLIDING GLASS DOORS</b>									
1.....	17.3	1.6	3.0	4.0	3.0	2.3	2.0	.4	1.0
2 OR MORE.....	4.3	.4	.8	1.1	.4	.5	.9	.2	.1
NONE/NO DOORS.....	61.5	2.0	4.0	5.6	5.1	4.8	10.6	6.3	23.1
AVERAGE NUMBER OF SLIDING GLASS DOORS.....	.3	.6	.6	.6	.5	.5	.3	.1	.1
<b>NUMBER OF STORM DOORS</b>									
1.....	12.9	.7	1.5	1.9	1.7	1.0	1.8	.7	3.5
2.....	23.0	.9	1.9	2.3	2.0	2.1	4.6	2.2	7.0
3.....	8.7	.3	.7	1.1	.8	.9	1.4	.8	2.7
4 OR MORE.....	3.3	.1	.4	.6	.3	.3	.4	.3	.8
NONE.....	31.3	1.9	3.0	4.3	3.4	3.0	5.0	2.5	8.2
NO OUTSIDE DOORS.....	3.8	Q	.3	.4	.3	.2	.3	.4	1.9
AVERAGE NUMBER OF STORM DOORS.....	1.2	1.0	1.2	1.2	1.1	1.2	1.3	1.3	1.2
AVERAGE NUMBER OF STANDARD STORM DOORS.....	1.0	.7	.8	.9	.9	1.0	1.1	1.2	1.2
AVERAGE NUMBER OF SLIDING GLASS STORM DOORS.....	.2	.3	.3	.3	.2	.2	.1	.1	Q

SEE FOOTNOTES AT END OF TABLE.



# Thermal Characteristics by Year House Built

Table 28. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	YEAR HOUSE BUILT							
		1979 OR LATER	1975 TO 1978	1970 TO 1974	1965 TO 1969	1960 TO 1964	1950 TO 1959	1940 TO 1949	1939 OR EARLIER
<b>PERCENT OF OUTSIDE DOORS WITH STORM DOORS</b>									
100 PERCENT.....	27.8	1.0	2.0	3.1	2.7	2.4	5.2	2.8	8.6
51 TO 99 PERCENT.....	8.0	.3	.9	1.1	.8	.9	1.0	.6	2.3
1 TO 50 PERCENT.....	12.1	.7	1.6	1.7	1.4	1.0	1.9	.7	3.2
NONE/NO DOORS.....	35.2	2.0	3.2	4.7	3.6	3.2	5.3	2.9	10.2
<b>TOTAL SINGLE-FAMILY UNITS.....</b>	<b>57.6</b>	<b>2.4</b>	<b>4.5</b>	<b>6.0</b>	<b>5.0</b>	<b>5.8</b>	<b>11.1</b>	<b>5.8</b>	<b>16.9</b>
<b>HAVE ROOF OR CEILING INSULATION (SINGLE-FAMILY UNITS)</b>									
YES.....	44.7	2.2	4.2	5.4	4.6	4.8	9.0	4.1	10.3
ALL INSULATED.....	38.8	2.1	3.9	5.0	4.3	4.3	7.8	3.4	8.0
PART INSULATED.....	4.3	.1	.2	.2	.2	.4	.8	.5	1.9
NONE, VERY LITTLE INSULATED.....	.8	.1	Q	Q	Q	Q	.2	.1	.3
DON'T KNOW AMOUNT/NOT REPORTED.....	.8	Q	.1	.1	.1	.1	.2	.1	.2
NO.....	7.9	Q	.1	.2	.2	.4	1.2	1.0	4.8
DON'T KNOW/NOT REPORTED.....	5.0	.2	.2	.4	.3	.5	1.0	.6	1.8
<b>TYPE OF INSULATION</b>									
BATTS ONLY.....	22.5	1.2	2.3	3.0	2.1	2.4	4.6	2.3	4.6
AVERAGE NUMBER OF INCHES....	5.5	6.5	6.4	6.0	5.3	5.1	5.5	4.9	5.0
LOOSE FILL ONLY.....	10.8	.4	.9	1.2	1.4	1.1	2.1	.9	2.9
AVERAGE NUMBER OF INCHES....	6.3	7.2	7.4	6.9	6.8	5.9	5.6	6.2	5.9
BATTS AND LOOSE FILL ONLY.....	4.8	.1	.4	.5	.5	.6	1.0	.4	1.3
AVERAGE NUMBER OF INCHES....	10.3	13.5	10.4	11.6	9.6	10.8	10.4	9.4	9.6
OTHER/COMBINATION.....	3.7	.3	.4	.3	.3	.4	.8	.4	.9
DON'T KNOW TYPE/NOT REPORTED..	2.6	.2	.2	.4	.3	.3	.5	.2	.5
NO INSULATION/DON'T KNOW/NOT REPORTED.....	12.9	.2	.3	.6	.5	1.0	2.1	1.6	6.6
<b>HAVE WALL INSULATION (SINGLE-FAMILY UNITS)</b>									
YES.....	35.3	2.2	3.9	4.5	3.6	3.6	6.5	2.9	8.1
ALL WALLS.....	29.5	2.2	3.9	4.3	3.2	3.1	5.0	2.4	5.5
SOME WALLS.....	5.8	Q	.1	.2	.4	.5	1.5	.6	2.6
NO.....	12.5	.1	.2	.4	.5	1.1	2.7	1.7	5.9
DON'T KNOW/NOT REPORTED.....	9.8	.1	.4	1.0	1.0	1.1	2.0	1.2	2.9
<b>FLOOR INSULATION (SINGLE-FAMILY UNITS)</b>									
HAVE BASEMENT/CRAWL SPACE.....	45.7	1.4	3.1	3.9	3.4	3.9	9.0	4.9	16.1
HEATED.....	12.6	.4	1.1	1.5	1.0	1.2	2.3	1.1	4.0
NONE OR PART HEATED.....	33.1	.9	2.0	2.4	2.4	2.7	6.8	3.8	12.1
HAVE FLOOR INSULATION.....	6.4	.4	.8	.8	.7	.6	1.1	.4	1.5
ALL PARTS INSULATED.....	4.7	.4	.7	.6	.6	.5	.8	.3	.9
SOME PARTS INSULATED.....	1.6	Q	.1	.2	.1	.2	.3	.1	.6
NO FLOOR INSULATION.....	20.4	.4	.8	1.2	1.2	1.4	4.4	2.6	8.4
DON'T KNOW/NOT REPORTED.....	6.3	.1	.5	.4	.5	.6	1.3	.8	2.2
NO BASEMENT/CRAWL SPACE.....	11.8	1.1	1.4	2.1	1.7	1.9	2.1	.8	.8
<b>INSULATION CHARACTERISTICS (SINGLE-FAMILY UNITS)</b>									
UNITS WITH SOME OR ALL STORM WINDOWS, AND SOME OR ALL STORM DOORS, AND ROOF OR CEILING INSULATION....	28.0	1.2	2.5	3.3	2.5	2.8	5.4	2.6	7.6
UNITS WITH ONE OR MORE OF THESE TYPES OF INSULATION..	51.5	2.3	4.4	5.6	4.8	5.3	10.0	4.8	14.2
UNITS WITH NONE OF THESE TYPES OF INSULATION.....	6.1	.1	.1	.3	.2	.5	1.1	.9	2.7

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Thermal Characteristics by Year House Built

**Table 29. Thermal Characteristics by Year House Built, as of November 1981 (Percentage of Households)**

HOUSEHOLD CHARACTERISTICS	TOTAL	YEAR HOUSE BUILT							
		1979 OR LATER	1975 TO 1978	1970 TO 1974	1965 TO 1969	1960 TO 1964	1950 TO 1959	1940 TO 1949	1939 OR EARLIER
TOTAL HOUSEHOLDS .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>NUMBER OF WINDOWS</b>									
1 TO 6.....	18.0	25.3	28.6	29.6	24.1	16.4	9.3	11.3	13.5
7 TO 12.....	41.7	48.8	44.8	42.3	42.3	48.2	45.0	43.0	34.9
13 TO 18.....	24.8	19.4	18.6	18.6	24.9	26.1	27.0	27.5	28.1
19 OR MORE.....	15.2	5.8	7.8	8.7	8.5	9.4	18.7	18.1	23.5
NONE.....	.2	.7	.3	.8	.2	Q	Q	Q	Q
<b>NUMBER OF STORM WINDOWS</b>									
1 TO 6.....	11.2	13.0	19.1	13.8	12.1	9.4	5.3	8.5	11.6
7 TO 12.....	23.3	28.5	24.9	22.3	22.7	23.7	23.0	20.4	23.3
13 TO 18.....	15.0	10.9	9.6	9.7	15.5	12.5	16.3	17.9	18.9
19 OR MORE.....	9.2	4.2	5.5	6.9	5.3	6.0	10.4	9.8	13.8
NONE/NO WINDOWS.....	41.3	43.5	40.9	47.3	44.4	48.4	45.0	43.3	32.4
<b>PERCENT OF WINDOWS WITH STORM WINDOWS</b>									
100 PERCENT.....	43.1	50.5	51.8	43.2	43.5	36.8	39.8	41.3	43.4
76 TO 99 PERCENT.....	7.0	1.7	2.7	5.8	5.9	5.5	6.9	6.6	10.8
51 TO 75 PERCENT.....	4.3	2.8	2.3	2.4	3.7	5.0	4.0	3.9	6.3
1 TO 50 PERCENT.....	4.3	1.5	2.3	1.3	2.4	4.4	4.3	4.9	7.2
NONE/NO WINDOWS.....	41.3	43.5	40.9	47.3	44.4	48.4	45.0	43.3	32.4
<b>NUMBER OF OUTSIDE DOORS</b>									
1.....	9.3	9.0	10.6	12.6	16.8	9.3	4.7	5.1	8.7
2.....	44.4	40.8	37.6	40.9	38.4	41.4	52.9	52.0	44.8
3.....	27.9	33.4	31.3	28.0	29.7	30.2	27.0	26.0	25.4
4 OR MORE.....	13.9	15.8	16.6	15.2	12.0	16.1	13.1	11.5	13.1
NONE.....	4.6	1.0	3.8	3.3	3.2	3.1	2.3	5.4	8.0
<b>TYPE AND NUMBER OF OUTSIDE DOORS</b>									
<b>STANDARD DOORS</b>									
1.....	14.7	20.8	20.3	22.1	22.9	16.0	10.5	6.8	9.9
2.....	50.0	54.1	51.7	48.9	46.9	49.7	56.4	55.4	45.3
3.....	21.2	18.6	16.7	14.6	18.3	21.1	24.1	23.8	24.5
4 OR MORE.....	7.5	2.9	4.0	5.6	4.1	7.2	5.9	8.6	12.1
NONE/NO DOORS.....	6.7	3.5	7.3	8.9	7.8	6.1	3.1	5.4	8.1
<b>SLIDING GLASS DOORS</b>									
1.....	20.8	39.3	38.9	37.8	35.0	30.7	14.9	5.6	4.0
2 OR MORE.....	5.2	10.1	9.8	9.9	4.9	6.4	6.5	3.2	.5
NONE/NO DOORS.....	74.0	50.6	51.2	52.3	60.1	62.9	78.5	91.2	95.5

SEE FOOTNOTES AT END OF TABLE.



# Thermal Characteristics by Year House Built

Table 29. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	YEAR HOUSE BUILT							
		1979 OR LATER	1975 TO 1978	1970 TO 1974	1965 TO 1969	1960 TO 1964	1950 TO 1959	1940 TO 1949	1939 OR EARLIER
<b>NUMBER OF STORM DOORS</b>									
1.....	15.5	17.0	19.9	18.2	19.9	13.3	13.2	10.2	14.6
2.....	27.7	21.4	24.4	21.4	23.9	28.1	34.0	32.2	29.0
3.....	10.5	8.6	8.6	10.4	9.8	12.3	10.1	11.8	11.1
4 OR MORE.....	4.0	3.3	5.1	6.1	3.6	3.9	3.2	4.2	3.4
NONE.....	37.7	48.6	38.1	40.5	39.6	39.3	37.3	36.2	33.9
NO OUTSIDE DOORS.....	4.6	1.0	3.8	3.3	3.2	3.1	2.3	5.4	8.0
<b>PERCENT OF OUTSIDE DOORS WITH STORM DOORS</b>									
100 PERCENT.....	33.4	24.3	25.8	29.4	31.6	32.0	38.7	40.3	35.4
51 TO 99 PERCENT.....	9.7	8.1	11.8	10.7	9.5	12.3	7.7	8.5	9.4
1 TO 50 PERCENT.....	14.6	17.9	20.4	16.1	16.1	13.3	14.0	9.6	13.2
NONE/NO DOORS.....	42.3	49.7	42.0	43.9	42.8	42.4	39.6	41.6	42.0
TOTAL SINGLE-FAMILY UNITS.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>HAVE ROOF OR CEILING INSULATION (SINGLE-FAMILY UNITS)</b>									
YES.....	77.6	91.2	94.0	90.2	90.4	83.0	80.9	71.6	60.9
ALL INSULATED.....	67.3	84.9	87.0	84.0	84.4	73.9	70.3	59.2	47.1
PART INSULATED.....	7.5	3.3	4.8	4.1	3.3	6.8	7.4	9.5	11.0
NONE, VERY LITTLE INSULATED.....	1.4	2.3	.6	.6	.9	.7	1.5	1.8	1.8
DON'T KNOW AMOUNT/NOT REPORTED.....	1.4	.7	1.7	1.6	1.8	1.6	1.7	1.1	1.0
NO.....	13.8	1.6	2.1	3.1	3.8	7.7	10.3	18.0	28.4
DON'T KNOW/NOT REPORTED.....	8.6	7.2	3.9	6.7	5.9	9.3	8.8	10.4	10.7
<b>TYPE OF INSULATION</b>									
BATTS ONLY.....	39.1	49.8	52.1	50.1	41.8	41.0	40.9	40.6	27.2
LOOSE FILL ONLY.....	18.8	17.6	20.0	19.3	27.2	19.7	18.5	15.2	16.9
BATTS AND LOOSE FILL ONLY.....	8.3	5.0	8.8	8.5	8.9	10.1	9.3	6.2	7.7
OTHER/COMBINATION.....	6.5	11.3	8.0	5.5	6.2	6.9	7.1	6.1	5.3
DON'T KNOW TYPE NOT REPORTED..	4.6	7.5	4.8	6.8	6.1	5.0	4.7	3.2	3.1
NO INSULATION/DON'T KNOW/NOT REPORTED.....	22.4	8.8	6.0	9.8	9.6	17.0	19.1	28.4	39.1
<b>HAVE WALL INSULATION (SINGLE-FAMILY UNITS)</b>									
YES.....	61.4	91.8	87.3	75.3	70.6	62.5	58.1	50.8	47.8
ALL WALLS.....	51.3	91.8	85.4	71.4	63.5	54.2	44.5	40.9	32.5
SOME WALLS.....	10.1	Q	1.9	3.9	7.1	8.3	13.5	9.8	15.3
NO.....	21.6	2.5	3.9	7.3	10.4	18.1	23.8	28.9	34.8
DON'T KNOW/NOT REPORTED.....	17.0	5.6	8.8	17.3	19.1	19.3	18.1	20.3	17.3
<b>FLOOR INSULATION (SINGLE-FAMILY UNITS)</b>									
HAVE BASEMENT/CRAWL SPACE.....	79.4	56.5	68.2	65.1	66.6	67.8	80.9	85.8	95.4
HEATED.....	21.9	18.1	23.8	24.4	20.0	21.0	20.3	19.1	23.9
NONE OR PART HEATED.....	57.5	38.3	44.4	40.7	46.6	46.8	60.6	66.7	71.5
HAVE FLOOR INSULATION.....	11.0	16.7	16.7	13.9	14.5	11.1	9.8	7.6	8.7
ALL PARTS INSULATED.....	8.2	15.1	14.6	10.5	11.6	7.8	7.5	5.6	5.2
SOME PARTS INSULATED.....	2.8	1.6	2.1	3.4	2.9	3.2	2.3	2.0	3.4
NO FLOOR INSULATION.....	35.5	17.4	17.6	20.6	23.2	25.0	39.1	45.6	49.6
DON'T KNOW/NOT REPORTED ..	11.0	4.2	10.1	6.1	9.0	10.7	11.7	13.5	13.3
NO BASEMENT/CRAWL SPACE.....	20.6	43.5	31.8	34.9	33.4	32.2	19.1	14.2	4.6
<b>INSULATION CHARACTERISTICS (SINGLE-FAMILY UNITS)</b>									
UNITS WITH SOME OR ALL STORM WINDOWS, AND SOME OR ALL STORM DOORS, AND ROOF OR CEILING INSULATION....	48.6	49.8	56.3	56.1	49.6	48.4	48.5	45.3	44.8
UNITS WITH ONE OR MORE OF THESE TYPES OF INSULATION..	89.4	94.1	97.3	94.3	95.4	92.0	89.7	84.0	83.7
UNITS WITH NONE OF THESE TYPES OF INSULATION.....	10.6	5.9	2.7	5.7	4.6	8.0	10.3	16.0	16.3

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# Conservation by Census Region, Area Type, and SMSA/Non-SMSA

**Table 30. Conservation by Census Region, Area Type, and SMSA/Non-SMSA During the Year Ending November 1981 (Million Households, Except Where Averages Are Indicated)**

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
TOTAL HOUSEHOLDS .....	83.1	17.9	21.2	27.7	16.3	57.3	25.9	56.6	26.5
TOTAL HOUSEHOLDS ADDING ITEMS...	4.7	1.2	1.3	1.6	.5	2.9	1.8	2.9	1.8
STORM DOORS (STANDARD OR SLIDING GLASS).....	2.9	.7	.9	1.0	.3	1.7	1.2	1.8	1.1
AVERAGE NUMBER ADDED.....	1.4	1.4	1.3	1.4	1.6	1.4	1.5	1.4	1.4
STORM WINDOWS.....	2.5	.7	.7	.9	.3	1.5	1.0	1.6	.9
AVERAGE NUMBER ADDED.....	8.9	8.2	6.1	10.8	10.7	9.2	8.4	9.0	8.6
TOTAL SINGLE-FAMILY UNITS AND MOBILE HOMES.....	61.8	10.5	16.3	22.6	12.3	37.7	24.0	38.0	23.8
SINGLE-FAMILY UNITS OR MOBILE HOMES ADDING ITEMS.....	18.4	4.2	6.0	5.3	2.9	11.4	6.9	11.5	6.9
CAULKING.....	8.8	2.0	3.6	2.4	.9	5.5	3.3	5.6	3.2
WEATHER STRIPPING.....	5.8	1.6	2.0	1.5	.7	3.8	2.0	3.8	2.0
CLOSEABLE SHUTTERS, PLASTIC SHEETS OR REFLECTIVE FILM, INSULATING DRAPES.....	4.0	1.1	1.3	1.2	.4	2.4	1.5	2.5	1.4
ROOF OR CEILING INSULATION....	2.7	.5	.9	.7	.7	1.8	1.0	1.8	.9
INSULATION AROUND WATER HEATER.....	1.9	.4	.4	.3	.7	1.1	.7	1.2	.7
OUTSIDE WALL INSULATION.....	1.6	.4	.6	.3	.3	1.0	.6	.8	.8
AUTOMATIC OR CLOCK THERMOSTAT.....	1.4	.4	.2	.5	.2	1.0	.3	1.1	.2
INSULATION AROUND HOT WATER PIPES.....	1.4	.3	.5	.3	.2	.7	.7	.8	.6
WOOD-BURNING STOVE.....	1.3	.3	.3	.4	.2	.4	.9	.6	.7
ADJUSTMENTS TO THERMOSTAT.....	1.0	.1	.4	.4	.2	.7	.3	.7	.3
INSULATION AROUND HEATING DUCTS.....	.8	.3	.2	.2	.1	.5	.4	.6	.2
FLOOR INSULATION.....	.7	.2	.3	.2	.1	.4	.3	.5	.2
ELECTRICAL OR MECHANICAL FURNACE IGNITION.....	.5	.2	.1	.2	.1	.4	.1	.4	.1
SMALLER NOZZLE OR BURNER.....	.5	.3	.1	.1	Q	.4	.1	.3	.1
AN ADDITIONAL THERMOSTAT.....	.4	.1	.1	.1	Q	.2	.1	.3	.1
AUTOMATIC FLUE DOOR.....	.3	Q	.2	.1	Q	.2	.1	.2	.1
FLAME RETENTION HEAD BURNER...	.2	.1	Q	Q	Q	.1	.1	.2	Q
HEAT PUMP.....	.1	Q	Q	.1	Q	.1	.1	.1	.1
ENERGY COST METER.....	Q	Q	Q	Q	Q	Q	Q	Q	Q
SINGLE-FAMILY UNITS OR MOBILE HOMES ADDING STORM WINDOWS, STORM DOORS, OR OTHER CONSERVATION MEASURES LISTED ABOVE....	20.4	4.7	6.4	6.2	3.1	12.7	7.7	12.7	7.7

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# Conservation by Census Region, Area Type, and SMSA/Non-SMSA

**Table 31. Conservation by Census Region, Area Type, and SMSA/Non-SMSA During the Year Ending November 1981 (Percentage of Households)**

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION				AREA TYPE		SMSA/NON-SMSA	
		NORTHEAST	NORTH CENTRAL	SOUTH	WEST	URBAN	RURAL	SMSA	NON-SMSA
TOTAL HOUSEHOLDS .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
TOTAL HOUSEHOLDS ADDING ITEMS...	5.6	6.8	6.3	5.9	3.1	5.0	7.0	5.1	6.8
STORM DOORS (STANDARD OR SLIDING GLASS).....	3.5	4.2	4.0	3.7	1.8	3.0	4.5	3.1	4.3
STORM WINDOWS.....	3.0	4.0	3.1	3.1	1.8	2.6	3.9	2.8	3.5
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
SINGLE-FAMILY UNITS OR MOBILE HOMES ADDING ITEMS.....	29.7	40.2	36.5	23.4	23.4	30.3	28.9	30.1	29.0
CAULKING.....	14.3	18.7	22.1	10.4	7.1	14.5	13.8	14.8	13.5
WEATHER STRIPPING.....	9.4	14.9	12.5	6.5	5.6	10.1	8.3	10.1	8.3
CLOSEABLE SHUTTERS, PLASTIC SHEETS OR REFLECTIVE FILM, INSULATING DRAPES.....	6.5	10.5	7.9	5.3	3.3	6.5	6.4	6.7	6.1
ROOF OR CEILING INSULATION....	4.5	4.3	5.4	3.2	5.7	4.7	4.0	4.8	4.0
INSULATION AROUND WATER HEATER.....	3.0	3.7	2.4	1.5	6.1	3.0	3.1	3.2	2.7
OUTSIDE WALL INSULATION.....	2.6	3.4	4.0	1.3	2.5	2.7	2.4	2.2	3.2
AUTOMATIC OR CLOCK THERMOSTAT.....	2.2	3.8	1.5	2.3	1.6	2.7	1.3	2.9	1.0
INSULATION AROUND HOT WATER PIPES.....	2.3	3.1	3.3	1.4	1.9	2.0	2.7	2.2	2.5
WOOD-BURNING STOVE.....	2.1	3.0	2.0	1.8	1.9	1.1	3.5	1.5	3.0
ADJUSTMENTS TO THERMOSTAT.....	1.7	.9	2.2	1.8	1.3	1.9	1.2	1.9	1.2
INSULATION AROUND HEATING DUCTS.....	1.3	2.5	1.4	.9	1.0	1.3	1.5	1.6	1.0
FLOOR INSULATION.....	1.1	1.5	1.8	.7	.7	1.2	1.1	1.4	.7
ELECTRICAL OR MECHANICAL FURNACE IGNITION.....	.8	1.4	.5	.8	.7	1.1	.4	1.0	.5
SMALLER NOZZLE OR BURNER.....	.8	2.6	.6	.3	.2	1.0	.5	.9	.6
AN ADDITIONAL THERMOSTAT.....	.6	1.1	.5	.6	.3	.7	.5	.8	.3
AUTOMATIC FLUE DOOR.....	.5	.4	1.0	.4	.2	.5	.5	.6	.4
FLAME RETENTION HEAD BURNER...	.3	1.2	.2	Q	.3	.4	.2	.4	.2
HEAT PUMP.....	.2	Q	.1	.4	.3	.2	.4	.2	.2
ENERGY COST METER.....	.1	.3	Q	Q	Q	.1	.1	.1	Q
SINGLE-FAMILY UNITS OR MOBILE HOMES ADDING STORM WINDOWS, STORM DOORS, OR OTHER CONSERVATION MEASURES LISTED ABOVE....	33.1	44.7	39.1	27.6	25.3	33.8	32.0	33.5	32.4

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# Number of Households by Inside Temperatures, Heating Degree-Days, and Size of Residence

Table 32. Number of U.S. Households by Inside Temperatures, Heating Degree-Days, and Size of Residence, as of November 1981 (Million Households)

HOUSEHOLD CHARACTERISTICS	TOTAL	HEATING DEGREE DAYS (HDD) APRIL 1981 THROUGH MARCH 1982 BY HEATED SQUARE FOOTAGE								
		MORE THAN 5,449 HDD			3,950 TO 5,449 HDD			LESS THAN 3,950 HDD		
		LESS THAN 1,000 SQ. FT.	1,000 TO 1,999 SQ. FT.	MORE THAN 1,999 SQ. FT.	LESS THAN 1,000 SQ. FT.	1,000 TO 1,999 SQ. FT.	MORE THAN 1,999 SQ. FT.	LESS THAN 1,000 SQ. FT.	1,000 TO 1,999 SQ. FT.	MORE THAN 1,999 SQ. FT.
TOTAL HOUSEHOLDS .....	83.1	13.1	14.7	12.0	4.6	6.1	3.1	11.2	15.0	3.3
HEATING CONTROLS										
HAVE CONTROLS.....	67.4	9.3	13.1	11.4	3.5	5.3	3.0	6.8	12.1	3.0
DO NOT HAVE CONTROLS										
UNKNOWN/NOT REPORTED.....	15.7	3.9	1.6	.6	1.2	.8	.1	4.5	2.9	.3
DAYTIME TEMPERATURE WHEN SOMEONE IS AT HOME										
HEAT IS TURNED ON.....	64.2	8.6	12.8	11.3	3.2	5.2	2.9	6.1	11.2	2.8
63 DEGREES OR LESS.....	4.0	.6	.8	.9	.2	.3	.2	.4	.5	.2
64 TO 66 DEGREES.....	9.3	1.6	2.1	1.9	.5	.7	.5	.7	1.2	.2
67 TO 69 DEGREES.....	20.1	2.3	4.2	4.5	.9	1.6	1.1	1.1	3.1	1.1
70 DEGREES.....	17.0	2.4	3.3	2.3	1.1	1.6	.7	2.0	2.9	.7
71 OR MORE DEGREES.....	13.8	1.6	2.4	1.7	.6	.8	.5	1.9	3.6	.7
HEAT TURNED OFF.....	1.6	.1	.1	Q	Q	.1	Q	.3	.7	.2
UNKNOWN/NO ANSWER.....	1.6	.6	.2	.1	.2	Q	Q	.3	.2	Q
DAYTIME TEMPERATURE WHEN NO ONE IS AT HOME										
HEAT IS TURNED ON.....	53.5	7.8	12.3	11.2	2.5	4.4	2.6	3.4	7.2	2.1
63 DEGREES OR LESS.....	17.2	2.5	4.0	3.7	1.0	1.6	1.0	.9	1.8	.6
64 TO 66 DEGREES.....	13.2	2.1	3.3	2.8	.6	1.1	.6	.9	1.5	.2
67 TO 69 DEGREES.....	11.4	1.4	2.5	2.6	.5	.9	.4	.5	1.7	.7
70 DEGREES.....	6.7	1.2	1.6	1.1	.2	.5	.3	.5	1.1	.3
71 OR MORE DEGREES.....	5.0	.7	.9	.8	.2	.3	.3	.5	1.1	.2
HEAT TURNED OFF.....	12.3	.9	.5	.2	.7	.9	.3	3.1	4.7	.9
UNKNOWN/NO ANSWER.....	1.7	.5	.2	.1	.2	Q	.1	.3	.3	Q
NIGHTTIME (SLEEPING HOURS)										
HEAT IS TURNED ON.....	59.2	8.3	12.6	11.2	2.8	4.7	2.7	4.9	9.4	2.6
63 DEGREES OR LESS.....	16.5	2.2	3.4	3.2	.9	1.6	.9	1.2	2.2	.8
64 TO 66 DEGREES.....	14.6	2.2	3.5	3.2	.6	1.2	.7	1.1	1.7	.4
67 TO 69 DEGREES.....	13.1	1.7	2.9	2.8	.5	1.1	.5	.7	2.2	.7
70 DEGREES.....	8.7	1.4	1.8	1.2	.4	.5	.4	1.1	1.6	.4
71 OR MORE DEGREES.....	6.3	.9	1.0	.8	.3	.3	.2	.8	1.7	.3
HEAT TURNED OFF.....	6.6	.4	.3	.1	.4	.6	.3	1.6	2.5	.4
UNKNOWN/NO ANSWER.....	1.7	.6	.2	.1	.2	.1	Q	.3	.2	Q

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Number of Households by Inside Temperatures, Heating Degree-Days, and Size of Residence

**Table 33. Number of U.S. Households by Inside Temperatures, Heating Degree-Days, and Size of Residence, as of November 1981 (Percentage of Households)**

HOUSEHOLD CHARACTERISTICS	TOTAL	HEATING DEGREE DAYS (HDD) APRIL 1981 THROUGH MARCH 1982 BY HEATED SQUARE FOOTAGE								
		MORE THAN 5,449 HDD			3,950 TO 5,449 HDD			LESS THAN 3,950 HDD		
		LESS THAN 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	MORE THAN 1,999 SQ.FT.	LESS THAN 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	MORE THAN 1,999 SQ.FT.	LESS THAN 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	MORE THAN 1,999 SQ.FT.
TOTAL HOUSEHOLDS .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
HEATING CONTROLS										
HAVE CONTROLS.....	81.1	70.6	89.2	95.2	75.0	87.3	96.2	60.3	80.9	90.6
DO NOT HAVE CONTROLS										
UNKNOWN/NOT REPORTED.....	18.9	29.4	10.8	4.8	25.0	12.7	3.8	39.7	19.1	9.4
HAVE HEATING CONTROLS.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
DAYTIME TEMPERATURE WHEN SOMEONE IS AT HOME										
HEAT IS TURNED ON.....	95.2	92.6	97.9	99.3	93.0	96.9	98.6	90.6	92.6	93.7
63 DEGREES OR LESS.....	6.0	6.7	6.5	8.3	5.9	4.9	5.8	5.6	3.7	5.5
64 TO 66 DEGREES.....	13.9	16.8	15.8	16.4	14.4	13.0	17.7	10.5	9.9	7.1
67 TO 69 DEGREES.....	29.8	25.0	32.3	39.5	24.8	33.9	36.3	16.9	25.5	35.6
70 DEGREES.....	25.2	26.3	25.2	20.5	30.7	29.3	22.9	29.3	23.9	23.1
71 OR MORE DEGREES.....	20.4	17.7	18.1	14.6	17.1	15.8	16.0	28.4	29.6	22.5
HEAT TURNED OFF.....	2.4	1.3	.6	.3	1.1	2.2	.6	4.5	5.9	6.1
UNKNOWN/NO ANSWER.....	2.4	6.2	1.5	.5	5.9	.9	.8	4.9	1.5	.2
DAYTIME TEMPERATURE WHEN NO ONE IS AT HOME										
HEAT IS TURNED ON.....	79.3	84.4	94.0	98.1	72.8	83.2	86.9	50.0	59.3	68.4
63 DEGREES OR LESS.....	25.5	27.5	30.8	32.2	28.5	29.6	33.3	14.0	14.9	20.7
64 TO 66 DEGREES.....	19.5	22.2	25.4	24.9	16.6	21.2	21.0	13.0	12.5	7.4
67 TO 69 DEGREES.....	16.9	14.6	19.1	24.3	15.1	16.7	14.3	7.4	14.3	23.8
70 DEGREES.....	9.9	12.8	11.8	9.6	6.3	9.6	9.8	7.5	8.7	9.2
71 OR MORE DEGREES.....	7.5	7.3	6.8	7.1	6.3	6.2	8.7	8.1	8.9	7.3
HEAT TURNED OFF.....	18.2	10.2	4.2	1.4	21.4	16.2	11.3	45.4	38.5	31.4
UNKNOWN/NO ANSWER.....	2.5	5.4	1.8	.5	5.8	.6	1.7	4.6	2.2	.2
NIGHTTIME (SLEEPING HOURS)										
HEAT IS TURNED ON.....	87.8	89.9	96.3	98.2	82.0	87.5	90.5	72.3	77.6	85.0
63 DEGREES OR LESS.....	24.5	23.9	25.7	27.9	27.4	30.0	30.6	17.7	18.5	28.0
64 TO 66 DEGREES.....	21.6	23.7	26.8	28.1	18.4	21.9	23.4	16.0	14.1	12.6
67 TO 69 DEGREES.....	19.5	18.1	22.5	24.7	15.0	19.9	17.6	9.8	18.3	24.0
70 DEGREES.....	12.9	14.6	13.5	10.7	12.3	9.7	11.9	16.7	12.8	12.0
71 OR MORE DEGREES.....	9.3	9.7	7.7	6.9	8.9	6.0	7.1	12.2	14.0	8.4
HEAT TURNED OFF.....	9.8	4.0	2.0	1.3	12.7	11.4	8.7	23.1	20.5	14.6
UNKNOWN/NO ANSWER.....	2.5	6.1	1.7	.5	5.3	1.0	.8	4.6	1.9	.4

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"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

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SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.





# Number of Households Changing Temperatures at Night by Heating Degree-Days and Size of Residence

Table 34. Number of U.S. Households Changing Temperatures at Night by Heating Degree-Days and Size of Residence, as of November 1981 (Million Households)

HOUSEHOLD CHARACTERISTICS	TOTAL	HEATING DEGREE DAYS (HDD) APRIL 1981 THROUGH MARCH 1982 BY HEATED SQUARE FOOTAGE								
		MORE THAN 5,449 HDD			3,950 TO 5,449 HDD			LESS THAN 3,950 HDD		
		LESS THAN 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	MORE THAN 1,999 SQ.FT.	LESS THAN 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	MORE THAN 1,999 SQ.FT.	LESS THAN 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	MORE THAN 1,999 SQ.FT.
TOTAL HOUSEHOLDS .....	83.1	13.1	14.7	12.0	4.6	6.1	3.1	11.2	15.0	3.3
HOUSEHOLDS WITH HEATING CONTROLS AND HEAT TURNED ON IN DAYTIME .	64.2	8.6	12.8	11.3	3.2	5.2	2.9	6.1	11.2	2.8
NIGHTTIME (SLEEPING HOURS) TEMPERATURE-SETTING BEHAVIOR										
TURNS HEAT DOWN AT NIGHT.....	29.9	3.7	6.6	5.9	1.6	2.8	1.6	2.2	4.3	1.3
1 TO 2 DEGREES.....	4.0	.4	1.0	1.0	.2	.3	.2	.2	.5	.2
3 TO 5 DEGREES.....	12.6	1.8	3.1	2.7	.5	1.2	.6	.8	1.5	.4
6 TO 10 DEGREES.....	10.1	1.2	2.1	1.8	.6	.9	.6	.7	1.6	.5
11 OR MORE DEGREES.....	3.2	.4	.4	.4	.2	.3	.1	.5	.7	.2
KEEPS SAME TEMPERATURE										
AT NIGHT.....	26.8	4.2	5.5	4.9	1.2	1.6	1.1	2.5	4.6	1.1
TURNS HEAT OFF AT NIGHT.....	5.4	.3	.2	.1	.4	.5	.2	1.3	2.0	.3
TURNS HEAT UP AT NIGHT.....	1.9	.3	.4	.4	.1	.2	.1	.1	.3	.1
OTHER.....	.2	.1	Q	Q	Q	Q	Q	Q	.1	Q

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

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SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Percentage of Households Changing Temperatures at Night by Heating Degree-Days and Size of Residence

Table 35. Number of U.S. Households Changing Temperatures at Night by Heating Degree-Days and Size of Residence, as of November 1981  
(Percentage of Households)

HOUSEHOLD CHARACTERISTICS	TOTAL	HEATING DEGREE DAYS (HDD) APRIL 1981 THROUGH MARCH 1982 BY HEATED SQUARE FOOTAGE								
		MORE THAN 5,449 HDD			3,950 TO 5,449 HDD			LESS THAN 3,950 HDD		
		LESS THAN 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	MORE THAN 1,999 SQ.FT.	LESS THAN 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	MORE THAN 1,999 SQ.FT.	LESS THAN 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	MORE THAN 1,999 SQ.FT.
		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
NIGHTTIME (SLEEPING HOURS) TEMPERATURE-SETTING BEHAVIOR										
TURNS HEAT DOWN AT NIGHT	46.6	43.6	51.7	51.8	48.3	54.3	53.3	35.4	38.0	46.3
1 TO 2 DEGREES	6.2	4.8	7.8	9.0	5.7	6.7	6.0	3.1	4.5	5.6
3 TO 5 DEGREES	19.6	20.9	24.0	23.9	16.2	22.7	20.8	12.5	13.3	15.3
6 TO 10 DEGREES	15.8	13.5	16.5	15.6	19.2	18.4	21.8	12.0	14.4	18.8
11 OR MORE DEGREES	5.0	4.3	3.4	3.3	7.2	6.5	4.7	7.8	5.9	6.6
KEEPS SAME TEMPERATURE AT NIGHT	41.7	49.5	43.2	43.7	36.1	31.4	35.8	40.4	40.9	40.3
TURNS HEAT OFF AT NIGHT	8.5	3.1	1.6	1.3	12.3	10.6	8.2	21.8	17.8	10.6
TURNS HEAT UP AT NIGHT	3.0	3.1	3.3	3.1	3.3	3.5	2.7	2.2	2.6	2.6
OTHER	.3	.8	.2	.1	Q	.1	Q	.2	.6	.2

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# Mean Daytime Temperature by Heating Fuel, Secondary Heating, and Age of Householder

**Table 36. Mean Daytime Temperature for U.S. Households by Main Heating Fuel, Secondary Heating, and Age of Householder, as of November 1981—Households with Heating Controls and Heat on in Daytime (Degrees Fahrenheit)**

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION AND ANNUAL HEATING DEGREE-DAYS (HDD) OR COOLING DEGREE-DAYS (CDD)--LONG-TERM AVERAGE						
		NORTHEAST		NORTH CENTRAL	SOUTH		WEST	
		5,500 HDD OR MORE	LESS THAN 5,500 HDD	4,000 HDD OR MORE	LESS THAN 2,000 CDD	2,000 CDD OR MORE	4,000 HDD OR MORE	LESS THAN 4,000 HDD
HOUSEHOLDS WITH HEATING CONTROLS AND HEAT TURNED ON IN DAYTIME . . . . .	68.9	67.1	68.2	68.9	69.2	71.0	68.3	68.9
<b>MAIN HEATING FUEL</b>								
NATURAL GAS.....	69.1	67.6	68.4	69.1	69.4	70.9	68.4	68.9
ELECTRICITY.....	69.4	66.5	69.5	68.1	69.4	71.6	68.2	68.4
FUEL OIL OR KEROSENE.....	67.6	66.7	67.9	68.1	68.5	Q	67.4	Q
LIQUID PETROLEUM GAS.....	68.9	Q	Q	68.9	68.6	69.5	Q	Q
WOOD/COAL/OTHER.....	68.6	66.7	Q	69.3	68.7	Q	69.2	Q
<b>SECONDARY HEATING</b>								
YES.....	68.4	66.2	67.6	68.5	69.1	70.8	68.1	68.6
NO.....	69.2	67.8	68.7	69.2	69.3	71.1	68.5	69.1
<b>MAIN HEATING FUEL GAS, ELECTRICITY, OIL PAID BY HOUSEHOLD</b>								
YES.....	68.8	66.8	68.1	68.8	69.2	71.0	68.2	68.8
NO.....	69.7	68.9	69.1	70.1	70.2	71.3	68.4	Q
WOOD/COAL/OTHER.....	68.6	66.7	Q	69.3	68.7	Q	69.2	Q
<b>AGE OF HOUSEHOLDER</b>								
UNDER 25 YEARS.....	69.1	66.8	Q	69.1	68.8	71.9	67.8	69.7
25 TO 34 YEARS.....	68.5	66.5	67.8	68.0	69.2	70.8	68.3	68.0
35 TO 44 YEARS.....	68.0	66.9	67.0	68.7	68.2	70.3	67.3	67.5
45 TO 59 YEARS.....	69.0	67.0	68.5	69.1	69.3	70.3	68.3	70.1
60 YEARS AND OVER.....	69.8	67.9	69.0	69.6	70.0	71.7	69.4	70.1

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# Number of Households by Main Heating Fuel, Secondary Heating, and Age of Householder

Table 37. Number of U.S. Households by Main Heating Fuel, Secondary Heating, and Age of Householder, as of November 1981—Households with Heating Controls and Heat on In Daytime (Million Households)

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION AND ANNUAL HEATING DEGREE-DAYS (HDD) OR COOLING DEGREE-DAYS (CDD)—LONG-TERM AVERAGE						
		NORTHEAST		NORTH CENTRAL	SOUTH		WEST	
		5,500 HDD OR MORE	LESS THAN 5,500 HDD	4,000 HDD OR MORE	LESS THAN 2,000 CDD	2,000 CDD OR MORE	4,000 HDD OR MORE	LESS THAN 4,000 HDD
TOTAL HOUSEHOLDS .....	83.1	9.6	8.3	21.2	16.4	11.3	6.3	10.0
HOUSEHOLDS WITH HEATING CONTROLS AND HEAT TURNED ON IN DAYTIME .	64.2	7.6	5.8	18.7	12.6	7.3	5.4	6.7
MAIN HEATING FUEL								
NATURAL GAS.....	38.3	3.3	2.7	14.4	6.3	3.4	2.8	5.5
ELECTRICITY.....	11.9	.8	.5	1.4	3.4	3.0	1.9	.9
FUEL OIL OR KEROSENE.....	9.1	3.1	2.5	1.5	1.5	.2	.4	Q
LIQUID PETROLEUM GAS.....	2.7	.1	Q	1.0	.6	.7	.1	.2
WOOD/COAL/OTHER.....	2.2	.4	.1	.5	.8	.1	.3	Q
SECONDARY HEATING								
YES.....	26.1	3.4	2.4	6.6	5.1	2.5	2.9	3.2
NO.....	38.1	4.2	3.4	12.1	7.5	4.8	2.5	3.5
MAIN HEATING FUEL GAS, ELECTRICITY, OIL PAID BY HOUSEHOLD								
YES.....	56.1	6.2	4.5	16.6	10.8	6.9	4.8	6.2
NO.....	5.9	1.0	1.2	1.6	1.0	.4	.4	.4
WOOD/COAL/OTHER.....	2.2	.4	.1	.5	.8	.1	.3	Q
AGE OF HOUSEHOLDER								
UNDER 25 YEARS.....	4.7	.4	.3	1.5	.9	.5	.7	.5
25 TO 34 YEARS.....	16.2	1.8	1.3	4.4	3.1	2.1	1.6	1.9
35 TO 44 YEARS.....	12.0	1.7	1.2	3.3	2.4	.9	.9	1.6
45 TO 59 YEARS.....	14.4	1.9	1.3	4.1	3.0	1.6	1.2	1.4
60 YEARS AND OVER.....	16.9	1.9	1.6	5.5	3.2	2.3	1.1	1.3

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# Use of Air-Conditioning Equipment

**Table 38. Use of Air-Conditioning Equipment in the United States in the Summer of 1981 by Region, Climate Zones, Income, Type of Equipment, and Payment for Air-Conditioning Fuel—Households with Air-Conditioning Equipment**

HOUSEHOLD CHARACTERISTICS	MILLION HOUSEHOLDS						PERCENTAGE OF HOUSEHOLDS					
	TOTAL	DID NOT USE AIR CONDITIONING EQUIPMENT	AIR CONDITIONING TURNED ON:			NOT REPORTED	TOTAL	DID NOT USE AIR CONDITIONING EQUIPMENT	AIR CONDITIONING TURNED ON:			NOT REPORTED
			A FEW TIMES	QUITE A BIT	ALL SUMMER				A FEW TIMES	QUITE A BIT	ALL SUMMER	
TOTAL HOUSEHOLDS .....	48.4	2.8	26.0	8.8	10.4	0.4	100.0	5.8	53.7	18.1	21.5	0.8
<b>CENSUS REGION</b>												
NORTHEAST.....	8.8	.6	6.7	1.0	.4	Q	100.0	7.2	76.3	11.0	5.1	.4
NORTH CENTRAL.....	12.9	1.1	8.3	2.0	1.4	.1	100.0	8.7	64.3	15.5	11.0	.5
SOUTH.....	21.2	.8	7.6	4.7	7.9	.3	100.0	3.8	35.7	22.1	37.1	1.3
WEST.....	5.6	.3	3.4	1.1	.7	Q	100.0	5.0	61.8	20.0	12.5	.7
<b>COOLING DEGREE-DAYS (CDD)-- APRIL 1981 THROUGH MARCH 1982</b>												
2,000 CDD OR MORE.....	10.0	.3	2.8	2.2	4.7	Q	100.0	2.9	27.8	21.7	47.4	.2
1,000 TO 1,999 CDD.....	15.4	.6	6.9	3.8	3.9	.3	100.0	3.9	44.8	24.4	25.3	1.7
500 TO 999 CDD.....	18.3	1.4	13.0	2.3	1.5	.1	100.0	7.5	71.0	12.6	8.4	.5
LESS THAN 500 CDD.....	4.7	.6	3.3	.5	.2	Q	100.0	12.0	70.9	10.9	5.3	.9
<b>1980 FAMILY INCOME</b>												
LESS THAN \$5,000.....	4.2	.3	2.4	.5	.9	Q	100.0	8.2	56.0	13.0	21.7	1.2
\$5,000 TO \$9,999.....	6.8	.4	4.0	1.1	1.2	.1	100.0	6.1	58.7	16.8	17.1	1.2
\$10,000 TO \$14,999.....	7.0	.6	3.9	1.3	1.2	Q	100.0	8.2	55.2	18.6	17.2	.7
\$15,000 TO \$19,999.....	6.2	.4	3.4	1.1	1.3	Q	100.0	6.4	54.5	17.7	20.9	.6
\$20,000 TO \$24,999.....	6.7	.4	3.5	1.1	1.5	.1	100.0	6.6	53.0	16.6	21.9	1.9
\$25,000 TO \$34,999.....	8.6	.3	4.7	1.7	1.9	Q	100.0	3.5	54.6	19.6	21.7	.5
\$35,000 OR MORE.....	8.8	.3	4.1	1.9	2.5	Q	100.0	3.9	46.5	21.1	28.3	.3
<b>AIR CONDITIONING (A/C) EQUIPMENT</b>												
CENTRAL A/C UNITS.....	22.4	1.0	8.8	4.9	7.5	.2	100.0	4.3	39.5	21.9	33.4	.9
INDIVIDUAL ROOM A/C UNITS.....	26.0	1.9	17.2	3.9	2.9	.2	100.0	7.2	65.9	14.9	11.3	.8
<b>PAY FOR ELECTRICITY/GAS FOR AIR CONDITIONING</b>												
YES.....	45.4	2.8	24.5	8.1	9.7	.4	100.0	6.1	53.8	17.8	21.4	.9
NO.....	3.0	.1	1.5	.7	.7	Q	100.0	2.7	51.4	21.9	23.3	.7

"-" = DATA NOT APPLICABLE.

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.



# Residential Wood Consumption

Table 39. U.S. Residential Wood Consumption for the Year Ending November 1981—Households Burning One-Third Cord or More

HOUSEHOLD CHARACTERISTICS	NUMBER OF HOUSEHOLDS BURNING 1/3 CORD OR MORE OF WOOD		TOTAL NUMBER OF CORDS BURNED		AVERAGE NUMBER OF CORDS BURNED PER HOUSEHOLD	MOST RECENT PURCHASE (1981)	
	(MILLIONS)	(PERCENT)	(MILLIONS)	(PERCENT)		NUMBER OF HOUSEHOLDS REPORTING (MILLIONS)	MEDIAN PRICE PER CORD PAID IN 1981 (DOLLARS)
TOTAL HOUSEHOLDS .....	15.6	100.0	43.0	100.0	2.8	4.0	65
CENSUS REGION AND ANNUAL HEATING DEGREE-DAYS (HDD) OR COOLING DEGREE-DAYS (CDD)--LONG-TERM AVERAGE							
NORTHEAST.....	3.5	22.3	13.4	31.3	3.9	1.3	60
5,500 HDD OR MORE.....	2.4	15.4	11.7	27.2	4.9	.9	60
LESS THAN 5,500 HDD.....	1.1	6.9	1.7	4.1	1.6	.4	Q
NORTH CENTRAL.....	3.9	25.0	12.5	29.2	3.2	1.1	60
SOUTH.....	4.8	31.0	10.5	24.5	2.2	.9	70
LESS THAN 2,000 CDD.....	3.7	23.6	8.7	20.2	2.4	.7	70
2,000 CDD OR MORE.....	1.2	7.4	1.9	4.3	1.6	.2	Q
WEST.....	3.4	21.7	6.4	15.0	1.9	.8	80
LESS THAN 4,000 HDD.....	1.4	8.9	1.6	3.8	1.2	.2	Q
4,000 HDD OR MORE.....	2.0	12.8	4.8	11.2	2.4	.5	70
AREA TYPE							
URBAN.....	6.4	40.8	10.2	23.8	1.6	2.1	75
RURAL.....	9.2	59.2	32.8	76.2	3.5	1.9	60
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)--LONG-TERM AVERAGE							
<2,000 CDD AND >7,000 HDD.....	2.8	18.1	15.9	36.9	5.6	.9	50
<2,000 CDD AND 5,500 TO 7,000 HDD.....	3.6	23.0	8.9	20.7	2.5	1.1	70
<2,000 CDD AND 4,000 TO 5,499 HDD.....	4.6	29.4	10.3	23.9	2.2	1.2	70
<2,000 CDD AND <4,000 HDD.....	3.4	21.5	6.0	13.9	1.6	.7	90
>2,000 CDD AND <4,000 HDD.....	1.2	7.9	2.0	4.6	1.6	.2	Q
MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE							
LESS THAN 600 SQUARE FEET.....	0.4	2.6	2.0	4.7	4.9	Q	Q
600 TO 999 SQUARE FEET.....	1.8	11.7	6.8	15.7	3.7	0.5	60
1,000 TO 1,599 SQUARE FEET.....	4.4	28.4	12.7	29.5	2.9	1.0	60
1,600 TO 1,999 SQUARE FEET.....	2.5	15.9	5.2	12.0	2.1	.5	65
2,000 TO 2,399 SQUARE FEET.....	2.4	15.4	5.3	12.4	2.2	.6	80
2,400 TO 2,999 SQUARE FEET.....	1.9	12.4	6.4	14.9	3.3	.7	75
3,000 OR MORE SQUARE FEET.....	2.1	13.6	4.6	10.8	2.2	.7	70
YEAR HOUSE BUILT							
1939 OR EARLIER.....	4.0	25.7	16.7	39.0	4.2	1.1	50
1940 TO 1949.....	1.1	7.3	3.3	7.6	2.9	.2	Q
1950 TO 1959.....	2.3	15.0	4.3	10.0	1.8	.7	80
1960 TO 1964.....	1.4	9.3	3.1	7.2	2.1	.4	90
1965 TO 1969.....	1.5	9.8	3.6	8.5	2.4	.3	Q
1970 TO 1974.....	2.2	14.2	5.2	12.1	2.3	.7	70
1975 TO 1978.....	2.1	13.6	5.0	11.7	2.4	.6	70
1979 OR LATER.....	.8	5.1	1.7	4.0	2.1	.1	Q
1980 FAMILY INCOME							
LESS THAN \$5,000.....	.8	5.2	3.2	7.5	4.0	.2	Q
\$5,000 TO \$9,999.....	1.5	9.4	6.3	14.7	4.3	.4	60
\$10,000 TO \$14,999.....	1.8	11.4	5.5	12.7	3.1	.4	60
\$15,000 TO \$19,999.....	2.2	13.8	7.8	18.1	3.6	.5	50
\$20,000 TO \$24,999.....	2.2	14.1	5.1	11.9	2.3	.4	65
\$25,000 TO \$34,999.....	3.2	20.3	7.3	16.9	2.3	.8	60
\$35,000 OR MORE.....	4.0	25.8	7.8	18.1	1.9	1.4	85
WOOD BURNED AS MAIN HEATING FUEL							
YES.....	4.9	31.6	23.9	55.6	4.8	1.2	50
FIREPLACE.....	.3	2.0	1.0	2.2	3.1	Q	Q
AIRTIGHT STOVE.....	3.7	23.4	16.5	38.5	4.5	1.0	50
NONAIRTIGHT STOVE.....	.6	3.9	3.1	7.1	5.1	.1	Q
FURNACE/OTHER.....	.4	2.3	3.3	7.7	9.3	.1	Q
NO.....	10.7	68.4	19.1	44.4	1.8	2.8	75

SEE FOOTNOTES AT END OF TABLE.



# Residential Wood Consumption

Table 39. (Continued)

HOUSEHOLD CHARACTERISTICS	NUMBER OF HOUSEHOLDS BURNING 1/3 CORD OR MORE OF WOOD		TOTAL NUMBER OF CORDS BURNED		AVERAGE NUMBER OF CORDS BURNED PER HOUSEHOLD	MOST RECENT PURCHASE (1981)	
	(MILLIONS)	(PERCENT)	(MILLIONS)	(PERCENT)		NUMBER OF HOUSEHOLDS REPORTING (MILLIONS)	MEDIAN PRICE PER CORD PAID IN 1981 (DOLLARS)
<b>WOOD BURNED AS SECONDARY FUEL</b>							
YES.....	9.2	58.7	16.6	38.7	1.8	2.4	80
FIREPLACE.....	6.2	40.0	8.5	19.8	1.4	1.7	89
AIRTIGHT STOVE.....	2.4	15.4	6.2	14.5	2.6	.5	70
NONAIRTIGHT STOVE.....	.5	3.3	1.9	4.4	3.6	.1	Q
NO.....	6.4	41.3	26.3	61.3	4.1	1.6	60
<b>AMOUNT OF WOOD BURNED IN PAST 12 MONTHS</b>							
1/3 TO 1.49 CORDS.....	7.1	45.8	5.3	12.3	.7	1.6	89
1.5 TO 2.49 CORDS.....	3.1	19.6	5.8	13.6	1.9	.9	72
2.5 TO 3.49 CORDS.....	1.8	11.4	5.3	12.3	3.0	.4	50
3.5 TO 4.49 CORDS.....	1.0	6.4	3.9	9.2	3.9	.3	Q
4.5 CORDS OR MORE.....	2.6	16.8	22.6	52.7	8.6	.8	40
<b>ANY WOOD PURCHASED</b>							
YES.....	5.4	34.5	16.6	38.6	3.1	4.0	65
NO/NOT REPORTED.....	10.2	65.5	26.4	61.4	2.6	-	-
<b>PRICE PER CORD PAID IN 1981</b>							
LESS THAN \$50.....	1.0	6.7	7.0	16.2	6.7	1.0	30
\$50 TO \$75.....	1.2	7.8	3.4	7.8	2.8	1.2	60
\$75 AND OVER.....	1.8	11.4	2.7	6.4	1.5	1.8	95
NONE PURCHASED/DON'T KNOW/NOT REPORTED.....	11.6	74.1	29.9	69.6	2.6	-	-

"-" = DATA NOT APPLICABLE.

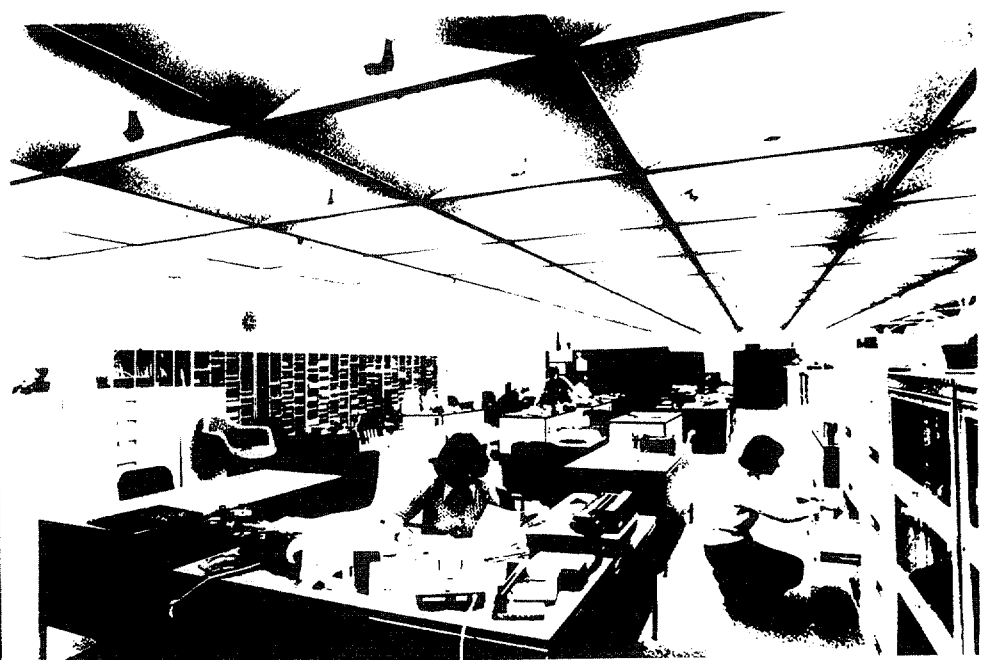
"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

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SOURCE: ENERGY INFORMATION ADMINISTRATION, OFFICE OF ENERGY MARKETS AND END USE, ENERGY END USE DIVISION, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.

## Appendix A

### How the Survey Was Conducted







# Appendix A

## Introduction

The Residential Energy Consumption Surveys (RECS) have been designed by the Energy Information Administration (EIA) to provide information concerning energy consumption within the residential sector. Information concerning the housing unit is collected through personal interviews with a representative national sample of households. Data concerning actual energy consumption are obtained from fuel records maintained by the household's fuel suppliers. An inventory of motor vehicles used by the household residents is also obtained at the time of the personal interview.<sup>1</sup>

## Data Collection

The fieldwork for this study was conducted by a contractor, Response Analysis Corporation of Princeton, New Jersey. The original sample consisted of 7,668 units, of which some 118 either were not used for dwelling purposes or were not habitable. Of the 7,550 habitable housing units, 709 were ineligible for this study due to a current vacancy or seasonal occupancy (occupants did not live in the units for more than half the year). Personal interviews were conducted at 5,937 of the 6,841 eligible units, for a response rate of 86.8 percent. Subsequently, mail questionnaires were sent to 754 of the 904 households that had not participated in personal interviews. Completed questionnaires were returned by 332 of these households, or 44.0 percent of those mailed. Of the total eligible households, responses were received from 91.6 percent (or 6,269 households).

Interviewer contacts at sample households were begun in late September 1981 and continued through January 1982; more than 75 percent of the personal interviews were completed in October and November. Most of the 332 completed mail questionnaires were received in January and February 1982, with a few additional questionnaires received in March. In keeping with past practice in this series of surveys, November was regarded as the rough midpoint for data collection activity. Thus, November 1981 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 50 minutes, with 85 percent of the interviews lasting between 30 and 70 minutes. The interview with the householder (or his or her spouse) covered structural features of the

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<sup>1</sup>Fuel consumption for household vehicles is collected through the Household Transportation Panel, which uses rotating subsamples from the residential surveys. Data for the Household Transportation Panel collected for the period June 1979 through September 1981 are reported in Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, June 1979 to December 1980, April 1982, DOE/EIA-0319, and Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, Supplement: January 1981 to September 1981, February 1983, DOE/EIA-328. Data are being collected for 1983 using households from the 1982 RECS survey. Households from this survey have not participated in the Household Transportation Panel.



## Appendix A (Continued)

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 efforts; 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.

At the end of the interview, respondents were asked to sign a waiver authorizing the 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 for further details on the measurement of housing units.)

### The Interviewers

A total of 307 interviewers completed one or more personal interviews for this study. The type of training received by interviewers for this study depended primarily on the experience of the interviewer on RECS the year before. As shown in Table A1, 179 interviewers (58 percent) had completed interviews on the preceding RECS. Most of 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.

**Table A1. Experience and Training of 1981 RECS Interviewers**

Experience on RECS the Year Before	Training for This RECS <sup>a</sup>	Number of Interviewers
Yes <sup>b</sup>	Home study	160
Yes <sup>c</sup>	Regional training meeting	19
No	Regional training meeting	122
No	Home study	6
		<u>307</u>

<sup>a</sup>All interviewers completed a practice interview and quiz.

<sup>b</sup>Attended regional training meeting and completed interviews on RECS the year before.

<sup>c</sup>Completed interviews on RECS, but did not attend the regional training meeting the year before.

Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

Two-day regional training meetings were held in 13 locations around the country in September 1981. These meetings were attended by 141 interviewers, including almost all those who had not interviewed on the preceding RECS. Each session was led by a trainer who had attended a 2-day workshop in Princeton, New Jersey. The 2-day training session for interviewers covered general interviewing techniques, background of the Residential Energy Consumption Surveys, the household questionnaire, ways to measure the respondents' homes, the sampling tasks, and administrative requirements.



## Appendix A (Continued)

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 home study was a 62-page manual, Instructions for Interviewers.

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 19 interviews. Twenty interviewers each completed fewer than six interviews; the average for this group of 20 interviewers was 2.7 completed interviews. The most interviews completed by one interviewer was 81. Twenty percent of the personal interviews were verified by telephone or mail to ensure that interviews were conducted as intended.

### Sample Design

The universe for this sample design 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 1981 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 survey. The design required a sample with a minimum level of precision within each of the 10 Federal regions and 9 Census divisions. This requirement meant disproportionate sampling in each of the 17 intersections created by the overlap between the Federal regions and the Census divisions.

The 3,141 counties and independent cities in the 50 States and the District of Columbia were divided into 1,782 Primary Sampling Units (PSU's) on the basis of Standard Metropolitan Statistical Areas (SMSA's), county and independent city boundary lines, and population characteristics. The PSU's were grouped into 131 strata having roughly similar population totals within each of the 17 intersections. Each stratum contained PSU's similar in several characteristics, including, among others, the dominant space-heating fuel and, in some strata, weather conditions. Some PSU's comprising all or part of large metropolitan areas were large enough in population to be a stratum by themselves; 31 of the PSU's are of this type and are called Self-Representing (SR) because the sample from each PSU represented only that PSU. In the other 100 strata, one PSU was selected from among two or more PSU's in the stratum. Each of the 100 PSU's selected from these strata is called Non-Self-Representing (NSR) because each PSU also represents the nonselected PSU's in its stratum.

A number of intermediate probability sampling stages preceded the final selection of RECS households. These stages included the selection of Minor Civil Divisions (MCD's), such as cities, towns, townships, and other Census divisions within each PSU. Within the MCD's, Census tracts or Enumeration Districts (ED's) were selected. A segment of 25 or more housing units was selected within a tract or ED. Segments were formed from field counts in easily identified geographic units. Detailed field listings were created for each segment by a person who visited the area and identified each housing unit by street address or apartment number or other observable feature. A cluster of 25 housing units was selected from the sample segment. The ultimate cluster to be contacted for interviews (averaging about five housing units) was



## Appendix A (Continued)

systematically selected from the cluster, and these housing units constituted the assignments given to the interviewers. The number of ultimate clusters totaled 1,515.

The 131 PSU's were selected in early 1980. The population sizes of PSU's were 1978 population estimates from the U.S. Bureau of the Census. Other data used in stratification, such as the dominant home-heating fuel, came from the 1970 Census. Definition of SMSA's is based on definitions using the 1970 Census results. These definitions will be updated in the future using results from the 1980 Census. For selection within PSU's, 1980 projected household counts for sub-areas of the PSU were used. The projections were based on data for MCD's provided by the National Planning Data Corporation. Within selected MCD's, the procedure for deriving estimated numbers of households in tracts and enumeration districts was based on data from a combination of sources, including Reuben H. Donnelley household address counts, 1970 Census data, and contacts with local sources of information such as a zoning board or agency issuing building permits.

### Supplemental Sample

A feature of the 1981 survey was a supplemental sample of households designed to be merged with the main RECS sample and to meet special analytical needs of the Office of Family Assistance, Social Security Administration. The supplemental sample comprised some 1,262 (18.4 percent) of the total sample of 6,841 eligible units.

The plan for the supplemental sample included procedures to "oversample" households below poverty level, particularly those using electricity, or fuel oil or kerosene, as the main home heating fuel. Households using these heating fuels are relatively small proportions of all households. Thus, procedures were designed to increase the sample size for households of these types to the extent feasible.

Housing units for the supplemental sample were selected in a subset of 382 of the same sample clusters used for the main RECS sample. Starting with the total of 1,515 sample segments used for this RECS, 137 were eliminated from consideration for the supplemental sample because the overall sampling rates applied to households in these sample segments for the main RECS were already at or close to the highest sampling rate used for any intersection in the main sample design. For the remaining 1,378 sample segments, two screening steps were used to identify locations that were likely to contain large proportions of households below the poverty level:

- Sample segments were divided into two groups--those with fewer than 10 percent of households below poverty level in 1970 (438 sample segments were in this first group) and those with 10 percent or more of households below poverty level in 1970 (940 sample segments were in this second group).
- For the second of the two groups, interviewers were instructed to rate the general income level of households in the sample segment (after completing their listing of housing units in the segment). Summaries of these ratings were used to place each sample segment in one of four groups: highest 25 percent (well-off or wealthy), upper middle, lower middle, or lowest 25 percent (poor or near poor).



## Appendix A (Continued)

Sample segments that were rated on income were also rated, whenever possible, on the predominant main home heating fuel. Interviewer judgments on household income and main heating fuel were used to place sample segments in groups and establish relative sampling rates as shown in Table A2.

**Table A2. Relative Sampling Rates for 940 Sample Segments Likely to Contain the Highest Density of Low-Income Households**

Main Home Heating Fuel	Income Rating		
	Upper Middle or Highest	Lower Middle	Lowest
Electricity or Fuel Oil/Kerosene .....	1.0	2.2	3.4
All Other .....	1.0	1.6	2.2

Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

A relative sampling rate of 1.0 in Table A2 means that the overall sampling rate applied to households in the sample segment is the rate established for the main sample. Relative sampling rates higher than 1.0 were used for 382 sample segments in four "over-sampled" groups of sample segments shown in Table A2. (A relative sampling rate of 2.2 means, for example, that sample segments in the group were sampled at a rate of 120 percent higher than the rate established for the main sample.) An estimated 1,262 additional households (that is, households selected as a result of the supplemental sampling process) were selected in these 382 segments, and 1,165 interviews were completed in these households (including both personal interviews and mailed questionnaires).<sup>2</sup>

Overall effects of the oversampling procedure are summarized in Table A3. Some 28.4 percent of completed interviews (in the supplemental sample) were with households below the poverty level, compared with 12.4 percent of completed interviews (in the main sample). The corresponding figures for 125 percent of poverty level were 38.7 percent and 17.9 percent of supplemental sample and main sample interviews respectively.

<sup>2</sup>The estimated numbers of main sample interviews were derived by multiplying the number of units of a given type in each ultimate cluster by the ratio

$$\frac{\text{Sampling rate for main sample}}{\text{Sampling rate for total (main + supplemental) sample}}$$

In general, for example, the ratio for a sample segment rated "lower middle" for income level and "electricity or fuel oil/kerosene" as main home-heating fuel was equal to 1/2.2. 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 main sample.



## Appendix A (Continued)

**Table A3. Poverty Status in 1980 and Home Heating Fuel of Poverty-Level Households in RECS Main and Supplemental Samples**

Poverty Status and Home Heating Fuel	Main Sample Households		Supplemental Sample Households	
	Number	Percent	Number	Percent
Total Sample .....	5,104	100.0	1,165	100.0
Below Poverty Level .....	833	12.4	331	28.4
Electricity .....	120	2.3	50	4.3
Fuel Oil/Kerosene .....	70	1.4	51	4.4
Other Fuels .....	443	8.7	230	19.7
Not Below Poverty Level ....	4,471	87.6	834	71.6
Below 125 Percent of Poverty Level .....	915	17.9	451	38.7
Electricity .....	170	3.3	71	6.1
Fuel Oil/Kerosene .....	115	2.3	73	6.3
Other Fuels .....	630	12.3	307	26.3
Not Below 125 Percent of Poverty Level .....	4,189	82.1	714	61.3

Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

### Survey Estimates

Survey estimates were developed to project sample results to the universe. The universe includes all households in the 50 States and the District of Columbia. Households on military installations are included. The definition of household is the same as that used by the U.S. Bureau of the Census. At the time of the survey, November 1981, the universe was estimated to contain 83,141,000 households, based on Current Population Survey (CPS) estimates of the population.

Weights were calculated for each sample household. The household weight reflected the probability of selection for that household and additional adjustments to correct for potential biases arising from the failure to contact all sample housing units and the failure to list all housing units in the sample area. Contacts were not successful with 8.4 percent of the eligible units.

The adjustment for these noninterviews was designed to spread the effects of noninterviews over the interviewed sample of households in the final cluster. This same procedure was used in the National Interim Energy Consumption Survey (NIECS) and the Screener Survey (see Glossary), but because the cluster size is smaller for the RECS (approximately five households to be contacted, on the average, for the RECS as compared with about 10 in the NIECS), the effects were spread over additional clusters within the PSU whenever the adjustment exceeded 2.0. In these cases, only that part of the noninterview adjustment that exceeded 2.0 was spread over the remaining ultimate clusters in the PSU.



## Appendix A (Continued)

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. This problem is treated in two ways in the RECS. One treatment occurs during the interviewing process and the second 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 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 due to 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 (1970 Census population) in cell "c" for all PSU's in RECS NSR strata, and

$M_c$  is an estimate of  $N_c$  generated by applying RECS PSU sampling weights to 1970 Census household totals for cell "c" in RECS NSR sample PSU's.

The second-stage factor adjusted data from the survey after nonresponse adjustment and first-stage ratio estimation to independently derived estimates of the number of households in 12 categories shown in Table A4. The second-stage adjustment for category "k" was given by

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

where  $H_k$  is an independent estimate of the total, and

$G_k$  is the RECS estimate prior to the second-stage ratio adjustment of the total number of households in category "k".

The numerator is based on a linear interpolation of values for each of the 12 cells between Current Population Survey estimates for March 1981 and March 1982. The second-stage factor reduced both the between-PSU variance and the within-PSU variance. An additional effect of applying this factor is that the final sample estimate of the number of households for each cell shown in Table A4 equals the control estimate.



## Appendix A (Continued)

**Table A4. Population Estimates Used as Controls In Ratio Estimates**

Census Region	SMSA-- Central City	SMSA--Outside Central City	Non-SMSA	Total
Northeast .....	6,001,000	8,118,000	3,808,000	17,927,000
North Central ..	5,865,000	7,998,000	7,373,000	21,236,000
South .....	7,362,000	8,467,000	11,861,000	27,690,000
West .....	5,375,000	7,438,000	3,475,000	16,288,000
Total .....	24,603,000	32,021,000	26,517,000	83,141,000

Source: Estimates derived from March 1981 and March 1982 Current Population Surveys.

### 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 describing the purposes and stressing the importance of the survey. Beginning in September 1981, 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, 118 addresses were found to be nonresidential and an additional 663 were found to be ineligible. Some 5,482 personal interviews were completed, leaving 1,405 nonrespondents in this wave. A \$2 incentive was not used in the personal interviews in this survey as it had been in previous RECS.

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 46 addresses were found to be ineligible. As a result of the second wave, an additional 446 interviews were completed, leaving 913 nonrespondents.

A third wave was initiated in an effort to reach nonrespondents in a few locations that had low completion rates. The third wave produced nine additional personal interviews.

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. A \$2 incentive was included in the mailing. As a result of this effort, 332 additional households responded.





## Appendix A (Continued)

After three waves of personal interview attempts and one mailed questionnaire, 572 households or 8.4 percent of all eligible housing units had not responded. These results are displayed in Table A5.

These efforts were successful in accomplishing the following:

- Approximately 87 percent of the households were contacted and agreed to be interviewed personally. An additional 4.8 percent of the sample households completed and returned mailed questionnaires.
- Of the 6,269 responses, 87.4 percent were obtained during the first wave of contacts; 7.1 percent were obtained during the second wave; and less than 0.2 percent resulted from third-wave contacts. Some 5.3 percent were responses to the mailed questionnaire.
- Of all households that participated in the personal interviews, 35.5 percent required only one visit and 78.2 percent were completed with no more than two callbacks.
- A total of 182 personal interviews were completed in the second and third waves with respondents who had previously refused to participate, representing 3.1 percent of all completed personal interviews. In addition, of the 332 mailed questionnaires that were completed and returned, 189 were from households that previously refused to participate.

### Response Rates and Household Characteristics

This section of the report will compare various response and nonresponse rates across Census region, location type, and structure type. These rates are reported in Table A6.

Several patterns are clear from Table A6. First, personal interviews enjoyed the most success in the South (88.9 percent), in non-SMSA areas (91.1 percent), and among residents of mobile homes (89.2 percent). Conversely, the interviewers had their lowest success rates in the Northeast (83.2 percent), SMSA central cities (82.4 percent), and in buildings with five or more residential units (78.6 percent). It is important to keep in mind when looking at the categories that make up these groupings that there is no guarantee that the characteristics are independent. Rather, it is highly likely that they overlap, that is to say, the Northeast has a high concentration of central cities and large apartment buildings.

The total response-rate patterns with regard to highest and lowest rates are generally not affected by the addition of the responses to the mailed questionnaire; however, the range from highest to lowest decreases by several percentage points. The highest refusal rates correspond to the lowest success rates for the personal interviews. The lowest refusal rate categories match the highest personal interview success groups.

### 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 to most items that were to be used for making national estimates and items that had less than 10 percent nonresponse. 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;



## Appendix A (Continued)

Table A5. Interviews Completed by Stage

	Personal Interviews			Status After	Mail	Final Status
	First Wave	Second Wave	Third Wave	Third Wave		
Total Listed Units.....	7,668	1,405	913	7,668	904	7,568
Nonhousing Units						
Business, Other .....	34	-	-	34	-	34
Not Habitable .....	15	-	-	15	-	15
Nonhousing Unit .....	69	-	-	69	-	69
Subtotal .....	118			118		118
Housing Units .....	7,550	1,405	913	7,550	904	7,550
Ineligible Units						
Vacant .....	489	31	-	520	-	520
Seasonal Vacant .....	174	15	-	189	-	189
Subtotal .....	663	46		709		709
Eligible Units .....	6,887	1,359	913	6,841	904	6,841
Not Completed--Personal						
No One Home .....	556	296	19	221	-	221
Eligible Respondent						
Not Home .....	50	16	1	26	-	26
Refused .....	650	349	9	<sup>a</sup> 562	-	562
Illness .....	27	2	1	15	-	15
Language Barrier .....	21	4	2	15	-	15
Wrong Respondent						
or Unit .....	9	2	-	7	-	7
Not Contacted <sup>b</sup> .....	35	223	872	22	-	22
Other .....	57	21	-	36	-	36
Subtotal .....	1,405	913	904	904		904
Not Completed--Mail						
Unusable Address .....	-	-	-	-	75	75
Post Master Return .....	-	-	-	-	74	74
Returned Blank .....	-	-	-	-	68	68
Returned Unusable .....	-	-	-	-	6	6
Not Returned .....	-	-	-	-	274	274
Other Not Mailed .....	-	-	-	-	75	75
Subtotal .....					572	572
Total Interviews						
Completed .....	5,482	446	9	5,937	33	6,269

<sup>a</sup> 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.

<sup>b</sup> Includes households that moved after initial contact.

"-" = Data not applicable.

Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.



## Appendix A (Continued)

**Table A6. Response Rates by Region, Location, and Type of Structure  
(Percentage of Eligible Housing Units)**

Characteristic	Response Rates			Personal Interview Non-response Rates	
	Personal Interview	Mail Questionnaire	Total Response	Refuse	Unable to Contact
Total .....	86.8	4.8	91.6	8.2	5.0
Census Region					
Northeast .....	83.2	6.3	89.5	10.5	6.3
North Central ....	86.7	5.2	91.9	8.8	4.4
South .....	88.9	3.4	92.3	6.2	4.9
West .....	86.9	5.3	92.2	8.4	4.7
Location Type					
SMSA-Central					
City .....	82.4	6.5	88.9	10.0	7.6
SMSA-Outside					
Central City ....	85.8	5.9	91.7	9.7	4.6
Non-SMSA .....	91.1	2.6	93.7	5.4	3.5
Structure Type					
Single-Family					
House .....	88.3	4.1	92.4	8.1	3.6
Mobile Home .....	89.2	2.6	91.8	6.1	4.7
Buildings with					
2-4 Units .....	86.4	4.8	91.2	7.2	6.4
Buildings with 5 or					
More Units .....	78.6	9.9	88.5	10.5	10.9

Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

the presence of wall insulation; and the cost of adding storm windows, doors, and insulation. For these items, the number of missing cases was considered large enough that the imputations would have introduced too much additional error.

The most frequently used imputation procedure was "hot-deck." 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 on 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 random selection from the distribution of the known values of a variable, regression estimates, and use of modal values. Regression procedures were used to impute the total square footage of the housing unit in 2 percent of the cases in which all data were missing. The random selection procedure was used only to assign dates (month and/or year) when those responses were missing. Discussion of the regression procedure and other imputations involved in the square footage estimates is found in Appendix B. A few variables were imputed by assigning modal values; this was done when the distribution of available data showed a highly skewed distribution.



## Appendix A (Continued)

The RECS personal interview questionnaire contained 356 items of information. These items were treated as follows with respect to imputations.

Imputation Method	Number
Not Imputed .....	81
Imputed .....	275
Hot-deck .....	207
Random .....	45
Modal .....	23
Total .....	356

Table A7 shows the most frequently imputed items, the number of cases requiring imputation, and the method used.

The 332 mail questionnaires had considerable missing data since the mail questionnaire was a small subset of questions from the household interview. For the mail questionnaires, the hot-deck imputation method was used. Households were selected by sorting the file by Census region, type of structure, space-heating fuel, hot-water fuel, air-conditioning fuel, family income, number of rooms, and number of persons in the household. The donor household was matched on these characteristics as closely as possible, and the entire set of responses from the donor household was imputed to the mailed questionnaire household. This meant that all the responses for the mailed questionnaire households were imputed except weather data, fuel consumption data acquired from the household's fuel suppliers, the geographic location of the mail questionnaire household, and those items in the hot-deck imputation procedure for which an exact match had been obtained.

**Table A7. 1981 Residential Energy Consumption Survey Items Most Frequently Imputed**

Item	Cases Imputed	Percent of Total Sample <sup>a</sup> (6,269)	Method of Imputing
1980 Family Income .....	947	15	Hot-deck
Availability of Natural Gas ....	444	7	Hot-deck
Year House Was Built .....	351	6	Hot-deck
Same Main Heating Fuel Used Last Winter .....	284	5	Hot-deck
Most-Used Oven Is/Is Not Microwave .....	176	3	Hot-deck
Householder Completed Highest Grade .....	159	3	Hot-deck
Number of Cords of Wood Burned .....	147	2	Hot-deck
Central Water-Heating System for the Building .....	145	2	Hot-deck
Square Footage of Housing Unit .....	(b)	(b)	(b)
Condominium or Cooperative .....	126	2	Hot-deck
Spouse Completed Highest Grade .....	123	2	Hot-deck
Central Heating System for the Building .....	119	2	Hot-deck
Other Source of Income in 1980 .....	111	2	Hot-deck
Regular Contributions from Nonfamily Members Received in 1980 .....	101	2	Hot-deck



## Appendix A (Continued)

Table A7. (Continued)

Item	Cases Impute	Percent of Total Sample <sup>a</sup> (6,269)	Method of Imputing
Second Oven Is/Is Not a			
Microwave .....	67	1	Hot-deck
Warm Air Forced Through Ducts...	63	1	Hot-deck
Other Public Assistance			
Received in 1980 .....	99	2	Hot-deck
Alimony Received in 1980 .....	99	2	Hot-deck
Government Pension			
Received in 1980 .....	95	2	Hot-deck
Private Pension			
Received in 1980.....	86	1	Hot-deck
Month Window or Door			
Caulking Added .....	81	1	Random
Dividends Received in 1980.....	79	1	Hot-deck
Disability Payments			
Received in 1980 .....	79	1	Hot-deck
SSI Received in 1980 .....	79	1	Hot-deck
Veteran's Payments			
Received in 1980 .....	79	1	Hot-deck
Workmen's Compensation			
Received in 1980.....	78	1	Hot-deck
Unemployment Compensation			
Received in 1980 .....	78	1	Hot-deck
Net Rental Income			
Received in 1980 .....	77	1	Hot-deck
AFDC Received in 1980 .....	73	1	Hot-deck
Social Security			
Received in 1980 .....	73	1	Hot-deck
Money from Self-Employment			
Received in 1980 .....	72	1	Hot-deck
Monthly Rent of Dwelling .....	68	1	Hot-deck

<sup>a</sup>Mail questionnaires are not included in the percent. To account for these, add 5 percentage points to the percent listed, except for the 1980 family income item. Family income was not imputed for the mail questionnaires, but some shift within broad income categories may have occurred in the process of matching mail questionnaires to personal interviews.

<sup>b</sup>See Appendix B for details on the square footage imputations.

Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

### Rental Agent Survey

Telephone interviews were carried out with rental agents and landlords of RECS households living in multiunit dwellings who did not pay directly to utility companies or fuel suppliers for one or more household fuels. The primary purpose of the rental agent survey was to verify information from household respondents on fuels used and main heating equipment.

The telephone interviews with rental agents or their deputies were conducted in July 1982.

Altogether, 203 rental agents were interviewed. These interviews covered 466 households in 294 buildings. The 466 households were 62.5 percent of the total of 746 households living in multiunit buildings who had one or more fuels included in their rent.



## Appendix A (Continued)

### Editing Completed Questionnaires

Interviewers mailed completed questionnaires to the contractor, where they were carefully reviewed. 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 insure completeness and the logical consistency of selected patterns of responses and to prepare the questionnaires for translation into machine-readable form. Key punching of important items was fully verified. Overall, 25 percent of the key punching work was fully verified. Finally, the data were machine edited to further insure 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 and data on fuel consumption, the contractor made telephone contact with a member of the household in question. Telephone contacts of this type were completed with approximately 14 percent of households during the course of data editing for this survey.

Comparisons were made between rental agent and household respondent 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 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. The rental agent's view generally prevailed also in the case in which the rental agent paid for the main heating fuel and the rental agent's description of the main heating equipment differed from that of the household respondent.

Since a supplemental heating fuel was more likely to be under the household's control, even in a multiunit dwelling, the respondent's definition of supplemental heating fuel was generally accepted.

The changes in the household records that resulted from these inquiries are given in Table A8.



## Appendix A (Continued)

**Table A8. Changes Made in Household Records Based on Information from Rental Agents**

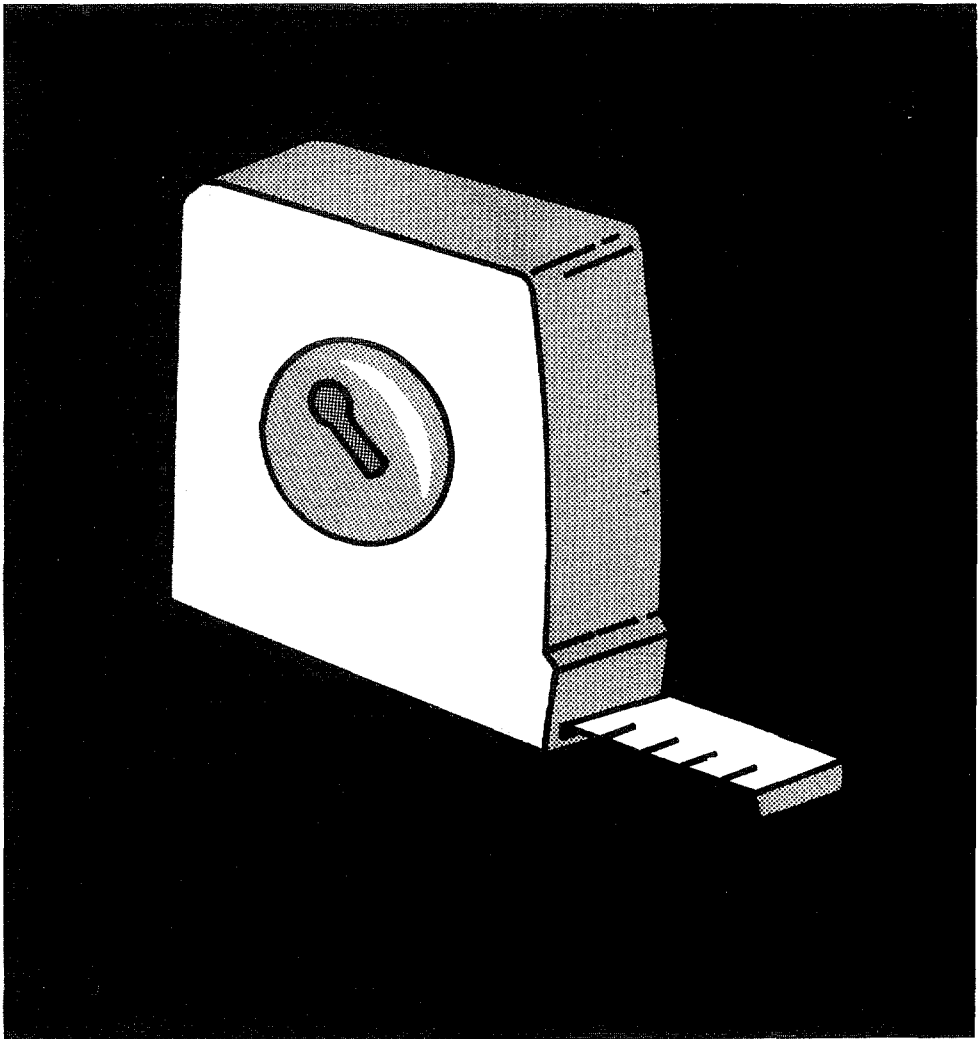
Type of Changes Made in Household Records	Fuel Paid by Rental Agent	Number with Changes Made	Percent with Changes Made
All Households in Rental Agent Survey .....	466	140	30
Main Heating Fuel .....	368	58	16
Main Heating Equipment .....	(a)	52	14
Supplementary Heating Fuel .....	(a)	18	5
Water Heating Fuel .....	389	82	21
Central Air-Conditioning Fuel ...	18	1	6

<sup>a</sup>Responses of rental agents and household respondents were compared for the 368 households for which the rental agent paid for the main heating fuel.

Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

**Appendix B**

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







## Appendix B

### Introduction



Interviewers for the 1981 RECS survey were given 50-foot tape measures and were instructed to measure the dimensions of each housing unit where they conducted an interview. 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 also recorded the dimensions of areas that were heated and unheated. This further breakdown into heated and unheated areas provides a closer approximation to the area 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. These measurements provide the first data on a national sample of all types of residential housing units, including apartment units and mobile homes.

Interviewers attempted to measure the size of the 5,937 housing units where personal interviews were conducted. In 108 cases, the measurements were taken from a floor plan. In 98 percent of the cases, usable measurements were acquired. In 2 percent, 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 figures for each housing unit:

HOMEAREA = total square footage of area enclosed from the weather

HEATED = total square footage of heated area

UNHEATED = HOMEAREA - HEATED = total square footage of unheated area.

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.

### Scaling Up Outside Measurements

As shown in Table B1, 4,883 homes had complete dimensions for the total area, the heated area, and the unheated area. The only adjustment required was to scale up the measurement for the 1,857 homes that were measured on the inside. The inside measurements were standardized to



## Appendix B (Continued)

outside dimensions. The scaling value was determined for each housing unit as a quadratic function of HOMEAREA for the housing unit.<sup>1</sup>

$$\text{SCALE} = 902 + 1.93\text{E}-04 \times \text{HOMEAREA} - 3.63\text{E}-08 \times (\text{HOMEAREA})^2$$

This formula indicates that the larger the HOMEAREA, the larger the scaling-up value. These scale values, which increased the inside measurements, ranged from 5.9 to 15.9 percent, depending on the size of HOMEAREA. For any case in which HOMEAREA was less than 1,000, SCALE was set to 1.059; for HOMEAREA greater than 2,700, SCALE was set to 1.159.

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

Amount of Information Collected	Number of Households	Percent
Complete Set of Dimensions .....	4,883	82
Outside measurement of home .....	3,026	51
Inside measurement of home .....	1,857	31
Partial Information		
Information available on heated and unheated areas. Unknown whether dimensions are for inside or outside of home .....	545	9
Total area known, but information on heated and unheated areas is missing. Also may be unknown whether dimensions are for inside or outside of home .....	162	3
Basement dimensions missing .....	150	3
Complete set of dimensions for all floors except basement. Basement total area known, but information on heated and unheated areas for basement is missing .....	56	1
All dimensions missing or unusable ....	141	2
Total .....	5,937	100

Note: The floor area for the 332 households responding by mail was imputed through a hot-deck procedure. The mail questionnaires are not included in this table.

Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

<sup>1</sup>This 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 in the range of 1,000 to 3,500 square feet. The relationship between the ratio of predicted "outside" to "inside" floorspace and the actual inside floorspace for these homes was fitted in a quadratic equation. The predicted scale factors from the quadratic equation were then applied to cases measured from the outside to estimate "inside" floorspace. A second quadratic fit of "outside" to "inside" floorspace was executed, this time using all households measured from the outside or inside with predicted or measured inside area in the range of 1,000 to 3,500 square feet. The last two steps were repeated until the quadratic fit of "outside" to "inside" converged to a stable solution.



## Appendix B (Continued)

### Treatment of Housing Units with Some Missing Data

The 545 cases lacking information as to whether the measurements were inside or outside, or in which the measurements may have been a combination of inside and outside, were treated to a hot-deck imputation scheme.<sup>2</sup> Those cases in which the imputed method of measurement became inside were then scaled up to outside dimensions by using Equation B1.

The 162 cases lacking information on the ratio of heated to unheated space were treated to a hot-deck procedure. The donor household provided the ratio of heated to unheated area. For most of these cases, information was also lacking as to whether the measurements were inside or outside. The donor household then furnished this information as well. The inside measurements were scaled up to outside dimensions.

For the 150 cases with missing basement dimensions, the basement area was imputed by using a simple regression based on the area of the first floor. The heated and unheated areas were determined or imputed and then added to known totals for the remaining floors. The total area was then scaled up to outside dimensions, if necessary.

There were 56 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. Two such distributions were used: one for homes with basements only, and one for homes with a basement plus crawl space and/or slab.

### Regression Model

Two regression equations were used for the 141 cases with no usable data. The first was used whenever there were no questions about the presence of a basement; the second was used when basement existence could not be determined.

After HOMEAREA had been imputed by using the regression model, a hot-deck procedure was used to impute the ratio of heated to unheated space. All estimates were then scaled up. This was necessary since the regression equations estimated inside dimensions. The prediction equations for outside dimensions were not used in the imputations because regression models based on cases with inside measurements yielded substantially better fits.

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<sup>2</sup>See Glossary for explanation of hot-deck imputation.

## Appendix C

Limitations of  
the Data

$$RSE(X|Y) = \sqrt{RSE^2(X) + RSE^2(Y)}$$



# Appendix C

## Introduction

Data from the 1981 Residential Energy Consumption Survey (RECS) are subject to the same sources of sampling error, nonsampling error, and bias of any survey. Sampling error results from the fact that a survey rather than a census was conducted, while nonsampling error and bias are related to how the survey was conducted.

Nonsampling error and bias include population undercoverage during sampling, interviewer errors in following the survey instructions or in recording answers, respondent errors in answering the questions, and coding and key punch errors. The wording and format of the survey instrument; the procedures used to select and train interviewers; and the quality control built into the data collection, receipt, and processing operations are all designed to minimize these sources of error.<sup>1</sup> It is impossible to compute nonsampling error and bias.

Sampling error, caused by the use of a sample survey rather than a census, is related to the size of the sample and the method of sample selection chosen. That is, all other things being equal, the larger the sample size, the smaller the sampling error. It is possible to estimate the sampling error for certain survey methodologies. Such a methodology was used in the 1981 RECS.

The remainder of this Appendix will discuss how these estimates were made and how they can be used as a guide in making inferences from the sample estimated to the total population.

## Quality of Specific Data Items

### Urban or Rural

In terms of geographic coverage, the U.S. Bureau of Census has developed rules for defining places as urban or rural. The general import of these rules is to classify a place as urban if it contains more than 2,500 individuals. The rules contain exceptions, however, and the boundaries of places classified as urban by the Bureau of Census may be ambiguous. As a result, the rules may not always have been applied to the RECS, Screener, and NIECS households in the way intended by the Bureau of Census. For this reason, estimates of urban and rural populations from those surveys may differ from the Bureau of Census figures. The classification scheme for metropolitan areas (SMSA and non-SMSA) used for the RECS, Screener, and NIECS does correspond to the classifications used by the Bureau of the Census. The designation of metropolitan areas is based on county boundary lines (except New England), which is a less ambiguous defining characteristic.

### Indoor Temperatures

The data on indoor temperatures are believed to be generally accurate for the purpose of 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

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<sup>1</sup>For a discussion of how these procedures were used in this survey, see Appendix A, "How the Survey Was Conducted."



## Appendix C (Continued)

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 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 reports 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 data for some respondents was highlighted 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.

### Calculation of Sampling Errors

A complex multistage, multiframe design, such as that used in the 1981 RECS, makes it almost impossible to construct an exact algebraic variance estimator. The variance can be approximated, however, by using a balanced half-sample replication technique (see References 1 and 2). To apply the half-sample method to this survey, the 131 Primary Sampling Units (PSU's) were grouped into 81 strata. Thirty-one of the strata were self-representing; that is, they consisted of large metropolitan areas that came into the sample with certainty, or they were PSU's in strata that could not be paired with another strata that had similar characteristics. In these strata, segments were divided into two replication groups. Each of the remaining 50 strata consisted of two sample PSU's belonging to one of 17 intersections created by the overlap between the 10 Federal regions and the nine Census Divisions. The two replication groups in these strata consisted of one PSU each.

To save time and effort, a fully balanced half-sample design was not used. Instead, the half-samples were balanced only among strata in the same Census region. If a fully balanced design were used, it would require 82 half-samples. By balancing only within Census regions, a balanced design could be constructed by using 32 half-samples.

The survey was constructed so that the results in each Census region can stand alone. No PSU lines cross Census region boundaries. The non-self-representing PSU's were paired within Census regions. All controlled selection and the ratio estimation were done within each Census region. Consequently, the national totals can be considered the sum of four independent totals for the four Census regions. Therefore, the variance of a national total is the sum of the variance for its four corresponding regional totals. This fact was used as one justification for balancing the half-sample design only within Census regions.

The 32 half-sample design is defined by a 32 x 81 matrix of +1's and -1's. The 32 rows correspond to the 32 half-samples, and the 81 columns correspond to the 81 pairs of replication groups. The +1's and -1's determine which of the groups in the pairs is used in each half-sample. All column totals are 0. Therefore, each of the groups is used in



## Appendix C (Continued)

exactly 16 of the half-samples. The columns for sets of pairs that fall within the same Census region are orthogonal. This is not necessarily true for columns corresponding to pairs that fall into different Census regions.

The 32 x 81 design matrix was constructed by using a 32 x 32 orthogonal matrix adapted from Plackett and Burman [3]. The rows of this 32 x 32 matrix were randomly sorted. The sorting preserves orthogonality. For each Census region, K columns were randomly selected from the sorted matrix. Therefore, K is the number of replication groups in a Census region. After the columns for a Census region have been selected, the rows are randomly sorted again.

Without the random sortings, all the 81 columns would be orthogonal with each other except possibly three other columns that would be identical to it. The three other columns would correspond to pairs in the three other Census regions. When two columns are identical, it means the groups corresponding to the +1's will always be in 16 half-samples together. (The groups corresponding to the -1's would follow a similar pattern.) Random sorting makes the possibility of two identical rows zero for all practical purposes.

Variance estimates for selected survey statistics were created by computing 32 half-sample estimates for each statistic. If a +1 falls in the *i*th row and *j*th column of the design matrix, the replication group corresponding to the +1 in the *j*th pair was used in the *i*th half-sample. The sampling weights in each half-sample were ratio-adjusted upward so that the total number of households in each Census region classified by SMSA status corresponded to the control total for that cell (see Table A4, Appendix A).

As a result of using control estimates, the total number of households in each of the 12 cells (Census region classified by SMSA status) is the same for all half-samples. The variance for these 12 totals, then, is zero. Any errors in these numbers are biases. In particular, they are affected by any undercount or overcount in the 1980 Census.

The half-sample variance estimate for the survey estimate  $Y'$  of population characteristic  $Y$  is given by

$$S_{Y'}^2 = \sum (Y'_{i'} - Y')^2 / 32$$

where  $Y'_{i'}$  is the *i*th half-sample estimate of  $Y$ , and  $Y'$  is the full sample estimate of  $Y$ .

The half-sample procedure measures variability due to sampling error and random response variance.

### Summary and Display of Sampling Errors

The form of the sampling error that is presented in this Appendix is the relative standard error given as a percent. For a given survey statistic,  $Y'$ , the relative standard error,  $RSE(Y')$ , is given by

$$RSE(Y') = (S_{Y'} / Y') \times 100.$$

From this, it follows that the standard error of  $Y'$ , the error form used in the text of this report, is given by

$$S_{Y'} = RSE(Y') \times Y' / 100.$$



## Appendix C (Continued)

### Number of Households

The estimated relative standard errors were generalized for sample statistics that are numbers of households with a particular set of characteristics. The error formula was constructed from variance estimates computed for selected statistics in the report by a least squares estimate of the model:

$$\log[\text{RSE}(Y')] = A + B + C[\log(Y')] + D[\log(Y')]^2 \quad (C1)$$

where A, B, C, and D are the parameters whose least squares estimate determines the shape of the curve. The logarithms used in estimating the parameters of the model were computed using base 10. The number of households, Y', is given in units of millions of households. The value of RSE(Y') is given in percent. The value of B depends on the characteristics used in defining the cell. Equation C2 assumes that B = 0. The adjustments to RSE(Y') for nonzero values of B will be discussed later.

$$\log[\text{RSE}(Y')] = 1.2395 - 0.4441 \times [\log(Y')] - 0.0368 \times [\log(Y')]^2 \quad (C2)$$

Table C1 shows the relative standard error of selected values of household counts.

**Table C1. Relative Standard Error for Selected Values of Number of Households**

Number of Households (Millions)	Relative Standard Error (Percent)	Number of Households (Millions)	Relative Standard Error (Percent)
0.1	44.3	12	5.2
0.2	34.0	13	5.0
0.3	29.0	14	4.8
0.4	25.7	15	4.6
0.5	23.4	16	4.5
0.6	21.7	17	4.3
0.7	20.3	18	4.2
0.8	19.2	19	4.1
0.9	18.2	20	4.0
1	17.4	22	3.8
2	12.7	24	3.6
3	10.5	26	3.4
4	9.1	28	3.3
5	8.1	30	3.2
6	7.4	32	3.1
7	6.9	34	3.0
8	6.4	36	2.9
9	6.1	38	2.8
10	5.7	40	2.7
11	5.5	42	2.6

Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

An estimate of the standard error for any statistic in this report that is in terms of numbers of households can be obtained by using either Equation C2 or Table C1. The formula or table can be applied directly only if the estimated number of households is less than half the appropriate control estimate. Table C2 shows the number of households in Census regions, in SMSA's, and in non-SMSA areas. These are control estimates or sums of control estimates and are, therefore, not subject





## Appendix C (Continued)

to sampling error. They are, however, subject to possible design bias. When the estimated number of households exceeds half the appropriate control estimate, then the standard error should be calculated for the statistics equal to the control estimate minus the estimate. This resulting standard error will also be the standard error of the original estimated household count.

**Table C2. Population Control Estimates for Use in Calculating Relative Standard Errors (Million Households)**

Type of Aggregate	Control Estimates	Upper Bounds for Direct Application of Formula or Curve	Control Complement
National .....	83.1	41.5	83.1 - Y'
Census Region			
Northeast .....	17.9	8.9	17.9 - Y'
North Central .....	21.2	10.6	21.2 - Y'
South .....	27.7	13.8	27.7 - Y'
West .....	16.3	8.1	16.3 - Y'
SMSA Status			
SMSA Central City ..	24.6	12.3	24.6 - Y'
SMSA Non-Central City .....	32.0	16.0	32.0 - Y'
Non-SMSA .....	26.5	13.2	26.5 - Y'

Source: Estimates derived from March 1981 and March 1982 Current Population Surveys.

Up until this point, it has been assumed that the value of B in Equation C1 has been zero. The value of B, the cell definition factor, depends partly on the amount of clustering of the characteristics used in defining the cell. In particular, the value of B depends on the strength of the tendency of households with similar characteristics to live in groups within each replicate pair. If the characteristic is highly clustered, the value of B is positive. If the characteristic is widely spread out, the value of B is negative.

For example, one characteristic used in the report is heating and cooling degree-days. People who live close to one another experience the same weather conditions; consequently, the value of B for heating and cooling degree-days is positive. On the other hand, there is some clustering of households headed by people of the same age group, but this tendency is less pronounced than for most other characteristics. As a result, the value of B for ages of household head is negative. As a final example, consider the Census regions in which households are contained. Everyone in the same pair of replicate groups lives in the same Census region. Therefore, there is no way of defining a cluster based on Census region within a pair of replicate groups. As a result, the value of B for Census regions is zero for all practical purposes.

Most cells in the tables of this report used two characteristics for their definition, one for the horizontal breakdown and one for the vertical breakdown. The factor for the vertical definition should be added to the factor for the horizontal definition. It is important to remember that Equation C1 is in terms of log to the base 10. An alternative method to incorporate B would be to determine the RSE(Y') by Equation C2 and then multiply by  $10^B$ . Table C3 lists the value of B and  $10^B$  for several cell definitions. If a definition is not listed, use  $B = 0.0$  and  $10^B = 1.0$ , or use a value for a variable that has a similar clustering tendency. A more extensive list of variables and their clustering factors is given on page 309 in Housing Characteristics, 1980 (DOE/EIA-0314).



## Appendix C (Continued)

**Table C3. Clustering Factor  
for Calculating the Relative  
Standard Error**

Cell Definition	B	10 <sup>B</sup>
Heating and Cooling—Degree Days .....	0.2221	1.67
Electricity Is Main Heating Fuel .....	0.0810	1.21
Other Main Heating Fuel <sup>a</sup> .....	0.0637	1.15
Natural Gas Is Main Heating Fuel .....	0.0286	1.07
LPG Is Main Heating Fuel .....	0.0266	1.06
Temperature Setting When at Home .....	0.0245	1.06
Wood Is Main Heating Fuel .....	0.0160	1.04
Year Built .....	0.0131	1.03
Age of Head of Household .....	-0.0082	0.98
Number of Square Feet Heated .....	-0.0493	0.89
Fuel Oil Is Main Heating Fuel .....	-0.0618	0.87
Family Income .....	-0.0702	0.85
Number of Household Members .....	-0.0801	0.82

<sup>a</sup>Main heating fuel other than electricity, natural gas, LPG, wood, or fuel oil.

Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

### Determining Relative Standard Error

The following is a set of steps for obtaining the relative standard error for most statistics in this report.

**Step 1:** Is the statistic a household count?

**Yes:** Go to Step 2 (Note: A simplified procedure for deriving relative standard errors may be followed. This procedure would use Steps 4 and 5 and would produce overestimates of sampling error for some statistics.)

**No:** Obtain the relative standard errors from Table C4 for temperature data shown in Table 36. For statistics on square footage (average or aggregates), average number of doors, windows, storm doors, storm windows, and inches of insulation, see pp. 314-343 in Housing Characteristics, 1980 (DOE/EIA-0314). If the statistic is a percentage, go to the section entitled "Determining the Relative Standard Errors for Percentages Based on Household Counts."

**Step 2:** Is the statistic one of the 20 control estimates given in Table A4, or a sum of two or more control estimates? (See Table A4, Appendix A.)

**Yes:** Set the RSE equal to zero and skip to Step 6.

**No:** Go to Step 3.

**Step 3:** Is the estimated household count less than half the appropriate control estimate? (See Table C2 for these values).

**Yes:** Use estimate directly in Step 4.

**No:** Use the value equal to the control minus the estimate to calculate the RSE. Call this value the control complement (see Table C2) and go to Step 4.



## Appendix C (Continued)

Step 4: Use Table C1 or Equation C2 to obtain the initial RSE of the estimate or its control complement. Denote this value as RSE (I).

Step 5: Is the vertical or horizontal cell definition that corresponds to the household count one of the clustering factors listed in Table C3 or similar to one that is listed?

Yes: Multiply the RSE (I) by the corresponding factor or factors under the column headed  $10^b$  and go to Step 6.

No: Use RSE (I) as is and go to Step 6.

Step 6: Was the RSE (I) computed by using the control complement?

Yes:  $RSE \text{ of } Y' = RSE (I) \times (\text{Control Complement})/Y'$

No:  $RSE \text{ of } Y' = RSE (I)$ .

Example 1: Table 9 shows that 14.2 million households heat with electricity nationally.

Step 1: This is a household count.

Step 2: This is not a control value.

Step 3: The upper boundary for national statistics is 41.5, thus enabling either Equation C2 or Table C1 to be directly applied.

Step 4: Equation C2 gives  $\log [RSE(Y')] = 0.6789$  and  $RSE(Y') = 4.8$  percent.

Step 5: The factor "electricity as the main heating fuel" is 1.21. This gives an RSE of  $(4.8) (1.21) = 5.8$  percent.

Step 6: The relative standard error equals 5.8 percent.

Example 2: Table 9 shows that 10.8 million households heat with natural gas in the West.

Step 1: This is a household count.

Step 2: This is not a control value.

Step 3: The upper boundary for using Equation C2 on household counts for the West is 8.1 million households. Therefore, the control complement =  $16.3 - 10.8 = 5.5$  should be used in determining the RSE.

Step 4: Equation C2 gives  $RSE = 7.8$  percent.

Step 5: The factor for natural gas as the main heating fuel is 1.07. This gives an RSE of 8.3 percent for the 5.5 million households that do not heat with natural gas in the West.



## Appendix C (Continued)

Step 6: The relative standard error equals  $(8.3)(5.5)/(10.8) = 4.2$  percent.

The standard error of 0.5 million households applies to both the 10.8 million households that heat with natural gas in the West and the 5.5 million households that do not.

### Determining the Relative Standard Errors for Percentages Based on Household Counts

In some cases, the reader may want to find the RSE of a percentage of the households having a given set of characteristics. For example, the reader may want to know the RSE of the use of natural gas for cooking among all households that use natural gas for heating. The tables report the number of households that use natural gas for heating and cooking,  $X$ , and the number of households that use natural gas for heating but some other fuel for cooking. By adding  $X$  and  $Z$ , it is possible to get the total number of households that use natural gas for heating,  $Y$ .

$$Y = X + Z$$

The estimate of the percentage of households that use natural gas for cooking among all households that use natural gas for heating is

$$P = \frac{X}{Y} 100.$$

The RSE of  $P$  can be approximated by

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

This approximation works best when  $RSE(X)$  and  $RSE(Y)$  are estimated by using 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 preceding format.

### References

1. National Center for Health Statistics. "Replication: An Approach to the Analysis of Data From Complex Surveys." Vital and Health Statistics. U.S. Public Health Service Publication No. 1000--Series 2--No. 14. Washington, D.C.: U.S. Government Printing Office, April 1966.
2. National Center for Health Statistics. "Pseudoreplication: Further Evaluation and Application of the Balanced Half-Sample Technique." Vital and Health Statistics. U.S. Public Health Service Publication No. 100--Series 2--No. 31. Washington, D.C.: U.S. Government Printing Office, January 1969.
3. Plackett, R. L., and Burman, J. P. "The Design of Optimum Multifactorial Experiments." Biometrika 33 (1946): 305-325.



## Appendix C (Continued)

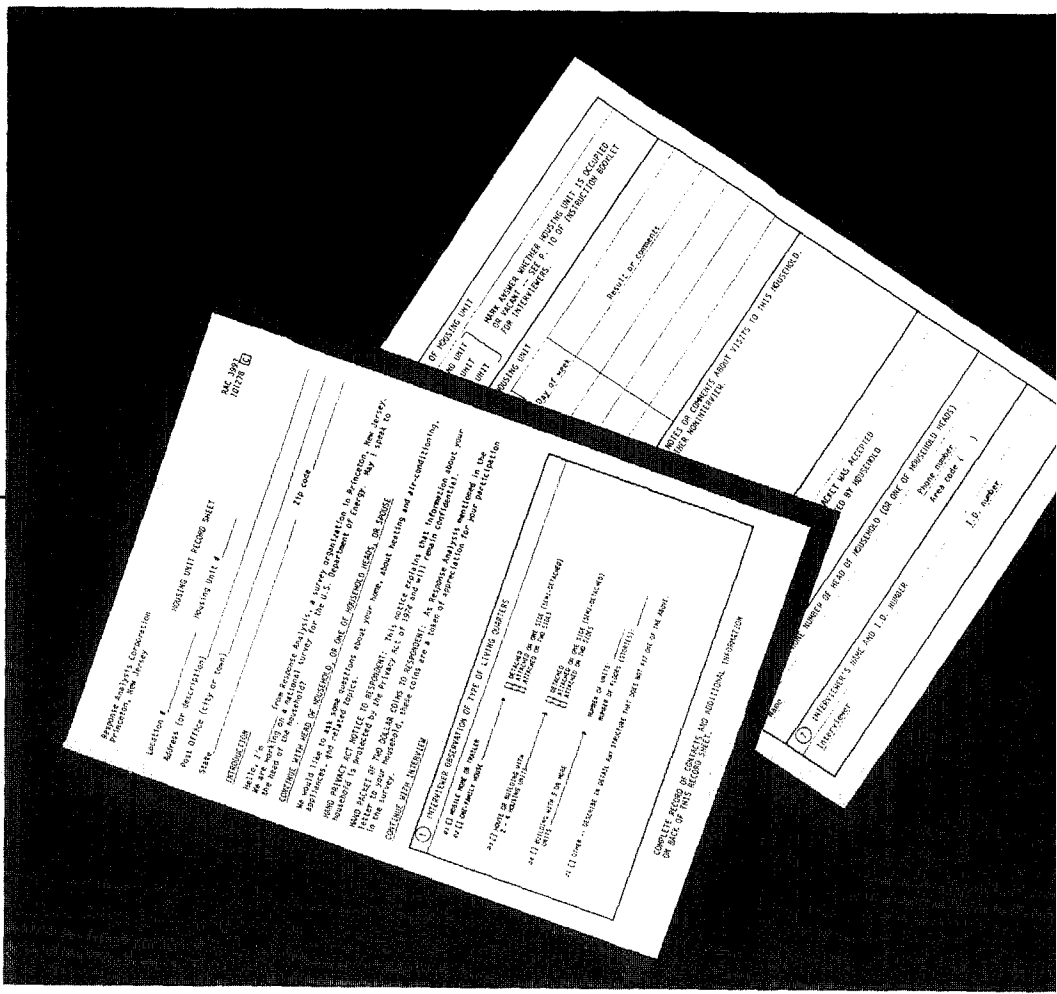
**Table C4. Relative Standard Errors (RSE) for Daytime Temperatures Shown in Table 36 (Percent)**

HOUSEHOLD CHARACTERISTICS	TOTAL	CENSUS REGION AND ANNUAL HEATING DEGREE-DAYS (HDD) OR COOLING DEGREE-DAYS (CDD)--LONG-TERM AVERAGE						
		NORTHEAST		NORTH CENTRAL	SOUTH		WEST	
		5,500 HDD OR MORE	LESS THAN 5,500 HDD	4,000 HDD OR MORE	LESS THAN 2,000 CDD	2,000 CDD OR MORE	4,000 HDD OR MORE	LESS THAN 4,000 HDD
HOUSEHOLDS WITH HEATING CONTROLS AND HEAT TURNED ON IN DAYTIME .	0.1	0.3	0.3	0.2	0.2	0.5	0.3	0.5
MAIN HEATING FUEL								
NATURAL GAS.....	.1	.5	.4	.2	.4	.4	.3	.4
ELECTRICITY.....	.3	1.4	1.5	.7	.5	.7	.5	1.2
FUEL OIL OR KEROSENE.....	.2	.4	.2	.3	.7	Q	.5	Q
LIQUID PETROLEUM GAS.....	.5	Q	Q	.7	1.5	1.5	Q	Q
WOOD/COAL/OTHER.....	.7	1.5	Q	1.4	1.0	Q	1.6	Q
SECONDARY HEATING								
YES.....	.2	.5	.5	.3	.3	.4	.3	.6
NO.....	.1	.3	.5	.3	.3	.6	.4	.7
MAIN HEATING FUEL GAS, ELECTRICITY, OIL PAID BY HOUSEHOLD								
YES.....	.1	.4	.3	.2	.2	.5	.3	.4
NO.....	.3	.5	1.0	.4	1.0	.9	1.0	Q
WOOD/COAL/OTHER.....	.7	1.5	Q	1.4	1.0	Q	1.6	Q
AGE OF HOUSEHOLDER								
UNDER 25 YEARS.....	.3	.9	Q	.7	.7	1.2	.5	1.1
25 TO 34 YEARS.....	.2	.6	.4	.4	.4	.8	.4	.5
35 TO 44 YEARS.....	.3	.4	.4	.5	.6	.6	.6	1.3
45 TO 59 YEARS.....	.2	.4	.7	.4	.4	.4	.5	.7
60 YEARS AND OVER.....	.2	.8	.4	.4	.3	.6	.5	.5

"Q" = DATA WITHHELD BECAUSE OF A LARGE VARIANCE.

NOTE: 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, FORM EIA-457, THE 1981 RESIDENTIAL ENERGY CONSUMPTION SURVEY.





## Appendix D

This Appendix contains copies of the survey forms used in the 1981 Residential Energy Consumption Survey.

- EIA-457A Housing Unit Record Sheet (actual form was pink)
- EIA-457B Household Questionnaire (actual form had a light blue cover)
- EIA-457E Electricity Utility Form (actual form was yellow)
- EIA-457F Natural Gas Utility Form (actual form was pink)
- EIA-457G Fuel Oil Supplier Form (actual form was green)
- EIA-457H Liquefied Petroleum Gas Supplier Form (actual form was blue)



# Appendix D (Continued)

Response Analysis Corporation  
Princeton, New Jersey  
RAC 4188 072281

OMB No. 0308-7045  
EPA 4874  
3305

## HOUSING UNIT RECORD SHEET

Location # \_\_\_\_\_ Housing Unit # \_\_\_\_\_  
Address (or description) \_\_\_\_\_  
Post Office (city or town) \_\_\_\_\_  
State \_\_\_\_\_ Zip Code \_\_\_\_\_

### INTRODUCTION

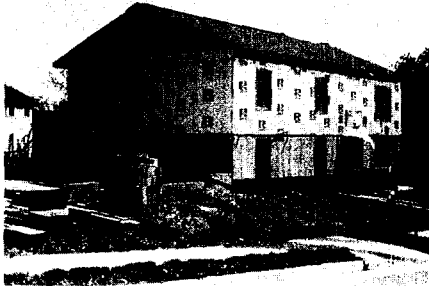
Hello, I'm \_\_\_\_\_ from Response Analysis, a survey organization in Princeton, New Jersey. We are working on a national survey for the U.S. Department of Energy. May I speak to the head of household, that is, the person in whose name the home is owned or rented?

### 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.

READ 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

42  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.





## Appendix D (Continued)

<b>2 TYPE OF OCCUPANCY OF HOUSING UNIT</b>				
1 <input type="checkbox"/> YEAR-ROUND UNIT 2 <input type="checkbox"/> SEASONAL UNIT 3 <input type="checkbox"/> MIGRATORY UNIT			MARK ANSWER WHETHER HOUSING UNIT IS OCCUPIED OR VACANT -- SEE P. 11 OF INSTRUCTION BOOKLET FOR INTERVIEWERS.	
<b>3 RECORD OF VISITS TO HOUSING UNIT</b>				
Visit number	Time of day (include AM or PM)	Date	Day of Week	Result or Comments
<b>4 USE THIS SPACE FOR ADDITIONAL NOTES OR COMMENTS ABOUT VISITS TO THIS HOUSEHOLD. DESCRIBE FULLY IF REFUSAL OR OTHER NONINTERVIEW.</b>				
<b>5 NAME AND PHONE NUMBER OF HOUSEHOLDER (OR ONE OF HOUSEHOLDERS)</b>				
<u>Name</u>			<u>Phone number</u> Area Code (    )	
<b>6 INTERVIEWER'S NAME AND I.D. NUMBER</b>				
<u>Interviewer</u>			<u>I.D. number</u>	

GPO 682-900



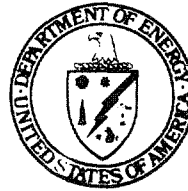
# Appendix D (Continued)

OMB No. 038-R0459 • EIA 457B

This survey is voluntary and authorized under the Federal Energy Administration Act of 1974 (Public Law 93-275). Information about specific households will be kept strictly confidential. The data will be summarized within large groupings for statistical purposes.

## Residential Energy Consumption Survey

Fall-Winter • 1981-1982



**U.S. Department of Energy**

**Energy Information Administration**

Location # _____	111-118
Housing Unit # _____	117-118



## Appendix D (Continued)

TIME INTERVIEW STARTED

1. In what year did your family move into this house (apartment)?

- 01  BEFORE 1940
- 02  1940-1949
- 03  1950-1959
- 04  1960-1964
- 05  1965-1969 121-122
- 06  1970-1974
- 07  1975-1979
- 08  1980
- 09  1981 -- ASK Q. 2
- 10  1982

IF "1981" OR "1982," ASK:

2. In which month did you move in?  
(SPECIFY MONTH AND ENTER LAST  
DIGIT OF YEAR.)

MONTH:  123-124

YEAR:

3. In what year was this house (building) built?  
Just your estimate.

- 01  BEFORE 1940
- 02  1940-1949
- 03  1950-1959
- 04  1960-1964
- 05  1965-1969
- 06  1970-1974 125-128
- 07  1975-1976
- 08  1977
- 09  1978
- 10  1979
- 11  1980
- 12  1981
- 13  1982



## Appendix D (Continued)

4. What material is mainly used on the outside walls of your (house/building)? (IF TWO MATERIALS ARE USED ABOUT THE SAME AMOUNT, MARK TWO BOXES.)
- |   |     |
|---|-----|
| <input type="checkbox"/> BRICK                                | 117 |
| <input type="checkbox"/> WOOD                                 | 118 |
| <input type="checkbox"/> CONCRETE                             | 119 |
| <input type="checkbox"/> STUCCO                               | 120 |
| <input type="checkbox"/> STONE                                | 121 |
| <input type="checkbox"/> ALUMINUM SIDING                      | 122 |
| <input type="checkbox"/> COMPOSITION (ASBESTOS SHINGLE, ETC.) | 123 |
| <input type="checkbox"/> GLASS                                | 124 |
| <input type="checkbox"/> OTHER (SPECIFY): _____               | 125 |

5. 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:  130-131

6. 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:  132

NONE

NUMBER OF HALF BATHROOMS:  133

NONE

### INTERVIEWER INSTRUCTIONS:

Q. 5 -- 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.



## Appendix D (Continued)

### HAND RESPONDENT EXHIBIT 7

7. What is the main heating equipment for your home?

- 01[] HOT WATER PIPES RUNNING THROUGH A SLAB FLOOR (RADIANT HEATING)
- 02[] STEAM OR HOT WATER SYSTEM WITH RADIATORS OR CONVECTORS
- 03[] CENTRAL WARM-AIR FURNACE WITH DUCTS TO INDIVIDUAL ROOMS (DO NOT COUNT HEAT PUMP HERE) -- ASK Q. 8
- 04[] HEAT PUMP
- 05[] BUILT-IN ELECTRIC UNITS (PERMANENTLY INSTALLED IN WALL, CEILING, OR BASEBOARD) 140-141
- 06[] FLOOR, WALL, OR PIPELESS FURNACE
- 07[] ROOM HEATER BURNING GAS, OIL, KEROSENE
- 08[] HEATING STOVE BURNING WOOD, COAL, COKE -- ASK Q. 9
- 09[] FIREPLACE(S)
- 10[] PORTABLE HEATER(S)
- 21[] OTHER (SPECIFY): \_\_\_\_\_
- 96[] DON'T KNOW
- 00[] NO HEATING EQUIPMENT USED -- SKIP TO Q. 23

IF "CENTRAL WARM AIR," ASK:

8. Is the warm air forced through the ducts by a fan? 142
- 1[] YES
  - 0[] NO
  - 6[] DON'T KNOW

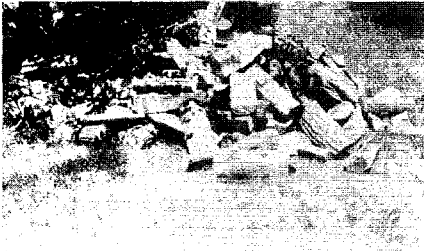
IF "HEATING STOVE BURNING WOOD, COAL, COKE," ASK:

9. Is the stove airtight? 143
- 1[] YES
  - 0[] NO
  - 6[] DON'T KNOW

TAKE BACK EXHIBIT 7

IF 2 OR MORE HOUSING UNITS IN BUILDING, ASK Q. 10. OTHERWISE, SKIP TO Q. 11.

10. Is your home heated by a central system for your building (or group of buildings) or is the main heating equipment for your living quarters only? 144
- 1[] CENTRAL SYSTEM FOR BUILDING(S)
  - 2[] MAIN HEATING EQUIPMENT FOR THESE LIVING QUARTERS ONLY
  - 6[] DON'T KNOW





# Appendix D (Continued)

## HAND RESPONDENT EXHIBIT 11/13

11. What is the main fuel used for heating this house (apartment)?

- 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

146-147

## TAKE BACK EXHIBIT 11/13

12. In November of 1980 was the main fuel used to heat this house (apartment) the same as it is now?

- 1[] YES -- SKIP TO Q. 14
- 2[] NO
- 6[] DON'T KNOW -- SKIP TO Q. 14
- 0[] NO FUEL USED -- SKIP TO Q. 14

147

IF "NO," ASK:

## HAND RESPONDENT EXHIBIT 11/13

13. What was the main fuel used to heat this house (apartment) in November of 1980?

- 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): \_\_\_\_\_

148-149

## TAKE BACK EXHIBIT 11/13

- 00[] NO FUEL USED
- 96[] DON'T KNOW



## Appendix D (Continued)

14. Do you have a thermostat, radiator valve, or other control to adjust the temperature in your (house/apartment) during the heating season?

1  YES  
0  NO -- SKIP TO Q. 18

150

IF "YES," ASK:

15. At what temperature do you usually keep your house (apartment) during the day in the wintertime when someone is at home? (SEE INSTRUCTION BELOW.)

DEGREES  
FAHRENHEIT

95  HEAT TURNED  
OFF

151-152

16. At what temperature do you usually keep your house (apartment) during the day in the wintertime when no one is at home? (SEE INSTRUCTION BELOW.)

DEGREES  
FAHRENHEIT

95  HEAT TURNED  
OFF

153-154

17. At what temperature do you usually keep your house (apartment) during sleeping hours in the wintertime? (SEE INSTRUCTION BELOW.)

DEGREES  
FAHRENHEIT

95  HEAT TURNED  
OFF

155-156

### INTERVIEWER INSTRUCTIONS:

Q. 15-17 -- 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 respondent doesn't know temperature, but does know thermostat setting, record thermostat setting. Otherwise, probe for best estimate.



# Appendix D (Continued)

## HAND RESPONDENT EXHIBIT 18

18. You have already mentioned your main heating equipment. Are any of these types of equipment used in your home in addition to your main equipment?
- 1  YES  
 0  NO -- TAKE BACK EXHIBIT 18; SKIP TO Q. 23

IF "YES," ASK:

19. What type(s) do you use? (IF MORE THAN ONE TYPE IS MENTIONED, MARK ONLY THE ONE USED MOST.)

- 01  HOT WATER PIPES RUNNING THROUGH A SLAB FLOOR (RADIANT HEATING)  
 02  STEAM OR HOT WATER SYSTEM WITH RADIATORS OR CONVECTORS  
 03  CENTRAL WARM-AIR FURNACE WITH DUCTS TO INDIVIDUAL ROOMS (DO NOT COUNT HEAT PUMP HERE) -- ASK Q. 20  
 04  HEAT PUMP  
 05  BUILT-IN ELECTRIC UNITS (PERMANENTLY INSTALLED IN WALL, CEILING, OR BASEBOARD)  
 06  FLOOR, WALL, OR PIPELESS FURNACE  
 07  ROOM HEATER BURNING GAS, OIL, KEROSENE  
 08  HEATING STOVE BURNING WOOD, COAL, COKE - ASK Q. 21  
 09  FIREPLACE(S)  
 10  PORTABLE HEATER(S)  
 21  OTHER (SPECIFY): \_\_\_\_\_  
 96  DON'T KNOW

IF "CENTRAL WARM AIR," ASK:

20. Is the warm air forced through the ducts by a fan?
- 1  YES  
 0  NO  
 6  DON'T KNOW

IF "HEATING STOVE BURNING WOOD, COAL, COKE," ASK:

21. Is the stove airtight?
- 1  YES  
 0  NO  
 6  DON'T KNOW

## TURN TO EXHIBIT 22

22. What fuel is used by this additional equipment?
- 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

TAKE BACK EXHIBIT 22





# Appendix D (Continued)

23. Has any wood been burned in your home in the past 12 months?

1  YES 164  
0  NO -- SKIP TO Q. 29

IF "YES," ASK:

HAND RESPONDENT EXHIBIT 24

24. Did your household burn less than a rack, or one rack or more? A rack is 16 in. x 4 ft. x 8 ft. or one-third of a cord.

0  LESS THAN ONE RACK -- TAKE BACK EXHIBIT 24; SKIP TO Q. 29 165  
1  ONE RACK OR MORE

IF "ONE RACK OR MORE," ASK:

25. About how many racks or cords of wood did you burn in the past 12 months? (PROBE FOR BEST ESTIMATE.)

NUMBER OF RACKS (16 in. x 4 ft. x 8 ft.)

OR 166-168

NUMBER OF CORDS (4 ft. x 4 ft. x 8 ft.):

DON'T KNOW

26. Did you purchase any wood to burn in your home in the last 12 months?

1  YES 169  
0  NO -- TAKE BACK EXHIBIT 24; SKIP TO Q. 29

27. On your household's most recent purchase of wood, how was the wood measured: by the rack, cord, or some other measure? (IF "TRUCKLOAD," PROBE FOR SIZE OF TRUCK).

1  RACK  
2  CORD 170  
5  OTHER (SPECIFY) \_\_\_\_\_

28. About what was the price per (rack/cord/other measure) on your household's most recent purchase of wood?

PRICE: \$ \_\_\_\_\_ 171-173

TAKE BACK EXHIBIT 24



## Appendix D (Continued)

### HAND RESPONDENT EXHIBIT 29/31

29. Which fuel is used most for heating water?

- 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): \_\_\_\_\_
- 174-175
- 00[] NO FUEL USED -- TAKE BACK EXHIBIT 29/31;
  - 96[] DON'T KNOW
- SKIP TO Q. 33

30. In addition to your main fuel, do you use any other fuel for heating water?

- 1[] YES
  - 0[] NO -- TAKE BACK EXHIBIT 29/31;
- 176
- SKIP TO INSTRUCTION FOR Q. 32

IF "YES," ASK:

31. 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): \_\_\_\_\_
- 177-178
- 96[] DON'T KNOW

TAKE BACK EXHIBIT 29/31

IF 2 OR MORE HOUSING UNITS IN BUILDING, ASK Q. 32. OTHERWISE, SKIP TO Q. 33.

32. Is your hot water supplied by a central system for your building (or group of buildings) or is the water heater for your living quarters only?

- 1[] CENTRAL SYSTEM FOR BUILDING(S)
  - 2[] FOR THESE LIVING QUARTERS ONLY
  - 6[] DON'T KNOW
- 179



# Appendix D (Continued)

33. Do you have air-conditioning equipment, either a central system or individual window or wall units? (MARK ALL THAT APPLY.)
- 209-210:02  
211
- YES, CENTRAL SYSTEM
- YES, INDIVIDUAL (WINDOW/WALL) UNITS -- SKIP TO Q. 36
- NO -- SKIP TO Q. 38

IF "CENTRAL SYSTEM" ON Q. 33, ASK:

34. Does the central air-conditioning system use gas from underground pipes, LPG, or electricity?
- 1 GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
- 2 LPG GAS (BOTTLED OR TANK GAS)
- 3 ELECTRICITY
- 6 DON'T KNOW
- 213

IF 2 OR MORE HOUSING UNITS IN BUILDING, ASK Q. 35. OTHERWISE SKIP TO Q. 36.

35. Is it a central air-conditioning system for your building (or group of buildings) or is the main air-conditioning equipment for your living quarters only?
- 1 CENTRAL SYSTEM FOR BUILDING
- 2 AIR-CONDITIONING IS FOR THESE LIVING QUARTERS ONLY
- 6 DON'T KNOW
- 214

36. 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:
- 95 ENTIRE HOUSE OR APARTMENT
- 215-216

HAND RESPONDENT EXHIBIT 37

37. 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
- 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): \_\_\_\_\_
- 217

TAKE BACK EXHIBIT 37



## Appendix D (Continued)

38. 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:

NONE -- SKIP TO Q. 45

### HAND RESPONDENT EXHIBIT 39

39. Please look at this exhibit of different kinds of doors. How many of each of these types of doors do you have?

Q. 39 NUMBER OF DOORS	Q. 40 NUMBER WITH STORM DOOR OR INSULATING GLASS	Q. 41 NUMBER STORM/ INSULATED DOORS PUT IN SINCE JANUARY 1, 1980	Q. 42	Q. 43	Q. 44
a. Sliding glass doors 220  <input type="checkbox"/> NONE	221  <input type="checkbox"/> NONE	222  <input type="checkbox"/> NONE	223-226 MONTH: _____ YEAR: 198__ <input type="checkbox"/> IN PROCESS	227-230 APPROXIMATE COST: \$ _____ <input type="checkbox"/> DON'T KNOW	1 <input type="checkbox"/> DOORS AND HAVING THEM PUT IN 2 <input type="checkbox"/> DOORS ONLY 5 <input type="checkbox"/> OTHER (SPECIFY): _____
b. Other doors to the outside 232  <input type="checkbox"/> NONE	233  <input type="checkbox"/> NONE	234  <input type="checkbox"/> NONE	235-238 MONTH: _____ YEAR: 198__ <input type="checkbox"/> IN PROCESS	239-242 APPROXIMATE COST: \$ _____ <input type="checkbox"/> DON'T KNOW	1 <input type="checkbox"/> DOORS AND HAVING THEM PUT IN 2 <input type="checkbox"/> DOORS ONLY 5 <input type="checkbox"/> OTHER (SPECIFY): _____

### TAKE BACK EXHIBIT 39

FOR EACH TYPE OF DOOR FOR WHICH ANSWER IS "ONE OR MORE," ASK:

40. (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:

41. How many of the(storm/insulated glass) doors were put in your home since January 1, 1980?

IF ONE OR MORE, ASK:

42. In what month and year did you get (it/them)?

43. Approximately what (did/will) the job cost you? (SEE INSTRUCTION BELOW.)

44. (Did you pay/Are you paying) both for the door(s) and having the door(s) put in, only for the door(s) themselves, or what?

### INTERVIEWER INSTRUCTIONS:

Q. 38-39 -- 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. 43 -- If the job included the cost of more than just this item, and if respondent is unable to break down the cost among the different types, note below what was included, and record the total cost.



## Appendix D (Continued)

45. 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. 45 NUMBER OF WINDOWS	Q. 46 NUMBER WITH STORM WINDOWS OR INSULATING GLASS	Q. 47 NUMBER STORM WINDOWS PUT IN SINCE JANUARY 1, 1980	Q. 48	Q. 49	Q. 50
244-245	246-247	248-249	250-253	254-257	258
<input type="checkbox"/> NONE	<input type="checkbox"/> NONE	<input type="checkbox"/> NONE	MONTH: _____ YEAR: 198 _____ <input type="checkbox"/> IN PROCESS	APPROXIMATE COST: \$ _____ .00 <input type="checkbox"/> DON'T KNOW	2 <input type="checkbox"/> WINDOWS AND HAVING THEM PUT IN 2 <input type="checkbox"/> WINDOWS ONLY 5 <input type="checkbox"/> OTHER (SPECIFY): _____

46. How many of the windows have storm windows or insulating glass? (SEE INSTRUCTIONS BELOW.)

IF ONE OR MORE WINDOWS WITH STORM WINDOWS OR INSULATING GLASS, ASK:

47. How many of the storm windows or windows with insulating glass were put in your home since January 1, 1980?

IF ONE OR MORE, ASK:

48. In what month and year were they put in?

49. Approximately what (did/will) the job cost you? (SEE INSTRUCTION BELOW.)

50. (Did you pay/Are you paying) for the windows and having them put in, only for the windows themselves, or what?

### INTERVIEWER INSTRUCTIONS:

Q. 45 -- 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. 46 -- Windows made of double glass and other types of insulating glass count the same as storm windows.

Q. 49 -- If the job included the cost of more than just this item, and if respondent is unable to break down the cost among the different types, note what was included below and record the total cost.



# Appendix D (Continued)

IF ONE-FAMILY HOUSE OR MOBILE HOME, ASK Q. 51 ff. IF 2 OR MORE UNITS IN BUILDING, SKIP TO Q. 69.

51. Do you have insulation in all, or some, or none of the outside walls of your home? 1 [ ] ALL  
2 [ ] SOME  
3 [ ] NONE  
4 [ ] DON'T KNOW
52. Do you have roof or ceiling insulation? 1 [ ] YES  
2 [ ] NO -- SKIP TO Q. 56  
3 [ ] DON'T KNOW -- SKIP TO Q. 56

IF "YES," ASK:

HAND RESPONDENT EXHIBIT 53

53. About how much of the roof or ceiling area is insulated? 0 [ ] NONE, VERY LITTLE (LESS THAN 5%)  
1 [ ] 1/4 (5 - 33%)  
2 [ ] 1/2 (34 - 66%)  
3 [ ] 3/4 (67 - 95%)  
4 [ ] ALL (96 - 100%)

TURN TO EXHIBIT 54

54. 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 3 [ ] DON'T KNOW	_____ INCHES [ ] DON'T KNOW	8-8-80
b. LOOSE PARTICLES/ LOOSE FILL	1 [ ] YES 0 [ ] NO 3 [ ] DON'T KNOW	_____ INCHES [ ] DON'T KNOW	8-8-80
c. FIRM FOAM/ FIRM PLASTIC	1 [ ] YES 0 [ ] NO 3 [ ] DON'T KNOW	_____ INCHES [ ] DON'T KNOW	8-8-80
d. SPRAYED-IN URETHANE FOAM	1 [ ] YES 0 [ ] NO 3 [ ] DON'T KNOW	_____ INCHES [ ] DON'T KNOW	8-8-80
e. OTHER (SPECIFY): _____ _____	1 [ ] YES 0 [ ] NO 3 [ ] DON'T KNOW	_____ INCHES [ ] DON'T KNOW	8-8-80

FOR EACH "YES," ASK:

55. About how many inches of (INSULATION TYPE) do you have in your roof or ceiling area? ↑

TAKE BACK EXHIBIT 54



## Appendix D (Continued)

CONTINUE IF ONE-FAMILY HOUSE OR MOBILE HOME. IF 2 OR MORE UNITS IN BUILDING, SKIP TO Q. 69.

### HAND RESPONDENT EXHIBIT 56

309-310:03

56. Does this house have a basement, an enclosed crawl space, a crawl space open to the outside, a concrete slab, or a combination of these?
- 1[] BASEMENT
  - 2[] CRAWL SPACE -- ENCLOSED
  - 3[] CRAWL SPACE -- OPEN TO THE OUTSIDE 311
  - 4[] CONCRETE SLAB -- SKIP TO Q. 59
  - 5[] COMBINATION (MARK ALL THAT APPLY.)
    - [] BASEMENT 312
    - [] CRAWL SPACE -- ENCLOSED 313
    - [] CRAWL SPACE -- OPEN TO THE OUTSIDE 314
    - [] CONCRETE SLAB 315

### TAKE BACK EXHIBIT 56

IF "BASEMENT," "CRAWL SPACE," OR "COMBINATION," ASK:

57. Is all, part, or none of the basement or crawl space heated? (SEE INSTRUCTION BELOW.)
- 1[] ALL
  - 2[] PART 316
  - 0[] NONE

IF "PART" OR "NONE" IS HEATED, ASK:

### HAND RESPONDENT EXHIBIT 58

58. 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%) 317
  - 3[] 3/4 (67 - 95%)
  - 4[] ALL (96 - 100%)
  - 5[] DON'T KNOW

### TAKE BACK EXHIBIT 58

### INTERVIEWER INSTRUCTIONS:

Q. 57 -- If respondent asks, a basement is considered heated if it is a comfortable place to work, read, study, play, etc., year-round.



## Appendix D (Continued)

CONTINUE IF ONE-FAMILY HOUSE OR MOBILE HOME. IF 2 OR MORE UNITS IN BUILDING, SKIP TO Q. 69.

### HAND RESPONDENT EXHIBIT 59

59. Please look at this list and tell me which items, if any, have been added or installed in your home since January 1, 1980. (SEE INSTRUCTION BELOW.)

Q. 59	Q. 60	Q. 61	Q. 62	Q. 63
a. Roof or ceiling insulation <input type="checkbox"/> YES 318 <input type="checkbox"/> NO <input type="checkbox"/> IN PROCESS	MONTH: _____ YEAR: 198____ <input type="checkbox"/> IN PROCESS 319-323	<input type="checkbox"/> BATT/BLANKET 323 <input type="checkbox"/> LOOSE PARTICLES/LOOSE FILL <input type="checkbox"/> FIRM FOAM/FIRM PLASTIC <input type="checkbox"/> SPRAYED-IN URETHANE FOAM <input type="checkbox"/> OTHER OR COMBINATION (SPECIFY): _____ <input type="checkbox"/> DON'T KNOW	APPROXIMATE COST: \$ _____ .00 <input type="checkbox"/> DON'T KNOW 324-327	<input type="checkbox"/> LABOR AND MATERIALS <input type="checkbox"/> MATERIALS ONLY <input type="checkbox"/> OTHER (SPECIFY): _____
b. Insulation in the outside walls <input type="checkbox"/> YES 329 <input type="checkbox"/> NO <input type="checkbox"/> IN PROCESS	MONTH: _____ YEAR: 198____ <input type="checkbox"/> IN PROCESS 330-333	<input type="checkbox"/> BATT/BLANKET 334 <input type="checkbox"/> LOOSE PARTICLES/LOOSE FILL <input type="checkbox"/> FIRM FOAM/FIRM PLASTIC <input type="checkbox"/> SPRAYED-IN URETHANE FOAM <input type="checkbox"/> OTHER OR COMBINATION (SPECIFY): _____ <input type="checkbox"/> DON'T KNOW	APPROXIMATE COST: \$ _____ .00 <input type="checkbox"/> DON'T KNOW 335-338	<input type="checkbox"/> LABOR AND MATERIALS <input type="checkbox"/> MATERIALS ONLY <input type="checkbox"/> OTHER (SPECIFY): _____
c. Insulation in the basement or crawl space below floor of house <input type="checkbox"/> YES 340 <input type="checkbox"/> NO <input type="checkbox"/> IN PROCESS	MONTH: _____ YEAR: 198____ <input type="checkbox"/> IN PROCESS 341-344	<input type="checkbox"/> BATT/BLANKET 345 <input type="checkbox"/> LOOSE PARTICLES/LOOSE FILL <input type="checkbox"/> FIRM FOAM/FIRM PLASTIC <input type="checkbox"/> SPRAYED-IN URETHANE FOAM <input type="checkbox"/> OTHER OR COMBINATION (SPECIFY): _____ <input type="checkbox"/> DON'T KNOW	APPROXIMATE COST: \$ _____ .00 <input type="checkbox"/> DON'T KNOW 346-349	<input type="checkbox"/> LABOR AND MATERIALS <input type="checkbox"/> MATERIALS ONLY <input type="checkbox"/> OTHER (SPECIFY): _____

### TAKE BACK EXHIBIT 59

FOR EACH "YES" OR "IN PROCESS" ANSWER, ASK:

60. In what month and year was the work completed? (SEE INSTRUCTION BELOW.)

### HAND RESPONDENT EXHIBIT 61

61. What type of insulation is it? (SEE INSTRUCTION BELOW.)

### TAKE BACK EXHIBIT 61

62. Approximately what (did/will) the job cost you? (SEE INSTRUCTION BELOW.)

63. (Did you pay/Are you paying) for labor and materials, only for materials, or what?

### INTERVIEWER INSTRUCTIONS:

Q. 59 -- Mark "Yes," "No," or "In Process," for each item. Count as "In Process" any work started but not yet completed. Do not count changes made before this household moved in.

Q. 60 -- If household has done item more than once, write down the most recent date.

Q. 61 -- If more than one type of insulation, mark one used most.

Q. 62 -- If the job included the cost of more than just this item, and if respondent is unable to break down the cost among the different types, note what was included below and record the total cost.





# Appendix D (Continued)

CONTINUE IF ONE-FAMILY HOUSE OR MOBILE HOME. IF 2 OR MORE UNITS IN BUILDING, SKIP TO Q. 69.

**HAND RESPONDENT EXHIBIT 64**

64. 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 January 1, 1980. (SEE INSTRUCTION BELOW.)

	Q. 64			Q. 65			
	YES	NO	IN PROCESS	MONTH	YEAR		
a. An automatic or clock thermostat	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	361-365
b. Adjustments to thermostat control (recalibration)	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	366-380
c. An additional thermostat (zoned your home)	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	381-385
d. Smaller nozzle or burner or smaller line on furnace	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	386-390
e. Flame retention head burner for furnace (fuel oil)	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	391-395
f. Automatic flue door (vent damper)	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	396-380
g. Electrical or mechanical furnace ignition system (spark ignition)	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	409-410:04
h. Insulation around heating ducts	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	411-415
i. Insulation around the hot water pipes	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	416-420
j. Insulation around the hot water heater	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	421-425
k. Meter that displays the cost of energy	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	426-430
l. Closeable shutters, plastic sheets, insulating drapes, reflective film	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	431-435
m. Caulking around any windows or doors to the outside	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	436-440
n. Weather stripping around any windows or doors to the outside	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	441-445
o. Heat pump	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	446-450
p. Wood-burning stove	2 <input type="checkbox"/>	0 <input type="checkbox"/>	2 <input type="checkbox"/>	_____	198	<input type="checkbox"/>	451-455
				_____	198	<input type="checkbox"/>	456-460

FOR EACH "YES," ASK:

65. In what month and year was the work completed?  
(SEE INSTRUCTION BELOW.)

TAKE BACK EXHIBIT 64

**INTERVIEWER INSTRUCTIONS:**

Q. 64 -- 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.

Q. 65 -- If household has done item more than once, write down the most recent date.



## Appendix D (Continued)

CONTINUE IF ONE-FAMILY HOUSE OR MOBILE HOME. IF 2 OR MORE UNITS IN BUILDING, SKIP TO Q. 69.

66. Do you have your own swimming pool?  
(SEE INSTRUCTION BELOW.)
- 1[] YES  
0[] NO -- SKIP TO Q. 69

IF "YES," ASK:

67. Do you use a heater to heat the water?
- 1[] YES  
0[] NO -- SKIP TO Q. 69

IF "YES," ASK:

HAND RESPONDENT EXHIBIT 68

68. What fuel is used for the heater?
- 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

TAKE BACK EXHIBIT 68

### INTERVIEWER INSTRUCTIONS:

Q. 66 -- Do NOT count ponds, hot tubs, jacuzzis, or children's wading pools as swimming pools.



# Appendix D (Continued)

**ASK EVERYONE**

69. Do you have a refrigerator in your home that you use regularly or occasionally? 1[] YES  
0[] NO -- SKIP TO Q. 73 465

IF "YES," ASK:

70. 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 466

ASK ABOUT EACH REFRIGERATOR -- FIRST ASK ABOUT REFRIGERATOR USED MOST: (SEE INSTRUCTION BELOW.)

71. Is it electric or gas?

REFRIGERATOR #1		REFRIGERATOR #2	
1[] ELECTRIC		1[] ELECTRIC	
2[] GAS	467	2[] GAS	468
1[]	468	1[]	470
2[]		2[]	
3[]		3[]	
4[]		4[]	

HAND RESPONDENT EXHIBIT 72

72. 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 . . . . .

TAKE BACK EXHIBIT 72

73. Do you have a home freezer, one that is separate from the refrigerator, that is presently in use? 1[] YES  
0[] NO -- SKIP TO Q. 77 471

IF "YES," ASK:

74. Do you have one freezer or more than one that is presently in use? (How many altogether?) 1[] ONE  
2[] TWO  
3[] THREE OR MORE 472

ASK ABOUT EACH FREEZER -- ASK FIRST ABOUT FREEZER USED MOST: (SEE INSTRUCTION BELOW.)

75. Is it electric or gas?

FREEZER #1		FREEZER #2	
1[] ELECTRIC		1[] ELECTRIC	
2[] GAS	473	2[] GAS	475
1[] FROST-FREE	474	1[] FROST-FREE	476
2[] MUST DEFROST		2[] MUST DEFROST	

76. Is it a frost-free freezer or must it be defrosted?

**INTERVIEWER INSTRUCTIONS:**

Q. 71-72 -- If respondent has more than two refrigerators, ask about two used most.

Q. 75-76 -- If respondent has more than two freezers, ask about two used most.



## Appendix D (Continued)

### HAND RESPONDENT EXHIBIT 77

509-510:01

77. 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
- 06[] COAL OR COKE
- 07[] WOOD
- 22[] OTHER (SPECIFY): \_\_\_\_\_
- 00[] NO COOKING DONE -- SKIP TO Q. 82

511-514

### TAKE BACK EXHIBIT 77

78. Does your household use an oven of any type, including microwave or convection ovens, for cooking at least occasionally?

- 1[] YES
- 0[] NO -- SKIP TO Q. 82

515

#### IF "YES," ASK:

79. Do you have one oven or more than one oven that you presently use? (How many altogether?) (SEE INSTRUCTION BELOW.)

- 1[] ONE
- 2[] TWO
- 3[] THREE OR MORE

514

ASK ABOUT EACH OVEN -- ASK FIRST ABOUT OVEN USED MOST: (SEE INSTRUCTION BELOW.)

80. Is your oven electric or gas?

#### IF "ELECTRIC," ASK:

81. Is it a microwave oven?

OVEN #1		OVEN #2	
1[] ELECTRIC		1[] ELECTRIC	
2[] GAS	515	2[] GAS	517
1[] YES	518	1[] YES	518
0[] NO		0[] NO	

### INTERVIEWER INSTRUCTIONS:

Q. 79 -- Do NOT count toaster ovens in count of ovens.

Q. 80 -- If respondent has more than two ovens, ask about two used most.



# Appendix D (Continued)

## HAND RESPONDENT EXHIBIT 82

82. Please look at this list and, as I read each item, tell me which of these you use here in your (home/apartment)?

ELECTRIC RANGE (STOVE-TOP OR BURNERS)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	519
GAS RANGE (STOVE-TOP OR BURNERS)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	520
OUTDOOR GAS GRILL	<input type="checkbox"/> YES	<input type="checkbox"/> NO	521
AUTOMATIC CLOTHES WASHER	<input type="checkbox"/> YES	<input type="checkbox"/> NO	522
WRINGER WASHING MACHINE (ELECTRIC)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	523
ELECTRIC DISHWASHER	<input type="checkbox"/> YES	<input type="checkbox"/> NO	524
ELECTRIC CLOTHES DRYER	<input type="checkbox"/> YES	<input type="checkbox"/> NO	525
GAS CLOTHES DRYER	<input type="checkbox"/> YES	<input type="checkbox"/> NO	526
OUTDOOR GAS LIGHT	<input type="checkbox"/> YES	<input type="checkbox"/> NO	527
ELECTRIC DEHUMIDIFIER	<input type="checkbox"/> YES	<input type="checkbox"/> NO	528
ELECTRIC HUMIDIFIER	<input type="checkbox"/> YES	<input type="checkbox"/> NO	529
EVAPORATIVE COOLER (SWAMP COOLER)	<input type="checkbox"/> YES	<input type="checkbox"/> NO	530
BLACK AND WHITE TELEVISION SET	<input type="checkbox"/> YES	<input type="checkbox"/> NO	531 NUMBER: <input type="text"/>
COLOR TELEVISION SET	<input type="checkbox"/> YES	<input type="checkbox"/> NO	532 NUMBER: <input type="text"/>

IF "YES" FOR BLACK AND WHITE TV SET, ASK:

83. How many black and white television sets do you use here in your home? \_\_\_\_\_

IF "YES" FOR COLOR TV SET, ASK:

84. How many color television sets do you use here in your home? \_\_\_\_\_

TAKE BACK EXHIBIT 82



# Appendix D (Continued)

Now some questions about cars.

85. How many members of your household can drive a car? NUMBER OF DRIVERS:  850-531  
[ ] NONE

**HAND RESPONDENT EXHIBIT 86**

86. 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  
0 [ ] NO -- TAKE BACK EXHIBIT 86; SKIP TO Q. 91 850-531

IF "YES," ASK:

87. How many do you have? NUMBER OF VEHICLES:  850-531

ASK ABOUT EACH VEHICLE.

88. Which type(s) do you have? (SEE INSTRUCTION BELOW.)

	VEHICLE NUMBER			
	1	2	3	4
STATION WAGON	01 [ ] 538-539	01 [ ] 546-547	02 [ ] 554-555	01 [ ] 562-563
AUTOMOBILE	02 [ ] 538-539	02 [ ] 547	02 [ ] 555	02 [ ] 563
JEEP OR SIMILAR VEHICLE	03 [ ]	03 [ ]	03 [ ]	03 [ ]
PASSENGER VAN OR MINIBUS	04 [ ]	04 [ ]	04 [ ]	04 [ ]
CARGO VAN	05 [ ]	05 [ ]	05 [ ]	05 [ ]
PICKUP TRUCK	06 [ ]	06 [ ]	06 [ ]	06 [ ]
OTHER TRUCK	07 [ ]	07 [ ]	07 [ ]	07 [ ]
MOTOR HOME	08 [ ]	08 [ ]	08 [ ]	08 [ ]
OTHER (SPECIFY):	21 [ ]	21 [ ]	21 [ ]	21 [ ]
	540-541	548-549	556-557	564-565
MAKE	542-543	550-551	558-559	562-563
MODEL YEAR	19 544-545	19 552-553	19 560-561	19 568-569
MODEL NAME				

**TAKE BACK EXHIBIT 86**

89. Please tell me the make and model year (of each one). ENTER LAST TWO DIGITS OF MODEL YEAR.)

90. What is the model name (of each one)? (SEE INSTRUCTION BELOW.)

**INTERVIEWER INSTRUCTIONS:**

Q. 86 -- "Regular use" means keeping the vehicle at home.

Q. 88 -- If household has more than four vehicles, mark answers for the four vehicles used most.

Q. 90 -- For pick-up trucks and vans, be sure to get a specific model name (examples: Chevrolet Luv, Ford Courier, GMC G1500, or Datsun 620, etc.) If respondent does not know model name, probe for size of truck (1/2 ton, 3/4 ton, etc.).



# Appendix D (Continued)

91. Now I have some questions about the people who live here. Please tell me who they are in relation to (HOUSEHOLDER). I also would like to know their ages on their last birthday. Please begin with (HOUSEHOLDER). (SEE INSTRUCTION BELOW.)

PERSON NUMBER	WHO IS RESPONDENT?	RELATIONSHIP TO HOUSEHOLDER	SEX		AGE
			FEMALE	MALE	
1		HOUSEHOLDER	1 <input type="checkbox"/>	2 <input type="checkbox"/>	
2			1 <input type="checkbox"/>	2 <input type="checkbox"/>	
3			1 <input type="checkbox"/>	2 <input type="checkbox"/>	
4			1 <input type="checkbox"/>	2 <input type="checkbox"/>	
5			1 <input type="checkbox"/>	2 <input type="checkbox"/>	
6			1 <input type="checkbox"/>	2 <input type="checkbox"/>	
7			1 <input type="checkbox"/>	2 <input type="checkbox"/>	
8			1 <input type="checkbox"/>	2 <input type="checkbox"/>	
9			1 <input type="checkbox"/>	2 <input type="checkbox"/>	
10			1 <input type="checkbox"/>	2 <input type="checkbox"/>	
11			1 <input type="checkbox"/>	2 <input type="checkbox"/>	
12			1 <input type="checkbox"/>	2 <input type="checkbox"/>	

809-610:08

612-616

621-626

631-636

641-646

651-656

661-666

671-676

709-710:07

711-716

721-726

731-736

741-746

751-756

I have listed (READ RELATIONSHIPS FROM Q. 91 ABOVE). Have I missed.....

FOR OFFICE USE ONLY:

767-758

- ... 92. Any babies or small children?  YES (ADD TO LISTING)  
 NO
- ... 93. Any lodgers, boarders, or persons in your employ who live here?  YES (ADD TO LISTING)  
 NO
- ... 94. Anyone who usually lives here but is away traveling or in the hospital? (SEE INSTRUCTION BELOW.)  YES (ADD TO LISTING)  
 NO
- ... 95. Anyone else staying here who does not have a regular residence elsewhere?  YES (ADD TO LISTING)  
 NO
- 96. Does another family share your home with you?  YES (SEE INSTRUCTION BELOW.)  
 NO

### INTERVIEWER INSTRUCTIONS:

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. 91 -- 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. 94 -- 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.
- Q. 96 -- If another family has a separate apartment that is defined by our rules as a separate housing unit, the additional housing unit should be listed on your housing unit address list for this location. See sampling instructions as to whether an additional interview should be completed. Go back over this interview, excluding that part of the house that is defined as a separate housing unit.

If the second family's space does not meet the definition of a separate housing unit, be sure that the members of this second family are included in the list of household members above.



## Appendix D (Continued)

INTERVIEWER: MARK ANSWER. ASK, IF NECESSARY.

HOUSEHOLDER'S  
MARITAL STATUS

97. 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

250

HAND RESPONDENT EXHIBIT 98

98. 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): \_\_\_\_\_

250

TAKE BACK EXHIBIT 98

99. Is (HOUSEHOLDER) of Spanish or Hispanic origin or descent?

- 1  YES
- 0  NO

251





# Appendix D (Continued)

I have just a few questions for background statistical purposes.

100. What is the highest grade (or year) (HOUSEHOLDER) attended in school? 00[] NEVER ATTENDED SCHOOL -- SKIP TO Q. 102
- |             |               |         |
|-------------|---------------|---------|
| 01[] FIRST  | 07[] SEVENTH  |         |
| 02[] SECOND | 08[] EIGHTH   |         |
| 03[] THIRD  | 09[] NINTH    |         |
| 04[] FOURTH | 10[] TENTH    |         |
| 05[] FIFTH  | 11[] ELEVENTH |         |
| 06[] SIXTH  | 12[] TWELFTH  | 762-763 |
- COLLEGE (ACADEMIC YEARS)
- |         |                 |  |
|---------|-----------------|--|
| 13[] C1 | 16[] C4         |  |
| 14[] C2 | 17[] C5         |  |
| 15[] C3 | 18[] C6 OR MORE |  |
101. Did (HOUSEHOLDER) finish that grade (or year)? 1[] YES  
0[] NO 764
102. At any time in 1980, did (HOUSEHOLDER) work for pay at a job or business? 1[] YES  
0[] NO -- SKIP TO Q. 104 765

IF "YES," ASK:

103. During 1980, how many weeks did (HOUSEHOLDER) work even for a few hours? Include paid vacation and sick leave as work.

NUMBER OF WEEKS:

766-767

IF LESS THAN 50 WEEKS ON Q. 103, OR "NO" ON Q. 102, ASK:

HAND RESPONDENT EXHIBIT 104/109

104. What was the main reason (HOUSEHOLDER) did not work (the remaining weeks) in 1980?

- 02 [] LOOKING FOR WORK (OR ON LAY-OFF)
- 02 [] ILL OR DISABLED AND UNABLE TO WORK
- 03 [] TAKING CARE OF FAMILY
- 04 [] GOING TO SCHOOL 768-769
- 05 [] UNABLE TO FIND WORK
- 06 [] IN ARMED FORCES
- 07 [] RETIRED
- 08 [] DOING SOMETHING ELSE

TAKE BACK EXHIBIT 104/109



# Appendix D (Continued)

IF HOUSEHOLDER HAS A SPOUSE/PARTNER IN THE HOUSEHOLD, ASK Q. 105 ff. OTHERWISE SKIP TO Q. 110.

105. What is the highest grade (or year) that (SPOUSE/PARTNER) attended in school? (SEE INSTRUCTION BELOW.) 809-810-06
- |  |               |
|--|---------------|
| 00[] NEVER ATTENDED SCHOOL -- SKIP TO Q. 107 |               |
| 01[] FIRST                                   | 07[] SEVENTH  |
| 02[] SECOND                                  | 08[] EIGHTH   |
| 03[] THIRD                                   | 09[] NINTH    |
| 04[] FOURTH                                  | 10[] TENTH    |
| 05[] FIFTH                                   | 11[] ELEVENTH |
| 06[] SIXTH                                   | 12[] TWELFTH  |
- 212-818
- COLLEGE (ACADEMIC YEARS)
- |         |                 |
|---------|-----------------|
| 13[] C1 | 16[] C4         |
| 14[] C2 | 17[] C5         |
| 15[] C3 | 18[] C6 OR MORE |
106. Did (SPOUSE/PARTNER) finish that grade (or year)? 813
- 1[] YES  
0[] NO
107. At any time in 1980, did (SPOUSE/PARTNER) work for pay at a job or business? 814
- 1[] YES  
0[] NO -- SKIP TO Q. 109

IF "YES," ASK:

108. During 1980, how many weeks did (SPOUSE/PARTNER) work even for a few hours? Include paid vacation and sick leave as work. 815-819
- NUMBER OF WEEKS:

IF LESS THAN 50 WEEKS ON Q. 108, OR "NO" ON Q. 107, ASK:

HAND RESPONDENT EXHIBIT 104/109

109. What was the main reason (SPOUSE/PARTNER) did not work (the remaining weeks) in 1980? 817-818
- |   |  |
|---|--|
| 01[] LOOKING FOR WORK (OR ON LAY-OFF)   |  |
| 02[] ILL OR DISABLED AND UNABLE TO WORK |  |
| 03[] TAKING CARE OF FAMILY              |  |
| 04[] GOING TO SCHOOL                    |  |
| 05[] UNABLE TO FIND WORK                |  |
| 06[] IN ARMED FORCES                    |  |
| 07[] RETIRED                            |  |
| 08[] DOING SOMETHING ELSE               |  |

TAKE BACK EXHIBIT 104/109

**INTERVIEWER INSTRUCTIONS:**

For questions on this page, where the term "SPOUSE/PARTNER" is inserted, use the appropriate designation -- you, your husband, wife, partner -- depending on who is the householder and whom you are interviewing.



## Appendix D (Continued)

### HAND RESPONDENT EXHIBIT 110

110. In 1980 did you or any member of your family living here receive any money from: (INTERVIEWER, READ EACH ITEM.)

- |   |                              |                             |     |
|---|------------------------------|-----------------------------|-----|
| A. Wages or salaries?   | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 819 |
| B. Self employment from business or farm?   | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 820 |
| C. Dividends, estates, trusts, interest on savings accounts or bonds?   | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 821 |
| D. Net rental income?   | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 822 |
| E. Government employee pensions?  | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 823 |
| F. Social Security or Railroad Retirement payments?   | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 824 |
| G. Private pensions or annuities?   | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 825 |
| H. Disability payments from Social Security or Railroad?  | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 826 |
| I. Aid to Families with Dependent Children (AFDC)?  | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 827 |
| J. Supplementary Security Income (SSI)?   | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 828 |
| K. Other public assistance? (SPECIFY): _____  | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 829 |
|   |                              |                             |     |
| L. Veterans' payments?  | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 830 |
| M. Unemployment compensation?   | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 831 |
| N. Workmen's compensation?  | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 832 |
| O. Alimony or child support?  | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 833 |
| P. Regular contributions from non-family members living in this household or from people outside the household? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 834 |
| Q. Any other source of income? (SPECIFY): _____   | <input type="checkbox"/> YES | <input type="checkbox"/> NO | 835 |

### TAKE BACK EXHIBIT 110

111. In 1980 did you or any member of your family living here receive food stamps?
- YES 836
- NO

### HAND RESPONDENT EXHIBIT 112

112. Since October 1980, did you or any member of your family living here receive any of the following forms of assistance from the government in paying your energy costs? (INTERVIEWER, READ EACH ITEM.)

- |   |     |
|---|-----|
| <input type="checkbox"/> Cash payment to household specifically to help pay for energy costs                                    | 837 |
| <input type="checkbox"/> Vouchers or coupons to give to utility companies or fuel dealers to help pay for energy costs          | 838 |
| <input type="checkbox"/> Government payments to your utility company or fuel dealer on your behalf to help pay for energy costs | 839 |
| <input type="checkbox"/> Other energy assistance: (SPECIFY) _____   | 840 |

### TAKE BACK EXHIBIT 112



# Appendix D (Continued)

## HAND RESPONDENT EXHIBIT 113

113. Now let's look at this list of income groups. Please tell me which group letter best describes the total combined income in 1980 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.)

841-841

### CIRCLE LETTER FOR INCOME GROUP

- |                        |                          |                          |
|------------------------|--------------------------|--------------------------|
| 01 A LOSS              | 09 I \$9,000 - \$9,999   | 17 Q \$20,000 - \$24,999 |
| 02 B \$0 - \$2,999     | 10 J \$10,000 - \$10,999 | 18 R \$25,000 - \$29,999 |
| 03 C \$3,000 - \$3,999 | 11 K \$11,000 - \$11,999 | 19 S \$30,000 - \$34,999 |
| 04 D \$4,000 - \$4,999 | 12 L \$12,000 - \$12,999 | 20 T \$35,000 - \$39,999 |
| 05 E \$5,000 - \$5,999 | 13 M \$13,000 - \$13,999 | 21 U \$40,000 - \$49,999 |
| 06 F \$6,000 - \$6,999 | 14 N \$14,000 - \$14,999 | 22 V \$50,000 - \$74,999 |
| 07 G \$7,000 - \$7,999 | 15 O \$15,000 - \$16,999 | 23 W \$75,000 OR OVER    |
| 08 H \$8,000 - \$8,999 | 16 P \$17,000 - \$19,999 | 96 [ ] DON'T KNOW        |
|                        |                          | 97 [ ] REFUSED           |

## TAKE BACK EXHIBIT 113

114. Do you or members of your household own your home or do you rent?

- 1 [ ] OWN (BUYING)  
 2 [ ] RENT -- SKIP TO Q. 116  
 3 [ ] OCCUPIED WITHOUT PAYMENT OF RENT -- SKIP TO Q. 117

842

### IF "OWN (BUYING)," ASK:

115. Is this house (apartment) part of a condominium or cooperative?

- 1 [ ] YES, CONDOMINIUM  
 2 [ ] YES, COOPERATIVE  
 0 [ ] NO

843

### IF "RENT," ASK:

116. What is the monthly rent of your house/apartment?

- \$ \_\_\_\_\_ .00 PER MONTH  
 [ ] OCCUPIED WITHOUT PAYMENT

844-844

IF RENT IS NOT PAID BY THE MONTH, NOTE IN THE SPACE BELOW THE TIME PERIOD COVERED AND THE AMOUNT PAID PER TIME PERIOD.

TIME PERIOD COVERED: \_\_\_\_\_  
 AMOUNT PAID PER TIME PERIOD: \$ \_\_\_\_\_ .00



# Appendix D (Continued)

## HAND RESPONDENT EXHIBIT 117

117. 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.

909-910:09

	USED	NOT USED	PAID BY HOUSEHOLD	INCLUDED IN RENT	OTHER (SPECIFY)	
<b>ELECTRICITY</b>						
a. FOR HOT WATER	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	911-912
b. FOR HEATING YOUR HOME	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	913-914
c. FOR AIR-CONDITIONING (CENTRAL OR WINDOW/WALL UNITS)	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	915-916
d. FOR COOKING	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	917-918
e. FOR LIGHTING AND OTHER APPLIANCES	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	919-920
<b>GAS FROM UNDERGROUND PIPES SERVING YOUR NEIGHBORHOOD</b>						
f. FOR HOT WATER	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	921-922
g. FOR HEATING YOUR HOME	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	923-924
h. FOR CENTRAL AIR-CONDITIONING	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	925-926
i. FOR COOKING	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	927-928
j. FOR OTHER APPLIANCES (INCLUDE OUTSIDE GAS LIGHT HERE)	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	929-930
<b>LPG GAS (BOTTLED OR TANK GAS)</b>						
k. FOR HOT WATER	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	931-932
l. FOR HEATING YOUR HOME	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	933-934
m. FOR CENTRAL AIR-CONDITIONING	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	935-936
n. FOR COOKING INSIDE HOME	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	937-938
o. FOR COOKING ON OUTDOOR GRILL	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	939-940
p. FOR OTHER APPLIANCES (INCLUDE OUTSIDE GAS LIGHT HERE)	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	941-942
<b>FUEL OIL OR KEROSENE</b>						
q. FOR HOT WATER	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	943-944
r. FOR HEATING YOUR HOME	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	945-946
s. FOR COOKING	1 <input type="checkbox"/>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	5 <input type="checkbox"/>	947-948

FOR EACH USE OF EACH FUEL, ASK:

118. Is that paid for by your household, included in your rent, or do you get it some other way? ↑

TAKE BACK EXHIBIT 117

IF UNDERGROUND GAS IS NOT USED, ASK Q. 119. OTHERWISE, SKIP TO INSTRUCTION FOR Q. 120.

119. Is gas from underground pipes available in this neighborhood? 2  YES  
0  NO  
6  DON'T KNOW

949

IF ALL FUEL BILLS ARE INCLUDED IN RENT, SKIP TO Q. 136.



## Appendix D (Continued)

IF HOUSEHOLD USES AND PAYS FOR LPG GAS (SEE QUESTIONS 117-118, PARTS k-p), ASK Q. 120 ff. OTHERWISE, SKIP TO INSTRUCTION FOR Q. 123.

120. About how many deliveries of LPG does your household usually get in a year? NUMBER OF DELIVERIES:  089-00
- 94  CASH AND CARRY, PICK UP AT STORE
- 95  LIVED HERE LESS THAN 1 YEAR
121. 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 089
- 2  MORE THAN ONE COMPANY
- IF "MORE THAN ONE COMPANY," ASK:
122. How many different companies? 2  TWO
- 3  THREE 089
- 4  FOUR OR MORE

IF HOUSEHOLD USES AND PAYS FOR FUEL OIL OR KEROSENE (SEE QUESTIONS 117-118, PARTS q-s), ASK Q. 123 ff. OTHERWISE, SKIP TO INSTRUCTION FOR Q. 126.

123. About how many deliveries of fuel oil/kerosene does your household usually get in a year? NUMBER OF DELIVERIES:  089-00
- 95  LIVED HERE LESS THAN 1 YEAR
124. Did you buy fuel oil/kerosene for this house (apartment) in the past 12 months from one company or from more than one company? 1  ONE COMPANY 089
- 2  MORE THAN ONE COMPANY
- IF "MORE THAN ONE," ASK:
125. How many different companies? 2  TWO
- 3  THREE 089
- 4  FOUR OR MORE



## Appendix D (Continued)

IF HOUSEHOLD USES AND PAYS FOR ELECTRICITY, GAS (FROM UNDERGROUND PIPES OR LPG), OR FUEL OIL/ KEROSENE IN Q. 118, ASK Q. 126 ff. OTHERWISE, SKIP TO INSTRUCTION FOR Q. 136.

### HAND RESPONDENT EXHIBIT 126

126. Do any of your household electric, gas, fuel oil, or kerosene bills include charges for 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 958  
0 [ ] NO -- TAKE BACK EXHIBIT 126  
SKIP TO INSTRUCTION FOR Q. 132. 960

#### IF "YES," ASK:

127. Which fuel bills include charges for fuel used for purposes other than your own living quarters? (MARK AS MANY AS APPLY.)
- [ ] ELECTRICITY 959  
[ ] GAS FROM UNDERGROUND PIPES 960  
[ ] LPG GAS (BOTTLED OR TANK GAS) 961  
[ ] FUEL OIL OR KEROSENE 962

#### TURN TO EXHIBIT 128-131

#### IF "ELECTRICITY" ON Q. 127, ASK:

128. 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%) 963  
2 [ ] 1/2 (34 - 66%)  
3 [ ] 3/4 (67 - 95%)

#### IF "GAS FROM UNDERGROUND PIPES" ON Q. 127, ASK:

129. 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%) 964  
3 [ ] 3/4 (67 - 95%)

#### IF "LPG GAS" ON Q. 127, ASK:

130. 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%) 965  
3 [ ] 3/4 (67 - 95%)

#### IF "FUEL OIL OR KEROSENE" ON Q. 127, ASK:

131. About how much of your household's fuel oil/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%) 966  
3 [ ] 3/4 (67 - 95%)

#### TAKE BACK EXHIBIT 128-131



## Appendix D (Continued)

CONTINUE IF ANY ELECTRIC, GAS (FROM UNDERGROUND PIPES OR LPG), OR FUEL OIL/KEROSENE BILLS ARE PAID BY HOUSEHOLD. OTHERWISE, SKIP TO INSTRUCTION FOR Q. 136.

132. 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 January 1981 through April 1985.

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 JANUARY 1, 1981, FILL IN ADDITIONAL COMPANY NAMES ON OTHER SIDE OF FORM. PLEASE PRINT.

1  AUTHORIZATION FORM SIGNED

0  AUTHORIZATION FORM NOT SIGNED -- INTERVIEWER, EXPLAIN BELOW:

367

IF AUTHORIZATION FORM IS SIGNED, ASK Q. 133 ff. OTHERWISE, SKIP TO INSTRUCTION FOR Q. 136.

133. Do your fuel bills come addressed to (LAST NAME OF SIGNATURE ON AUTHORIZATION FORM), or are they in another name?

1  SAME AS LAST NAME -- SKIP TO INSTRUCTION FOR Q. 135

2  ANOTHER NAME

368

IF BILL IS IN ANOTHER NAME, ASK:

134. What is that name and address:

BILLING NAME: \_\_\_\_\_

STREET ADDRESS: \_\_\_\_\_

CITY AND STATE: \_\_\_\_\_

ZIP CODE: \_\_\_\_\_

IF HOUSEHOLD SIGNED THE AUTHORIZATION FORM, ASK Q. 135. OTHERWISE, SKIP TO INSTRUCTION FOR Q. 136.

135. 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: \_\_\_\_\_

NOT AVAILABLE/REFUSED

379

GAS (FROM UNDERGROUND PIPES) -- CUSTOMER NUMBER: \_\_\_\_\_

NOT AVAILABLE/REFUSED

380





# Appendix D (Continued)

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## U.S. DEPARTMENT OF ENERGY SURVEY

Authorization Form for  
Residential Energy Consumption Survey

I hereby give permission to the company (companies) below to provide information to Response Analysis Corporation (or other designee of the U.S. Department of Energy) for confidential use in connection with their survey for the U.S. Department of Energy.

This authorization covers use of fuels (electricity, natural gas or LPG, fuel oil or kerosene) by my household from January 1, 1981 through April 30, 1985, including:

- 1) the total amount of fuels used by my household.
- 2) the total price charged for fuels by my household.

Companies are authorized to provide this information by monthly periods or by delivery date, whichever applies.

A photocopy of this authorization may be accepted with the same authority as the original.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Remove Form Carefully At Perforation

PLEASE PRINT

YOUR NAME		
ADDRESS	APT. NO.	
CITY OR POST OFFICE	STATE	ZIP CODE
TELEPHONE	NUMBER:	
AREA CODE:	NUMBER:	

PLEASE COMPLETE ONE BLOCK BELOW FOR EACH FUEL USED BY YOUR HOUSEHOLD  
(IF MORE THAN ONE SUPPLIER OF A PARTICULAR FUEL USE THE OTHER SIDE OF THIS SHEET)

ELECTRICITY →

PRINT FULL NAME OF ELECTRIC COMPANY
LOCATION OF COMPANY (IF KNOWN) - CITY AND STATE
TELEPHONE
AREA CODE: _____ NUMBER: _____

GAS →  
from underground pipes  
or LPG (bottled or tank gas)

PRINT FULL NAME OF GAS COMPANY
LOCATION OF COMPANY (IF KNOWN) - CITY AND STATE
TELEPHONE
AREA CODE: _____ NUMBER: _____

FUEL OIL →  
or KEROSENE

PRINT FULL NAME OF OIL COMPANY
LOCATION OF COMPANY (IF KNOWN) - CITY AND STATE
TELEPHONE
AREA CODE: _____ NUMBER: _____



## Appendix D (Continued)

GAS  
LPG (bottled  
or tank gas)

### SECOND GAS COMPANY

PRINT FULL NAME OF GAS COMPANY

LOCATION OF COMPANY (IF KNOWN) - CITY AND STATE

TELEPHONE  
AREA CODE: \_\_\_\_\_ NUMBER: \_\_\_\_\_

### THIRD GAS COMPANY

PRINT FULL NAME OF GAS COMPANY

LOCATION OF COMPANY (IF KNOWN) - CITY AND STATE

TELEPHONE  
AREA CODE: \_\_\_\_\_ NUMBER: \_\_\_\_\_

FUEL OIL  
or KEROSENE

### SECOND FUEL OIL/KEROSENE COMPANY

PRINT FULL NAME OF OIL COMPANY

LOCATION OF COMPANY (IF KNOWN) - CITY AND STATE

TELEPHONE  
AREA CODE: \_\_\_\_\_ NUMBER: \_\_\_\_\_

### THIRD FUEL OIL/KEROSENE COMPANY

PRINT FULL NAME OF OIL COMPANY

LOCATION OF COMPANY (IF KNOWN) - CITY AND STATE

TELEPHONE  
AREA CODE: \_\_\_\_\_ NUMBER: \_\_\_\_\_



## Appendix D (Continued)

IF HOUSEHOLD HAS ONE OR MORE FUELS "INCLUDED IN RENT" OR "OTHER" (SEE Q. 118), ASK Q. 136. OTHERWISE, SKIP TO Q. 137.

136. 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)?

NAME: \_\_\_\_\_

TELEPHONE NUMBER: (AREA CODE: \_\_\_\_\_) \_\_\_\_\_

STREET ADDRESS: \_\_\_\_\_

CITY OR TOWN/STATE/ZIP CODE: \_\_\_\_\_

971

ASK EVERYONE

137. 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: \_\_\_\_\_



## Appendix D (Continued)

138. 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). (SEE INSTRUCTION BELOW.)

1009-1070: 0

INDICATE WHETHER THE MEASUREMENT IS DONE  
INSIDE OR OUTSIDE THE HOME.

1  INSIDE

2  OUTSIDE

5  OTHER (PLEASE SPECIFY): \_\_\_\_\_

139. Are any of the areas measured not heated during most of the heating season?

1  YES -- INDICATE UNHEATED AREA(S) ON THE DIAGRAM WITH LINES LIKE THIS (/////).

0  NO

INTERVIEWER OBSERVATION:

140. MARK TYPE OF HOUSING UNIT:

1  MOBILE HOME OR TRAILER

2  ONE-FAMILY HOUSE

1  ONE STORY

2  TWO STORY

3  THREE STORY

4  SPLIT LEVEL

5  OTHER (SPECIFY): \_\_\_\_\_

IF ONE-FAMILY HOUSE,  
MARK STYLE

3  APARTMENT BUILDING OR OTHER STRUCTURE WITH TWO OR MORE UNITS

### INTERVIEWER INSTRUCTIONS:

Q. 138 -- The general rule for this question is to include measurements for all parts of the housing unit enclosed from the weather. Include basements that are enclosed from the weather, whether or not there is finished space, and attached garages that are enclosed from the weather. Include attics only if there is some heated or finished space.

Do not include: Crawl spaces, sheds, garages, carports, or porches that are open to the weather or detached from the house; attics that do not have finished or heated space.

Note any measurement problems on page 37. Use the back cover for rough sketches.

FOR OFFICE USE ONLY

Q. 138	Q. 139	Q. 140 Type	Q. 140 Style	Control	LQT
1011	1012	1013	1014	1015	1016-1018



# Appendix D (Continued)

RECORD MEASUREMENTS ON DIAGRAM TO NEAREST FOOT

RECTANGULAR SHAPE

OR

DIAGRAM OTHER SHAPES

Basement 1 <input type="checkbox"/> Full      2 <input type="checkbox"/> Half Basement	

First story 1 <input type="checkbox"/> Full story    2 <input type="checkbox"/> Half story	

DIAGRAM SECOND AND THIRD STORY ON NEXT PAGE.

FOR OFFICE USE ONLY

	Flr Codes				Unit A			Unit B			Unit C			Unit D			# of Units
	1019	20	21	22	23-24	25-26	27	28-29	30-31	32	33-34	35-36	37	38-39	40-41	42	
B																	
1	1043	44	45	46	47-48	49-50	51	52-53	54-55	56	57-58	59-60	61	62-63	64-65	66	



## Appendix D (Continued)

RECORD MEASUREMENTS ON DIAGRAM TO NEAREST FOOT

RECTANGULAR SHAPE

OR

DIAGRAM OTHER SHAPES

Second story  
 Full story     Half story

Third story  
 Full story     Half story

FOR OFFICE USE ONLY  
 1109-1110:11

	Flr Codes				Unit A				Unit B				Unit C				Unit D				# of Units
	1111	12	13	14	15-16	17-18	19	20-21	22-23	24	25-26	27-28	29	30-31	32-33	34					
2																					
3																					

1209-1210:12

	Heated	Unheated	DK Htd/Unhtd	TOTALS		
	H	UH	DK	H	UH	DK
	1211-1215	1216-1220	1221-1225	26	27	28
TOTAL						



## Appendix D (Continued)

### INTERVIEWER REPORT ON MEASUREMENT OF YEAR-ROUND LIVING SPACE

A. What problems, if any, did you have in measuring this house/apartment?

B. What effect, if any, did these problems have on the accuracy of your measurement?

TIME INTERVIEW COMPLETED: _____	LENGTH OF INTERVIEW: _____	MINUTES	1229-	
INTERVIEWER'S SIGNATURE: _____			DATE: _____	1231
INTERVIEWER'S I.D. #: _____				1232-
				1235
				1236-
				1240



# Appendix D (Continued)



U.S. DEPARTMENT OF ENERGY SURVEY

OMB No. 038-R0457  
EIA-457E F3153

Conducted by  
RESPONSE ANALYSIS CORPORATION  
P.O. Box 158, Princeton, New Jersey 08540  
Mandatory under Public Law 93-275 and 94-385

HOUSEHOLD:

If the customer account number is not shown, please enter it.

If you have any questions please call collect to Ms. Luci Raam at (609) 921-3333.

Customer Account Number for Household: \_\_\_\_\_

Information about specific households will be kept strictly confidential. The data will be summarized within large groupings for statistical purposes.

ELECTRICITY USAGE FROM MARCH 1, 1981 TO THE PRESENT							
Time Period	Consumption Period		Number of kWh Used	(Circle One) kWh are:			Total Dollar <sup>m</sup> Amount
	Beginning Date	Ending Date		A - Actual	E - Estimates	R - Read by Customer	
1				A	E	R	
2				A	E	R	
3				A	E	R	
4				A	E	R	
5				A	E	R	
6				A	E	R	
7				A	E	R	
8				A	E	R	
9				A	E	R	
10				A	E	R	
11				A	E	R	
12				A	E	R	
13				A	E	R	
14				A	E	R	
15				A	E	R	
16				A	E	R	
17				A	E	R	
18				A	E	R	

\*Please include state and local taxes. Exclude merchandise, repair, and service charges. If the household is on the budget plan, do not provide the budgeted bill; provide instead the dollar amount that is the cost of the actual consumption in the period.

Form completed by: \_\_\_\_\_ (Name) \_\_\_\_\_ (Telephone Number) \_\_\_\_\_ (Date)





# Appendix D (Continued)



U.S. DEPARTMENT OF ENERGY SURVEY  
 Conducted by  
 RESPONSE ANALYSIS CORPORATION  
 P.O. Box 158, Princeton, New Jersey 08540  
 Mandatory under Public Law 93-275 and 94-385

OMB No. 038-R0457  
 EIA-457F F3154

HOUSEHOLD:

If the customer account number is not shown, please enter it.

If you have any questions please call collect to Ms. Luci Raam at (609) 921-3333.

Customer Account Number for Household: \_\_\_\_\_

Information about specific households will be kept strictly confidential. The data will be summarized within large groupings for statistical purposes.

UTILITY GAS USAGE FROM MARCH 1, 1981 TO THE PRESENT							
Time Period	Consumption Period		Quantity Used	(Circle One) Quantities are:			Total Dollar* Amount
	Beginning Date	Ending Date		A - Actual	E - Estimated	R - Read by Customer	
1				A	E	R	
2				A	E	R	
3				A	E	R	
4				A	E	R	
5				A	E	R	
6				A	E	R	
7				A	E	R	
8				A	E	R	
9				A	E	R	
10				A	E	R	
11				A	E	R	
12				A	E	R	
13				A	E	R	
14				A	E	R	
15				A	E	R	
16				A	E	R	
17				A	E	R	
18				A	E	R	

\*The quantity used is expressed in terms of: (Mark one)

- Therms
- Cubic Feet
- Hundreds of Cubic Feet (CCF)
- Thousands of Cubic Feet (MCF)
- Other (Please specify): \_\_\_\_\_

\*\*Please include state and local taxes. Exclude merchandise, repairs, and service charges. If the household is on the budget plan, do not provide the budgeted bill; provide instead the dollar amount that is the cost of the actual consumption in the period.

Form completed by \_\_\_\_\_ (Name) \_\_\_\_\_ (Telephone Number) \_\_\_\_\_ (Date)



## Appendix D (Continued)



OMB No. 038-R0457  
EIA-457G F3151-1  
FIRST YEAR DATA

### U.S. DEPARTMENT OF ENERGY 1981 - 1982 RESIDENTIAL ENERGY CONSUMPTION SURVEY

Conducted by  
RESPONSE ANALYSIS CORPORATION  
Research Park, Route 206  
P. O. Box 158  
Princeton, New Jersey 08540

FUEL OIL OR KEROSENE  
HOUSEHOLD

These data will be combined with similar data throughout the country to show the use of fuel oil or kerosene in U.S. homes.

This research is being conducted by Response Analysis Corporation under U.S. Department of Energy Contract Number DE-AC01-E110085. This survey is mandatory as authorized by the Federal Energy Administration Act of 1974 (Public Law 93-275) as amended by the Energy Conservation and Production Act (Public Law 94-385).

Information about specific households will be kept strictly confidential. The data will be summarized within large groupings for statistical purposes.



# Appendix D (Continued)

FIRST YEAR DATE:

HOUSEHOLD:

If you have any questions, please call collect to Luci Raun at (609) 921-3333.

### FUEL OIL AND KEROSENE USAGE

Please provide information on all deliveries to this household from January 1, 1981 to the present date. If information is available only for a shorter period, just report deliveries for that shorter period.

Del. #	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
	Date of Delivery	Fuel Sold Was: Fuel oil #1 (1) Fuel oil #2 (2) Kerosene (K) Other (O) (Circle one)	Gallons Delivered	Price per Gallon	Total Dollar Amount*	Was tank completely filled: Yes No Don't Know (DK) (Circle one)
1		1 2 K O				YES NO DK
2		1 2 K O				YES NO DK
3		1 2 K O				YES NO DK
4		1 2 K O				YES NO DK
5		1 2 K O				YES NO DK
6		1 2 K O				YES NO DK
7		1 2 K O				YES NO DK
8		1 2 K O				YES NO DK
9		1 2 K O				YES NO DK
10		1 2 K O				YES NO DK
11		1 2 K O				YES NO DK
12		1 2 K O				YES NO DK
13		1 2 K O				YES NO DK
14		1 2 K O				YES NO DK
15		1 2 K O				YES NO DK
16		1 2 K O				YES NO DK
17		1 2 K O				YES NO DK
18		1 2 K O				YES NO DK

PLEASE CONTINUE ON PAGE 4 IF NECESSARY.

\*Please include state and local sales taxes, where applicable. Exclude merchandise, repairs, or service charges.



## Appendix D (Continued)

### FUEL OIL AND KEROSENE

1. If "Other" has been circled for type of fuel in Column 2 (page 2 or page 4), please specify what fuel was sold: \_\_\_\_\_  
 NOT APPLICABLE
2. What is the capacity of this household's storage tank? CAPACITY: \_\_\_\_\_ GALLONS
3. Was this household your customer as of January 1, 1981?  
 YES       NO  
    ↓ IF "NO," approximately when did this household become a customer of your company?  
    APPROXIMATE DATE: \_\_\_\_\_  
     DON'T KNOW  
     NEVER A CUSTOMER
4. Is this household presently your customer?  
 YES       NO  
    ↓ IF "NO," approximately when did this household stop being a customer of your company?  
    APPROXIMATE DATE: \_\_\_\_\_  
     DON'T KNOW  
     NEVER A CUSTOMER
5. The information presented here is from:  
 COMPANY RECORDS  
 AN ESTIMATE MADE BY A COMPANY REPRESENTATIVE  
 INFORMATION SECURED FROM THE CUSTOMER
6. This information has been supplied by:

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Company)

\_\_\_\_\_  
(Telephone)

\_\_\_\_\_  
(Date)



# Appendix D (Continued)

## FUEL, OIL AND KEROSENE

Del. #	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
	Date of Delivery	Fuel Sold Was: Fuel oil #1 (1) Fuel oil #2 (2) Kerosene (K) Other (O) (Circle one)	Gallons Delivered	Price per Gallon	Total Dollar Amount*	Was tank completely filled? Yes No Don't Know (DK) (Circle one)
19		1 2 K O				YES NO DK
20		1 2 K O				YES NO DK
21		1 2 K O				YES NO DK
22		1 2 K O				YES NO DK
23		1 2 K O				YES NO DK
24		1 2 K O				YES NO DK
25		1 2 K O				YES NO DK
26		1 2 K O				YES NO DK
27		1 2 K O				YES NO DK
28		1 2 K O				YES NO DK
29		1 2 K O				YES NO DK
30		1 2 K O				YES NO DK

\*Please include state and local sales taxes, where applicable. Exclude merchandise, repairs, or service charges.

PLEASE USE THIS SPACE FOR ANY ADDITIONAL NOTES THAT YOU WISH TO MAKE TO EXPLAIN ENTRIES ON THIS FORM.

PLEASE CHECK THAT THE QUESTIONS ON PAGE THREE HAVE BEEN ANSWERED.



## Appendix D (Continued)



OMB 038-R0457  
EIA-457H F3152-1

### U.S. DEPARTMENT OF ENERGY 1981 - 1982 RESIDENTIAL ENERGY CONSUMPTION SURVEY

Conducted by  
RESPONSE ANALYSIS CORPORATION  
Research Park, Route 206  
P. O. Box 158  
Princeton, New Jersey 08540

LIQUEFIED PETROLEUM GAS (LP-GAS)

HOUSEHOLD

These data will be combined with similar data throughout the country to show the use of LP-Gas in U.S. homes.

This research is being conducted by Response Analysis Corporation under U.S. Department of Energy Contract Number DE-AC01-E110085. This survey is mandatory as authorized by the Federal Energy Administration Act of 1974 (Public Law 93-275), as amended by the Energy Conservation and Production Act (Public Law 94-385).

Information about specific buildings will be kept strictly confidential. The data will be summarized within large groupings for statistical purposes.



# Appendix D (Continued)

HOUSEHOLD:

If you have any questions, please call collect to Luci Raam at (609) 921-3333.

## LIQUEFIED PETROLEUM GAS USAGE

Please provide information on all deliveries to this household from January 1, 1981 to the present date. If information is available only for a shorter period, just report deliveries for that shorter period.

Del. #	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
	Date of Delivery	Fuel Sold Was: Propane P Butane B Other O (Circle one)	Quantity Delivered	Price per Unit	Total Dollar Amount*	Was tank/cylinder completely filled? Yes No Don't Know (DK) (Circle one)
1		P B O				YES NO DK
2		P B O				YES NO DK
3		P B O				YES NO DK
4		P B O				YES NO DK
5		P B O				YES NO DK
6		P B O				YES NO DK
7		P B O				YES NO DK
8		P B O				YES NO DK
9		P B O				YES NO DK
10		P B O				YES NO DK
11		P B O				YES NO DK
12		P B O				YES NO DK
13		P B O				YES NO DK
14		P B O				YES NO DK
15		P B O				YES NO DK
16		P B O				YES NO DK
17		P B O				YES NO DK
18		P B O				YES NO DK

PLEASE CONTINUE ON PAGE 4 IF NECESSARY.

\*Please include state and local taxes, where applicable. Exclude merchandise, repairs, or service charges.



## Appendix D (Continued)

### LIQUEFIED PETROLEUM GAS (LPG)

1. If "Other" has been circled for type of fuel in Column 2 (page 2 or page 4), please specify what fuel was sold? \_\_\_\_\_  
 NOT APPLICABLE
  
2. Please mark unit of measure for deliveries reported on page 2.  
 POUNDS                       CUBIC METERS  
 GALLONS                       DECITHERMS  
 CUBIC FEET                       OTHER (Please specify): \_\_\_\_\_
  
3. What is the capacity of this household's storage tank(s)?  
Capacity is \_\_\_\_\_ and is measured  
in number of:  
 POUNDS  
 GALLONS  
 OTHER UNIT (Please specify): \_\_\_\_\_
  
4. Were you supplying this household on January 1, 1981?  
 YES                       NO  
IF "NO," approximately when did this household  
become a customer of your company?  
APPROXIMATE DATE \_\_\_\_\_  
 DON'T KNOW  
 NEVER A CUSTOMER
  
5. Is this household presently your customer?  
 YES                       NO  
IF "NO," approximately when did this household  
stop being a customer of your company?  
APPROXIMATE DATE \_\_\_\_\_  
 DON'T KNOW  
 NEVER A CUSTOMER
  
6. The information reported here is from:  
 COMPANY RECORDS  
 AN ESTIMATE MADE BY A COMPANY  
REPRESENTATIVE  
 INFORMATION SECURED FROM THE  
CUSTOMER
  
7. This information has been supplied by:

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Company)

\_\_\_\_\_  
(Telephone)

\_\_\_\_\_  
(Date)





# Appendix D (Continued)

## LIQUEFIED PETROLEUM GAS (LPG)

Del. #	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
	Date of Delivery	Fuel Sold Was: Propane P Butane B Other O (Circle one)	Quantity Delivered	Price per Unit	Total Dollar Amount*	Was tank/cylinder completely filled? Yes No Don't know (DK) (Circle one)
19		P B O				YES NO DK
20		P B O				YES NO DK
21		P B O				YES NO DK
22		P B O				YES NO DK
23		P B O				YES NO DK
24		P B O				YES NO DK
25		P B O				YES NO DK
26		P B O				YES NO DK
27		P B O				YES NO DK
28		P B O				YES NO DK
29		P B O				YES NO DK
30		P B O				YES NO DK

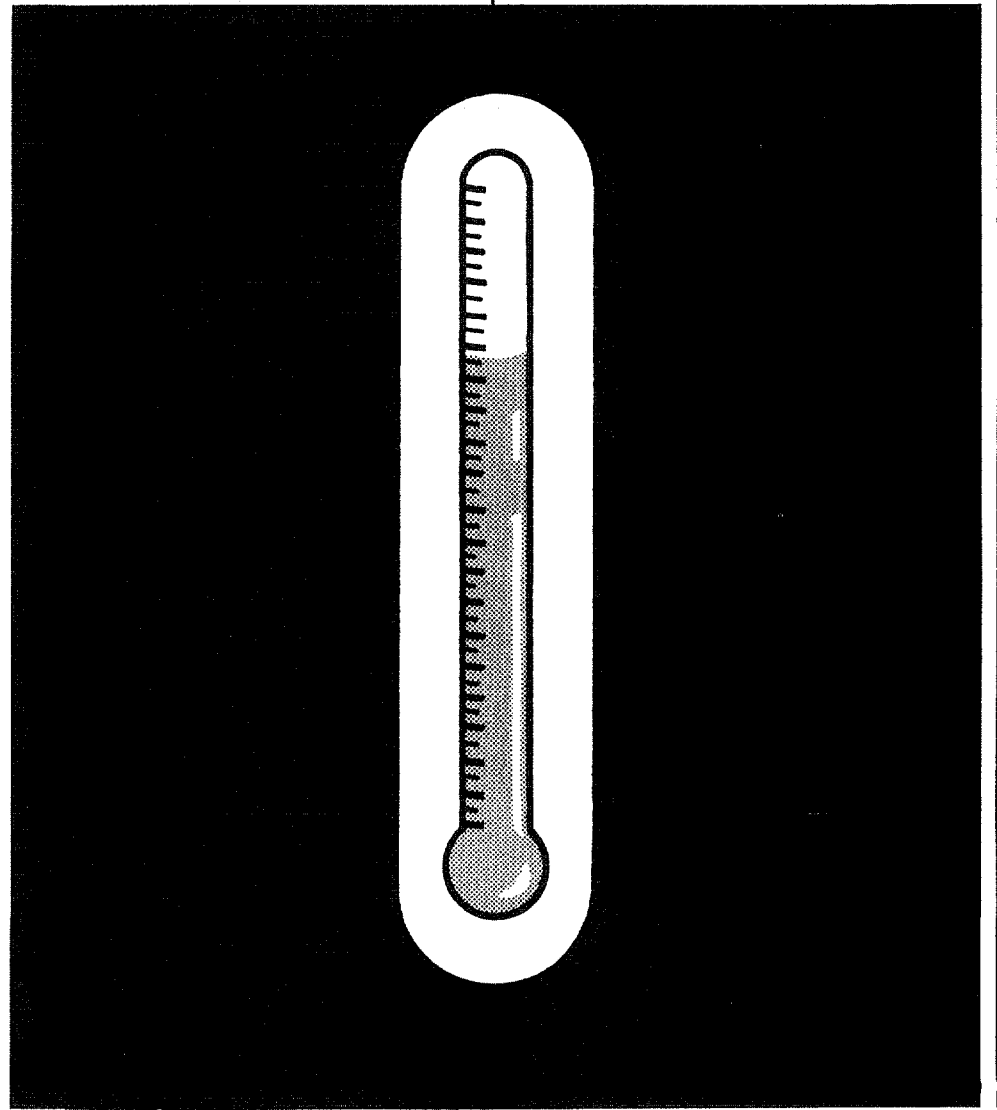
\*Please include state and local sales taxes, where applicable. Exclude merchandise, repairs, or service charges.

PLEASE USE THIS SPACE FOR ANY ADDITIONAL NOTES THAT YOU WISH TO MAKE TO EXPLAIN ENTRIES ON THIS FORM.

PLEASE CHECK THAT THE QUESTIONS ON PAGE THREE HAVE BEEN ANSWERED.

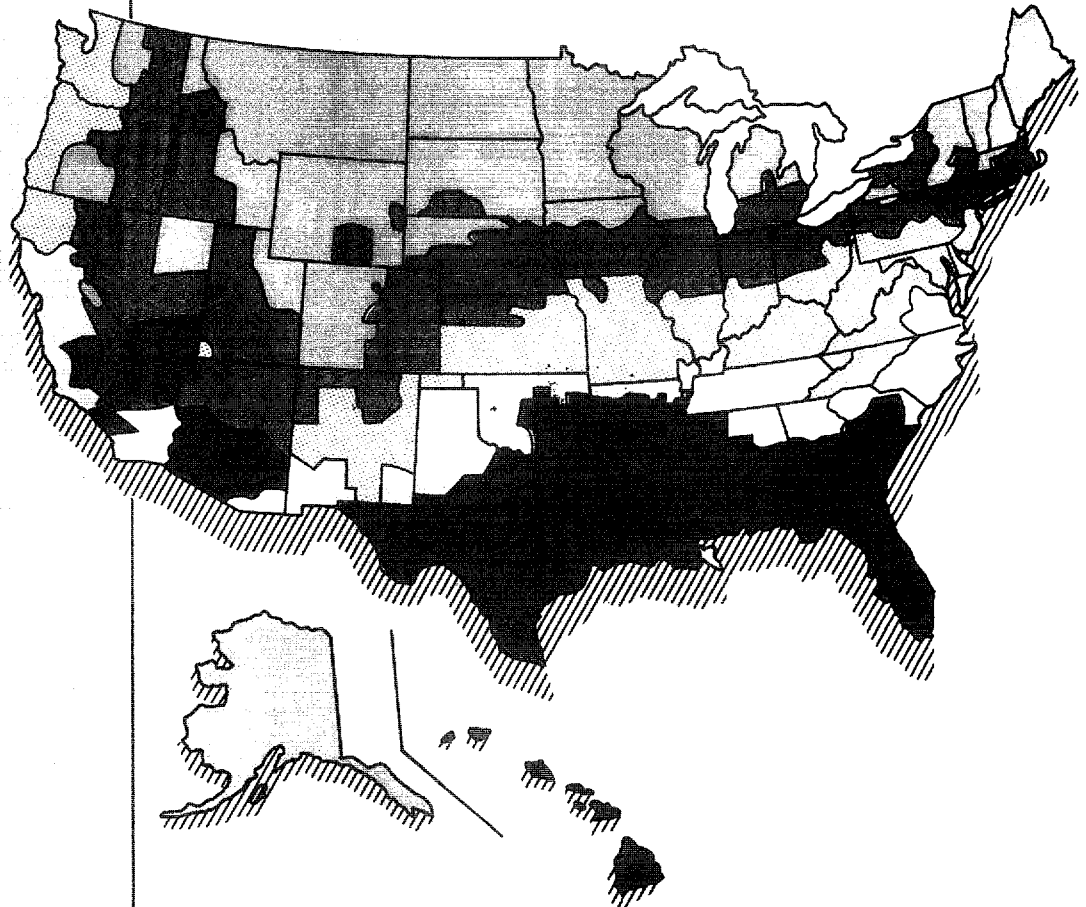
**Appendix E**

U.S.  
Weather Zone  
Map










**U.S. Weather Zone  
Map of Heating Degree-Days  
(HDD) and Cooling Degree-  
Days (CDD)**

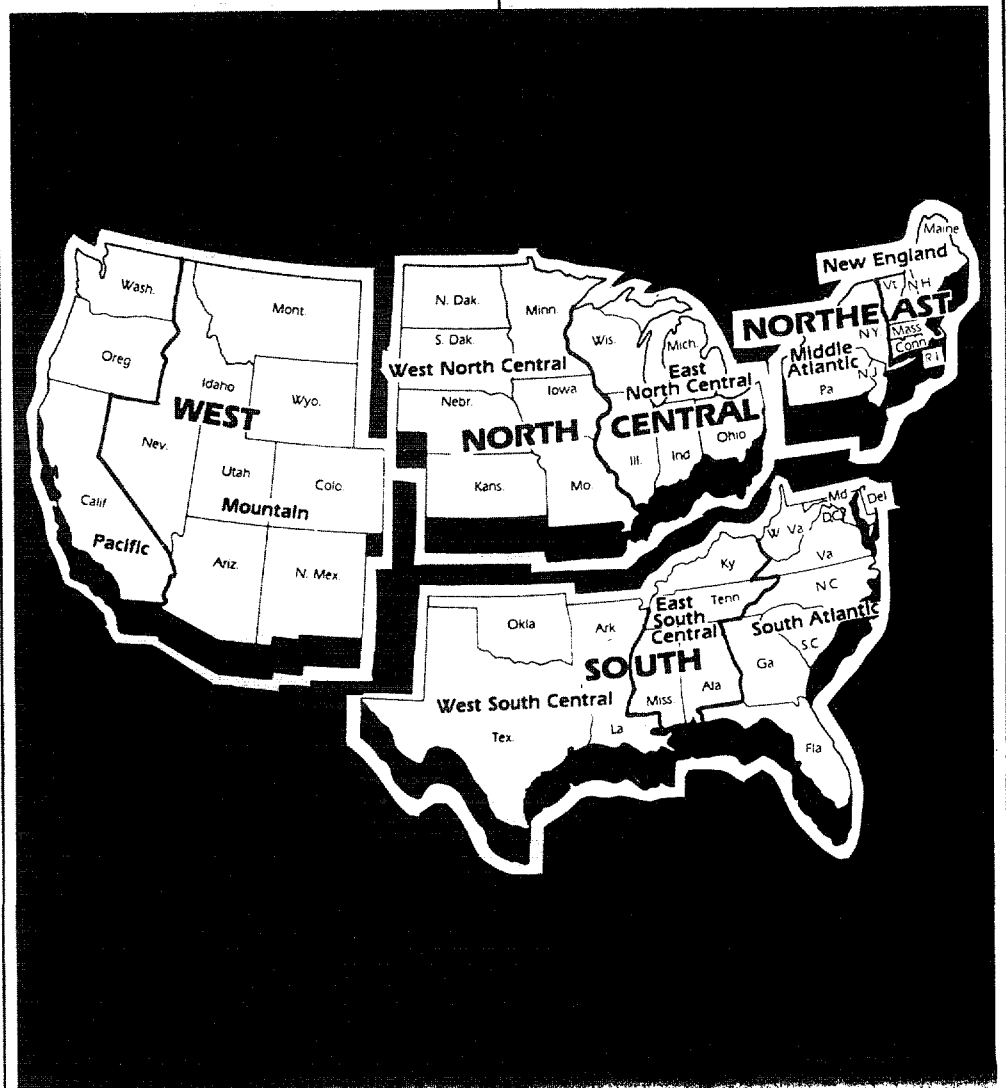


**Weather Zones**

-  Zone 1 is less than 2,000 CDD and greater than 7,000 HDD.
-  Zone 2 is less than 2,000 CDD and 5,500-7,000 HDD.
-  Zone 3 is less than 2,000 CDD and 4,000-5,499 HDD.
-  Zone 4 is less than 2,000 CDD and less than 4,000 HDD.
-  Zone 5 is greater than 2,000 CDD and less than 4,000 HDD.

# Appendix F

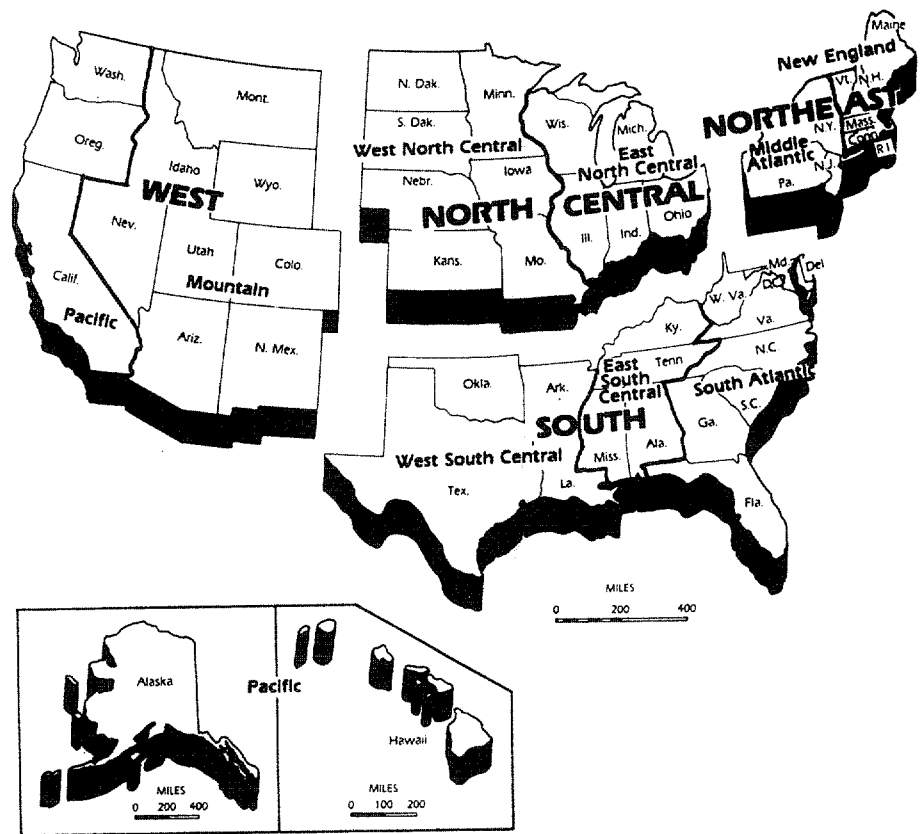
## U.S. Census Regions and Divisions



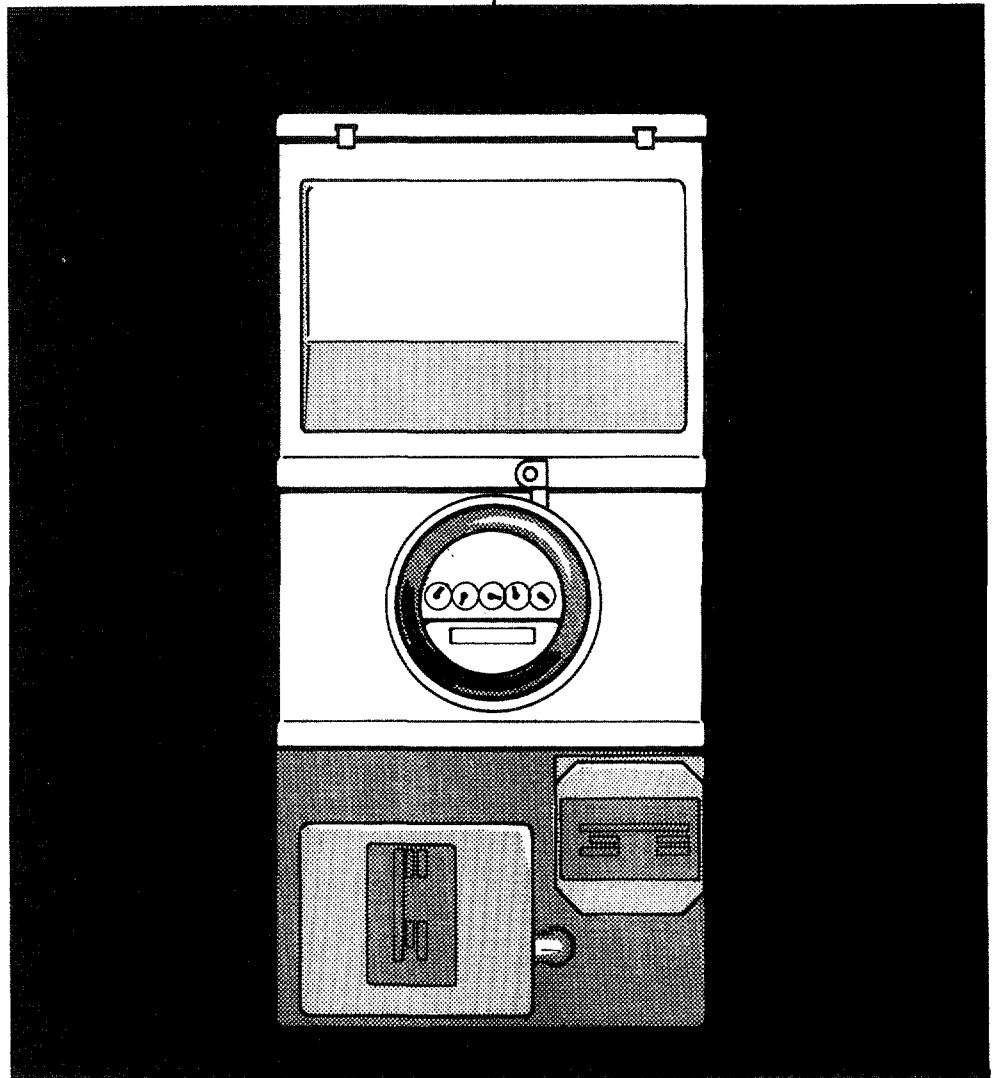


# Appendix F

U.S. Census Regions and Divisions

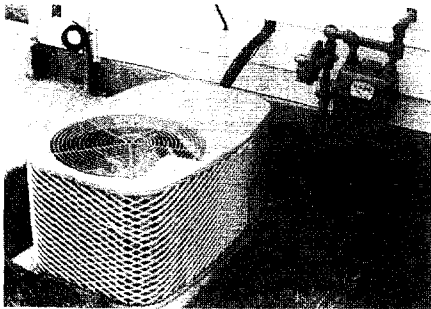


# Glossary





# Glossary



Air Conditioning: Cooling of air by a refrigeration unit. This does not include fans, blowers, or evaporative cooling systems not connected to a refrigeration unit. Air-conditioning units that are not currently in working condition or are not used, but are in place in the housing unit, are included in this survey.

"Number of rooms that can be air conditioned" refers to the number of rooms the air-conditioning equipment is capable of cooling when the equipment is used. Question 36 "How many rooms in your house (apartment) are cooled by 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 a household with air-conditioning equipment that cooled zero rooms.

"All rooms air conditioned" means that 100 percent of the rooms are air conditioned. "Some rooms air conditioned" means that less than 100 percent are air conditioned.

"Central air-conditioning system" refers to a system that air-conditions a number of rooms in a home. See also Central System for the Building. For a definition of rooms, see Number of Rooms.

All-Electric Home: Uses electricity for space heating, water heating, and cooking. Other fuels may be used for supplementary heating or other purposes.

Appliances Used: Appliances possessed and used by the household. Appliances possessed by the household but not used are not counted. Air-conditioning units are an exception. Air conditioning is counted if present whether or not it is used. (See Air Conditioning.) Appliances loaned to the household for their 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. "Swimming pool heater" applies only to swimming pools that are for the exclusive use of the housing unit. Swimming pools in apartment buildings, condominiums, or cooperatives that are for the use of many resident households are not included. "Oven" includes microwave and convection ovens, but does not include toaster ovens. "An evaporative cooler (swamp cooler)" is an air-cooling unit that turns air into moist, cool air by saturating the air with water vapor. (See also Refrigerators.)

Availability of Natural Gas in the Neighborhood: Respondents who did not use natural gas answered "yes," "no," or "don't know" to the question, "Is gas from underground pipes available in this neighborhood?" Respondents were not provided with a definition of "available" or "neighborhood," so some variation is expected in what these concepts mean to each respondent. This question was asked only of households living in single-family or mobile homes in the 1980 RECS.

Basement: 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 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.



## Glossary (Continued)

**Bathroom:** A "complete" bathroom has a flush toilet, a bathtub or shower, and a sink or washbasin with running water. A "half-bath" has a flush toilet or a bathtub or shower but does not have all the facilities for a complete bathroom.

**Billing Period:** The time between meter readings. It does not refer to the time the bill was sent nor when the payment was to have been received. In some cases, the billing period is the same as the billing cycle that corresponds closely (within several days) to meter-reading dates. For fuel oil and LPG, the billing period is the number of days between fuel deliveries.

**Btu (British Thermal Units):** A Btu is the amount of energy required to raise the temperature of 1 pound of water 1 degree Fahrenheit at or near 39.2 degrees Fahrenheit and 1 atmosphere of pressure. One Btu is about equal to the heat given off by a blue-tip match.

Btu conversion factors for this survey are:

Electricity .....	3,412 Btu/kilowatt-hour
Natural Gas .....	1,027 Btu/cubic foot
Fuel Oil No. 1 .....	135,000 Btu/gallon
Kerosene .....	135,000 Btu/gallon
Fuel Oil No. 2 .....	138,690 Btu/gallon
LPG (propane) .....	21,540 Btu/pound
	91,330 Btu/gallon
	2,510 Btu/cubic foot
	88,640 Btu/cubic meter
Wood .....	20,000,000 Btu/cord

Other conversion factors used include:

1 therm =	100,000 Btu
1 barrel =	42 gallons

Almost all LPG reported by the fuel suppliers was propane. Hence, the LPG conversion factors are those for propane. See Wood Burned for discussion of the Btu value of wood.

**Built-in Electric Units:** Individual resistance electric heating units are permanently installed in the floors, walls, ceilings, or baseboards, and are 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.

**Central System for the Building:** A central system serving one or more buildings of two or more housing units each that is used for main heating, water heating, or air conditioning. A system that is for the respondent's living quarters only is not a central system for the building.

**Central Warm-Air Furnace:** A central furnace providing 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. 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.

**Condominium Ownership:** A type of ownership that enables a person to own an apartment or house in a project of similar units. The owner has his or her own deed and, very likely, has a mortgage on the unit. The owner





## Glossary (Continued)

also holds common or joint ownership in all common areas such as hallways, entrances, and elevators. Condominium ownership may apply to single-family houses, row houses, town houses, or apartments.

Conservation Items Added: 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.

"Automatic or clock thermostat" is a thermostat that can be set to turn the heating system off and on at certain preset times of day.

"Adjustments to thermostat control (recalibration)" assure that the temperature the thermostat is set for is the actual temperature maintained in the house.

"An additional thermostat (zoning the home)" allows a household to regulate the temperature in different parts of the home. For example, the sleeping areas of the home can be kept at a lower temperature than the living areas.

"Smaller nozzle or burner or smaller line on furnace" will cut down on the amount of fuel an oil furnace burns.

"Flame-retention head burner for furnace (fuel oil)" is a device that controls the pattern of flame in the combustion chamber of a boiler or furnace.

"Automatic flue door (vent damper)" automatically closes the flue when the furnace goes off, preventing heat loss up the chimney.

"Electrical or mechanical furnace ignition system (spark ignition)" added to the furnace means that fuel will ignite from an electrically or mechanically produced spark rather than from a pilot light that burns continuously.

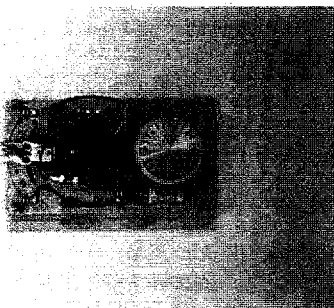
"Insulation around heating ducts" is extra insulation to reduce heat loss as the hot air travels through the ducts to different parts of the residence.

"Insulation around hot water pipes" is blanket insulation wrapped around the hot water heater to reduce heat loss. This is in addition to any insulation provided by the manufacturer.

"Meter that displays the cost of energy" is a device to show the homeowner how much energy is being used in the home at a given time and/or to add up the cost of energy usage over a specific period of time.

"Closeable shutters, plastic sheets, insulating drapes" are counted 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. Decorative shutters that do not close are not counted.

"Caulking around any windows or doors to the outside" is available in these types: oil or resin base, latex, butyl or polyvinyl based, elastomeric or a filler such as oakum, caulking cotton, sponge rubber, or glass fiber. Caulking is counted whether done on the inside or outside of the home.





## Glossary (Continued)

"Weather stripping around any windows or doors to the outside" can be applied on the inside or outside of the home. Weather stripping is available in these basic types: thin spring metal, rolled vinyl, or foam rubber with adhesive backing.

Consumed: Is the amount of electricity or natural gas used by the household during the 365-day period. For fuel oil, kerosene, and LPG, the quantity represents fuel purchased, not fuel consumed. If the level of fuel in the tank was the same at the beginning and end of the annual period, then the quantity consumed would be the same as the quantity purchased. Measurements or reports of the level of fuel in the tank were not included in the data collection.

Cooling Degree-Days: Refers to the number of degrees per day the daily average temperature is above 65 degrees Fahrenheit. Normally, cooling is not required in a building when the outdoor average daily temperature is below 65 degrees. Cooling degree-days are determined by subtracting the base of 65 from the daily average temperature. For example, a day with an average temperature of 85 degrees has 20 cooling degree-days ( $85-65 = 20$ ), while one with an average temperature of 65 degrees or lower has none. The average daily temperature is the mean of the maximum and minimum temperatures for a 24-hour period. The cooling degree-days for RECS households in the 48 States and the District of Columbia were assigned according to the NOAA division in which each household was located (See NOAA Division). Cooling degree-day totals for Alaskan and Hawaiian households were assigned by appropriate nearby weather stations.

Doors: (Outside doors) go from a heated area to the outside or to an unheated area, such as a porch or garage. Doors to a heated hallway in an apartment building, doors permanently sealed shut, and doors to an unheated attic or basement were not counted because these doors are not usually fitted with storm doors. The NIECS survey counted doors to an unheated attic or basement, but this rule was not followed in the RECS survey. Double doors were counted as one door. A pair of sliding glass doors was counted as one door in this survey. A pair of sliding glass doors was counted as two doors in the NIECS survey. "Standard" doors include doors with and without glass panels.

Electricity: See "Fuels."

Electricity Paid by Household: The household paid directly to the electric utility for all household uses of electricity, such as for water heating, space heating, air conditioning, cooking, lighting, and operating other appliances. See Fuels.

Estimated Bills: Are calculated by the fuel supplier when the meter is not read. The estimate may be based on one or more of the following factors: past usage, usage by similar households, and weather data.

Expenditures: Refers to the cost for electricity or natural gas consumed during the 365-day period. Expenditures include State and local taxes, but exclude merchandise, repairs, or special service charges. For households on a budget plan, the expenditures are for the actual consumption. Fuel oil, kerosene, and LPG expenditures are for the amount of fuel purchased, which may differ from the amount of fuel consumed (see Consumed).

Family Income: Is the total combined income in 1980 of all members of the family from all sources before taxes and deductions. It includes wages, salaries, tips, commissions, and income from Social Security, pensions, interest, dividends, rent, public assistance, and unemployment insurance. This includes the total income for all family members who lived in the household in 1980, regardless of whether they were living there at the time of the interview.



## Glossary (Continued)

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.

Federal Regions: The States are divided into 10 groups as follows:

<u>Region</u>	<u>States</u>
1	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut
2	New York, New Jersey
3	Delaware, Pennsylvania, Maryland, Virginia, West Virginia, District of Columbia
4	Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida
5	Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota
6	Louisiana, Arkansas, Texas, Oklahoma, New Mexico
7	Missouri, Iowa, Nebraska, Kansas
8	Colorado, Utah, North Dakota, South Dakota, Wyoming, Montana
9	Hawaii, Arizona, California, Nevada
10	Alaska, Idaho, Oregon, Washington.

Fireplace: Is any masonry or prebuilt installed fireplace. Fireplaces in mobile homes are included. A fireplace must have a permanent chimney built into the wall of the house. A freestanding fireplace that can be detached from its chimney is a heating stove. A fireplace insert is classified as a fireplace.

Floor, Wall, or Pipeless Furnace: 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.

Fuels: Refers to the primary fuel delivered to the residential site. It may be converted at the site to some other energy form. "Electricity" is included in this report as a fuel.

"Coal" includes coke.

"Electricity" refers to metered electric power supplied by a central utility to a residence via underground or aboveground power lines. It does not refer to electricity generated onsite for the exclusive use of the residence. In this case, the fuel used for the generator will be indicated. The Btu equivalent for electricity is the energy value of electricity as received by the household (3,412 Btu per kilowatt-hours). Electrical energy losses that occur in the generation and



## Glossary (Continued)

transmission of electricity are not included in the conversion of electricity into Btu for this report. If these losses were to be included, in general, the conversion rate would be about 10,353 Btu per kilowatt-hour.

"Fuel Oil" is 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.

"Kerosene" refers to a distilled product of oil or coal with the generic name "kerosene." Kerosene is similar to No. 1 distillate fuel oil and is used for space heating or water heating or lighting equipment using wicks. It is sometimes sold under the names "range oil" or "stove oil".

"LPG or liquefied petroleum gas" refers to 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 is not considered sufficient use to mark the household as an LPG user.

"Natural gas" is 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.

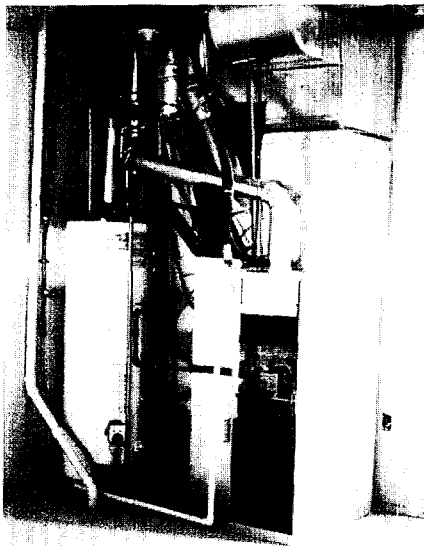
"Solar collector" refers to active, thermal, concentrating collectors using either air or liquid as the working fluid. It does not refer to passive collection of solar thermal energy.

Fuel Oil Paid by Household: The household paid directly to the fuel supplier for all household uses of fuel oil or kerosene such as for space heating or water heating. See Fuels.

Gas Paid by Household: The household paid directly to the utility company for all household uses of natural gas such as for water heating, space heating, air conditioning, cooking, and operating appliances including outdoor gas lights. See Fuels.

Head of Household: If the respondent was married and living with his or her spouse, the male was considered to be the head of the household. Otherwise, the respondent was the head of the household. See also Householder.

Heating Degree-Days: The number of degrees per day the daily average temperature is below 65 degrees Fahrenheit. Normally, heating is not required in a building when the outdoor average daily temperature is above 65 degrees. Heating degree-days are determined by subtracting the average daily temperature below 65 degrees from the base 65. For example, a day with an average temperature of 50 degrees has 15 heating degree-days ( $65 - 50 = 15$ ), while one with an average temperature of 65 or higher has none. The average daily temperature is the mean of the maximum and minimum temperature for a 24-hour period.





## Glossary (Continued)

The heating degree-days for RECS households in the 48 States and the District of Columbia were assigned according to the NOAA division in which each household is located (See NOAA Division). Heating degree-days for Alaskan and Hawaiian households were assigned by appropriate nearby weather stations.

Heating Stove Burning Wood, Coal, and Coke: Any freestanding box or controlled draft stove or built-in fireplace stove. Stoves are made of cast iron, sheet metal, or plate steel. Freestanding fireplaces that can be detached from their chimneys are considered heating stoves. "Airtight" stoves have a gasket around the doors to close off air leakage and control the amount of air intake. "Non-airtight" stoves do not have gaskets around their door openings.

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. It generally consists of a compressor, both indoor and outdoor coils, and a thermostat.

When the heat pump is attached to a central furnace, the heat pump is either the main or secondary heating equipment depending on how often the heat pump operates. If it 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 the main heating equipment.

Hot-Deck Imputation: A procedure by which the household file is sorted by variables related to the missing item. A household is then selected that has the same value on the matching variables, and this "donor" household supplies the value for the missing item. (See Imputation).

Household: A group of up to 12 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 count of households is the same as the count of occupied housing units.

Householder: The person (or one of the persons) 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 generally in charge.

Housing Structure: One of four structure types used to categorize the building in which the housing unit was located.

A "single-family housing unit" refers to a structure that provides living space for one household or family. The structure may be



## Glossary (Continued)

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 to the roof.

A "house or building with two to four housing units" 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 a separate dwelling 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.

A "building with five or more housing units" refers to a building containing living quarters for five or more separate households or families.

A "mobile home or trailer" refers to 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 contain one or more rooms. If additional rooms are added to the structure, it is still considered a mobile home.

Housing Unit: A structure or part of a structure where a household (family or individual) lives or could live. It has direct access from the outside of the building or through a common hall. Housing units do not include group quarters such as prisons, hospitals, dormitories, nursing homes, fraternity houses, or convents where 10 or more unrelated persons live. Hotel rooms, motel rooms, mobile homes, or trailers are considered housing units if occupied.

Imputation: Is a statistical method used to estimate the response to specific questions for which answers are missing. In general, it is a procedure for filling in missing data values.

Insulation: Refers to any material that, when placed between the interior of the dwelling and the outdoor environment, reduces the rate of heat loss to the environment or heat gain from the environment. 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). It is usually made of fiberglass or rock wool.

"Loose particles or loose fill"--loose insulation comes in a bag and 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 urethane foam" is not shown separately as a category because the description used in the survey was inaccurate. Urethane foam is not sprayed in because it expands so much that confined areas may be broken apart by the force of the expanding substance. The more general category of "sprayed foam" will be used in the future to include all types of foam insulation.

"Floor insulation" is insulation between the bottom floor and the unheated basement or crawl space. Carpeting or carpeting pads are not insulation.



## Glossary (Continued)

LPG Paid by Household: The household paid directly to the fuel supplier for all household uses of LPG such as for water heating, space heating, air conditioning, cooking (cooking on an outdoor grill is not counted), and operating appliances. See Fuels.

Main Cooking Fuel: Is 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: (See description of specific heating equipment.) Main heating equipment, if temporarily out of order, is reported as the main heating equipment. If two types of heating equipment are used, the main equipment is the one used more. If both are used equally, the main equipment is the one that appears first on the list in the question.

Main Heating Fuel: The fuel mentioned by the respondent in response to Question 11: "What is the main fuel used for heating this house (apartment)?" Question 13 asked about the main heating fuel used to heat the house (apartment) in November 1980. This question does not apply to housing units not built by November 1980 or to housing units not heated in November 1981 (and assumed not to have been heated in November 1980).

Main Outside Wall Material: The predominant type of wall material. Houses built with two materials used in approximately the same amount are classified as having a "combination" of materials.

Master Metered: The method used by utility companies (e.g., electricity and natural gas) to measure the total volume of energy used by several individual customers collectively.

Median Price per Cord: The median price is the price reported by the middle household when households are listed according to the price they report. That is, 50 percent of the households report a lower price than the median. The median price is not affected by high prices that can occur when small purchases of wood are made and the price is calculated per cord. The median price is not reported for table cells having fewer than 25 sample cases.

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 344 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.

Number of Rooms: Whole rooms are rooms such as living rooms, dining rooms, bedrooms, kitchens, lodger's 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.



## Glossary (Continued)

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 are not included.

A partially divided room, such as a dinette next to a kitchen or a living room, is 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.

Rooms are counted as year-round living space if they are completely enclosed with permanently installed walls, windows, and roof, and can be heated.

Occupied Housing Unit: A unit someone was living in as his or her usual or permanent place of residence at the time of the first field contact.

Origin: Each respondent was asked, "Which of the groups on this exhibit best describes (HOUSEHOLDER)?" The groups included white, black or Negro, American Indian, Alaska native, Asian, Pacific Islander. The word "race" was not used in either the questionnaire or the instructions.

Owner/Renter: Own/rent refers to the structure itself, not the land on which it is located. The household is classified "renter" 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 rent is paid or contracted for. 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. "Rent free" also includes occupants who pay only for utilities. Unless shown separately, "rent free" households are grouped together with "renters."

Poverty: "Below 100 Percent of Poverty" defines a group of households with incomes below the poverty level defined by the Bureau of the Census. "Below 125 Percent of Poverty" defines a group of households with incomes below 125 percent of the poverty level. This group of the poor and near poor represents an alternative level for defining poverty. The definitions of poor are based on the number of family members in the household and family income. Because income data were collected by using categories of income (for example, \$3,000 to \$3,999), an exact match of Census thresholds could not be made. In addition, the RECS survey did not ask about the farm-nonfarm distinction, thus further limiting a closer match to Census thresholds that are lower for farm households.





## Glossary (Continued)

**Table G1. Definition of Poverty**

Number of Persons per Family	Below 100 Percent of Poverty		Below 125 Percent of Poverty	
	1980 RECS Income Range Less than:	Census Threshold <sup>a</sup>	1980 RECS Income Range Less than:	125 Percent Threshold
1	\$4,000	\$4,184	\$5,000	\$5,230
2	\$5,000	\$5,338	\$7,000	\$6,673
3	\$7,000	\$6,539	\$8,000	\$8,174
4	\$8,000	\$8,385	\$10,000	\$10,481
5	\$10,000	\$9,923	\$12,000	\$12,404
6	\$11,000	\$11,215	\$14,000	\$14,019
7 or more	\$14,000	\$13,883	\$17,000	\$17,354

<sup>a</sup>Figures from the U.S. Bureau of the Census, Characteristics of the Population Below the Poverty Level: 1980. (Current Population Reports, Series P-60, No. 133), July 1982. See Table A2, p. 187.

Source: Energy Information Administration, 1981 Residential Energy Consumption Survey.

The preceding definitions produced an estimate of 11.031 million poor households (below 100 percent of poverty). The Bureau of the Census estimate for March 1981 is 10.968 million poor households (below 100 percent of poverty).

Portable Heater(s): Heaters that can be picked up and moved, including electric heaters that get current through a cord plugged into an electrical wall outlet. Portable space heaters are included in this category.

Quadrillion: Equals 1,000,000,000,000,000 or  $10^{15}$ .

Race: See Origin.

Residential: Refers to occupied housing units including mobile homes, single-family housing units (attached and detached), and apartments. The definition of housing units is the same as that used by the U.S. Bureau of the Census. See Household and Housing Unit for further definition.

Rooms: See Number of Rooms.

Retrigerators: With no freezer sections are included in the non-frostfree category. "Frostfree" means that frost does not build up on the insides of the freezer section or ice cube section.

Room Heaters Burning Gas, Oil, Kerosene: Are circulating heaters, convectors, radiant gas heaters, space heaters, or other nonportable room heaters that may or may not be connected to a flue, vent, or chimney.



## Glossary (Continued)

Rural: Refers to places that had a population of less than 2,500 in the 1970 Census.

Screener Survey: The Residential Energy Consumption Survey that contacted 4,033 households in October and November 1979. Fuel suppliers provided data on consumption and expenditures for the period April 1979 through March 1980. This survey was named the Household Screener Survey because it was used to screen households for participation in the Household Transportation Panel.

Secondary Heating Equipment: Equipment used in addition to the main equipment. Description of the secondary heating equipment is the same as for the main heating equipment.

SMSA: A group of households located within Standard Metropolitan Statistical Areas (SMSA's) as defined in the 1970 Census. Except in New England, an SMSA is a county or group of contiguous counties that contain at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of at least 50,000. The contiguous counties are included in an SMSA if, according to certain criteria, they are essentially metropolitan in character and are socially and economically integrated with the central city. In New England, SMSA's consist of towns and cities, rather than counties. "Non-SMSA" refers to households not located within SMSA's as defined in the 1970 Census.

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. "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 by the interviewer using a metallic, retractable, 50-foot tape measure. All "measurements" are standardized to outside estimates, if not already outside measurements. For details on how the measurement was made and how the data were treated, see Appendix B.

"Heated square feet" are that portion of the measured square feet that is heated during most of the season. Rooms that are shut off during the heating season to save on fuel use 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.

Steam or Hot Water System with Radiators or Convectors: A central heating system supplying steam or hot water to conventional radiators, baseboard radiators, 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. This category also includes radiant heating through hot water pipes inlaid in a concrete, slab floor.

Storm Doors and Windows: Storm 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.

Storm windows are 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 not counted.



## Glossary (Continued)

Note: Responses of "don't know" for storm doors, windows, and/or attic 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 if it had attic insulation, was counted in the "have one or two of these" category.

Urban: Includes housing in places of 2,500 inhabitants or more as defined in the 1970 Census.

Utilities Paid by Household: Fuel suppliers or utility companies paid directly for all electricity, natural gas, fuel oil, kerosene, or liquefied petroleum gas used by the household. Households paying directly to the utility were classified in this survey as "all paid." Households that paid directly for at least one but not all their fuels used and had at least one fuel charge included in their rent were classified as "some paid, some included in rent." Households in which all fuels used were included in their rent were classified as "all included in rent." Some households were classified as "other" if they did not fall into any of those three categories. Included are households for which fuel bills were paid by a department of social services or a relative and households that paid for some of their fuels used but paid for other fuels through some other arrangement.

Vacant Housing Unit: A housing unit not occupied at the time of the first field contact. An occupied seasonal or migratory housing unit is classified as vacant at the time of the first field contact when all persons had a usual place of residence elsewhere.

Water-Heating Fuel: The answer to the question, "Which fuel is used most for heating water?" Households that did not have running water in their home were also asked this question. The fuel is used for heating water for bathing and washing. The hot water may have been available anywhere in the same building as the respondent's living quarters. This may have been in a hallway, in a room used by several units in the building, in the basement, or on an enclosed porch, provided the respondent's household had access to it.

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.

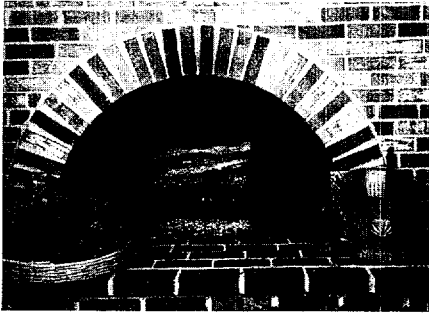
Wood Burned: Amount of wood burned in the home at any time in the past 12 months in a fireplace, stove, or furnace as reported by the respondent at the time of the interview. The figures for wood burned cover the last part of the 1980-1981 heating season and the first part of the 1981-1982 heating season.

A "cord" measures 4 feet by 4 feet by 8 feet and is approximately 128 cubic feet. A third of a cord measures 16 inches by 4 feet by 8 feet. The accompanying drawing of a cord and a rack (third of a cord) was shown to respondents.

Converting cords of wood into a Btu equivalent is an imprecise exercise. The number of cords burned by each household is imprecise, as the estimate requires the respondent to sum up the use of wood over a 12-month period during which time wood may have been added to the supply as well as removed. In addition to the recall errors inherent in this task, the estimates are subject to problems in definition and perception of what a cord is. The nominal cord as delivered to a



## Glossary (Continued)



suburban residential buyer may differ from the dimensions of the standard cord. This can occur because wood is most often cut between the length that makes a third of a cord (16 inches) and a half a cord (24 inches).

In other cases, wood is bought or cut in unusual units (e.g., pickup truck load or trunk load). Finally, volume estimates are difficult to make when the wood is not stacked up but is left in a pile.

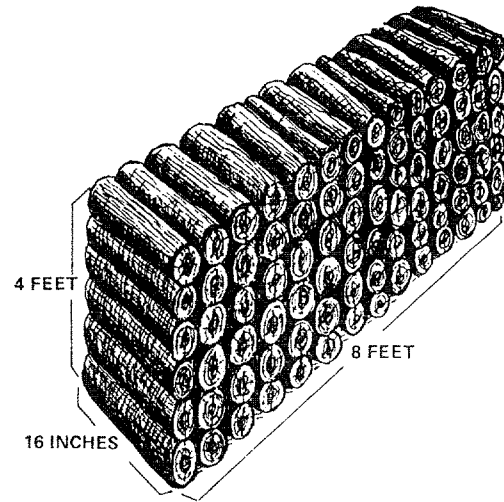
Other factors that make it difficult to estimate the Btu value of the wood burned is that the amount of empty space between the stacked logs may vary from 12 to 40 percent of the volume. The moisture content may vary from 20 percent in dried wood to 50 percent in green wood. Moisture reduces the useful Btu output because energy is used to drive off the moisture. Finally, some tree species contain twice the Btu content of species with the lowest Btu value. Generally, hardwoods have greater Btu value than softwoods. Wood was converted to Btu at the rate of 20 million Btu per cord, which is a rough average taking all these factors into account.



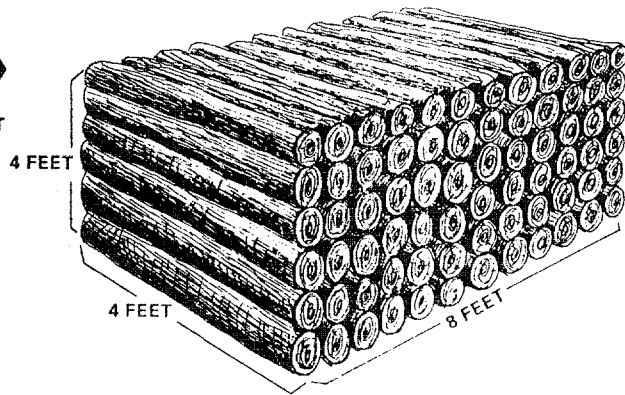
## Glossary (Continued)

### Size and Volume Contained In a Rack and a Cord of Firewood

**RACK** →  
CONTAINS  
43 CUBIC FEET



**CORD** →  
CONTAINS  
128 CUBIC FEET



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