

Residential Energy  
Consumption Survey:

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

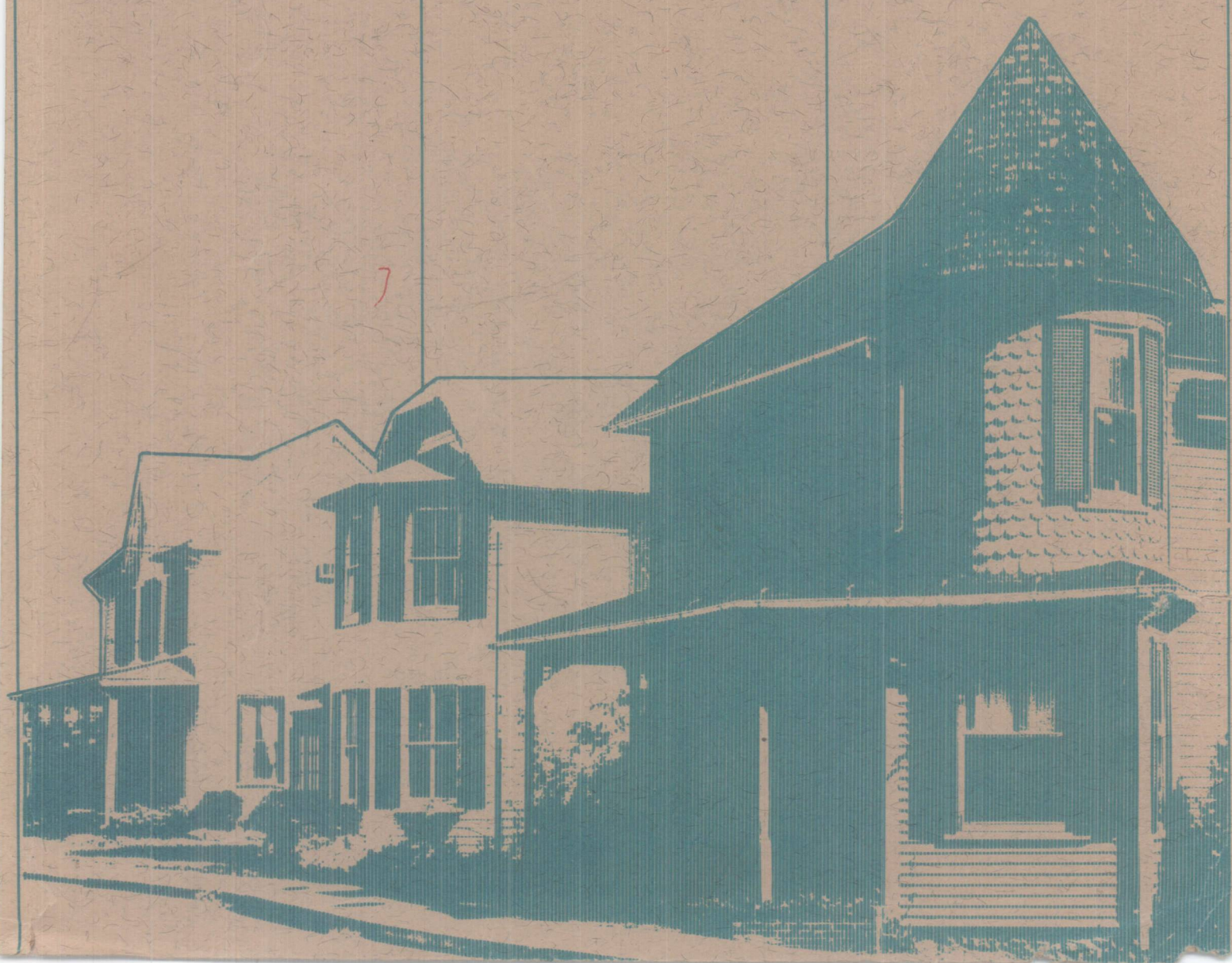
September 1983

*Recs 2*

# Consumption and Expenditures, April 1981 Through March 1982



Part 1:  
National Data



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Residential Energy  
Consumption Survey:

# Consumption and Expenditures, April 1981 Through March 1982



Part 1:  
National Data

Prepared by:  
Wendel Thompson

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Energy End Use Division  
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# Contents

## Summary of Findings

## Appendixes

## Figures

## Tables

	Page
Introduction .....	1
Recent Trends .....	1
Apartment Buildings .....	13
Average Annual Fuel Bills .....	15
A. How the Survey Was Conducted .....	81
B. Estimates of the Size of U.S. Housing Units in Square Feet ...	105
C. Limitations of the Data .....	111
D. Survey Forms .....	133
E. U.S. Weather Zone Map .....	189
F. U.S. Census Regions and Divisions .....	193
Glossary .....	197
1. Average Household Total Energy Consumption of All Fuels and of Specific Fuels--1978, 1979, 1980, and 1981 (Million Btu per Household) .....	2
2. U. S. and Regional Heating and Cooling Degree-Days, Long-Term Averages--1978, 1979, 1980, and 1981 .....	3
3. Average Household Total Energy Consumption, by Region--1978, 1979, 1980, and 1981 (Million Btu per Household) .....	4
4. Total Residential Energy Consumption, by Fuel Type--1978, 1979, 1980, and 1981 (Quadrillion Btu) .....	5
5. Average Household Expenditures for All Fuels and for Specific Fuels--1978, 1979, 1980, and 1981 (Nominal Dollars per Household) .....	6
6. Total Residential Energy Expenditures, by Fuel Type--1978, 1979, 1980, and 1981 (Billions of Nominal Dollars) .....	7
7. Average Total Energy Expenditures, by Region--1978, 1979, 1980, and 1981 (Nominal Dollars per Household) .....	8
8. Average Energy Prices--1978, 1979, 1980, and 1981 (Nominal Dollars per Million Btu) .....	9
9. Average Total Energy Consumption, by Income Class--1978, 1979, 1980, and 1981 (Million Btu per Household) .....	10
10. Average Total Energy Expenditures, by Income Class--1978, 1979, 1980, and 1981 (Nominal Dollars per Household) .....	11
11. Percentage of Income Spent on Household Energy, by Income Class--1981 .....	12
S1. Number of Apartment Buildings (Five or More Units) and Energy Consumed, by Census Region, 1981 .....	13
S2. Percentage of Apartment Buildings (Five or More Units), by Census Region and Size of Building, 1981 .....	14
S3. Annual Energy Consumption of Buildings Containing Five or More Housing Units and Heating with Natural Gas, Electricity, or Fuel Oil, 1981 .....	14
S4. Households Paying Directly for Main Heating Fuel, by Size of Home and Winter Temperatures (Million Households) .....	15
S5. Average Annual Household Consumption of the Main Heating Fuel .....	16



## Contents (Continued)

	Page
1. U.S. Residential Energy Consumption and Expenditures-- April 1981 Through March 1982 .....	19
2. U.S. Residential Energy Consumption and Expenditures-- April 1981 Through March 1982 (Percent) .....	23
3. U.S. Residential Proportionate Energy Consumption of Fuels-- April 1981 Through March 1982 (Percentage of Total Btu) .....	27
4. U.S. Residential Proportionate Energy Expenditures for Fuels--April 1981 Through March 1982 (Percentage of Total Dollars) .....	31
5. U.S. Average Residential Energy Consumption of All Fuels Used in the Household, by Main Heating Fuel Type--April 1981 Through March 1982 (Million Btu per Household) .....	35
6. U.S. Average Residential Energy Expenditures for All Fuels Used in the Household and Expenditures as a Percentage of Income, by Main Heating Fuel Type--April 1981 Through March 1982 (Dollars per Household) .....	39
7. U.S. Residential Natural Gas Consumption and Expenditures-- April 1981 Through March 1982 .....	42
8. U.S. Residential Natural Gas Consumption and Expenditures for Households Using Natural Gas as Main Heating Fuel-- April 1981 Through March 1982 .....	46
9. U.S. Residential Electricity Consumption and Expenditures-- April 1981 Through March 1982 .....	49
10. U.S. Residential Electricity Consumption and Expenditures for Households Using Electricity as Main Heating Fuel-- April 1981 Through March 1982 .....	52
11. U.S. Residential Electricity Consumption and Expenditures for Households Not Using Electricity as Main Heating Fuel-- April 1981 Through March 1982 .....	55
12. U.S. Residential Fuel Oil or Kerosene Consumption and Expenditures--April 1981 Through March 1982 .....	60
13. U.S. Liquefied Petroleum Gas Consumption and Expenditures-- April 1981 Through March 1982 .....	66
14. U.S. Average Residential Energy Consumption, Including Natural Gas, Electricity, Fuel Oil or Kerosene, and Liquefied Petroleum Gas, by Climate Zone and Heated Square Footage--April 1981 Through March 1982 (Million Btu per Household) .....	69
15. U.S. Average Residential Energy Expenditures, Including Natural Gas, Electricity, Fuel Oil or Kerosene and Liquefied Petroleum Gas, by Climate Zone and Heated Square Footage-- April 1981 Through March 1982 (Dollars per Household) .....	72
16. Number of U.S. Households, by Climate Zone and Heated Square Footage--November 1981 (Million Households) .....	73
17. U.S. Average Residential Energy Prices--April 1981 Through March 1982 (Dollars per Million Btu) .....	75
A1. Experience and Training of 1981 RECS Interviewers .....	82
A2. Relative Sampling Rates for 940 Sample Segments Likely to Contain the Highest Density of Low-Income Households .....	85
A3. Poverty Status in 1980 and Home Heating Fuel of Poverty-Level Households in RECS Main and Supplemental Samples .....	86
A4. Population Estimates Used as Controls in Ratio Estimates .....	87
A5. Interviews Completed by Stage .....	89



## Contents (Continued)

	Page
A6. Response Rates by Region, Location, and Type of Structure (Percentage of Eligible Housing Units) .....	90
A7. 1981 Residential Energy Consumption Survey Items Most Frequently Imputed .....	92
A8. Changes Made in Household Records Based on Information from Rental Agents .....	94
A9. Companies in Fuel Supplier Survey and Number of Households Supplied .....	95
A10. Energy Consumption Records and Missing Data for Survey Households Using Electricity, Natural Gas, Fuel Oil or Kerosene, or Liquefied Petroleum Gas (Percentage of Households Using the Fuel) .....	97
A11. Energy Consumption Records and Missing Data for Survey Households, by Fuels Used and by Type of Housing Structure (Percent) .....	101
B1. Completeness of Data on Square Footage of Housing Units .....	106
C1. Relative Standard Errors for Survey Estimates of the Number of Households .....	116
C2. Clustering Factors for Calculation of Relative Standard Errors for Survey Estimates of the Number of Households .....	116
C3. Relative Standard Errors for Control Totals (Million Households) .....	118
C4. Relative Standard Errors for Aggregate Statistics of Total Consumption and Expenditures (Natural Gas, Electricity, Fuel Oil or Kerosene, and LPG--Combined) .....	120
C5. Relative Standard Errors for Aggregate Statistics of Electricity Consumption and Expenditures .....	121
C6. Relative Standard Errors for Aggregate Statistics of Natural Gas, Fuel Oil or Kerosene, and LPG Consumption and Expenditures .....	122
C7. Relative Standard Errors for Total Consumption and Expenditures per Household (Natural Gas, Electricity, Fuel Oil or Kerosene, and LPG--Combined) .....	123
C8. Relative Standard Errors for Natural Gas, Electricity, Fuel Oil or Kerosene, and LPG Consumption and Expenditures per Household .....	124
C9. Relative Standard Error Equations .....	125
C10. Relative Standard Errors for Expenditures as a Percentage of Income Displayed in Table 6 (Percent) .....	126
G1. Definition of Poverty .....	208







# Summary of Findings

## Introduction

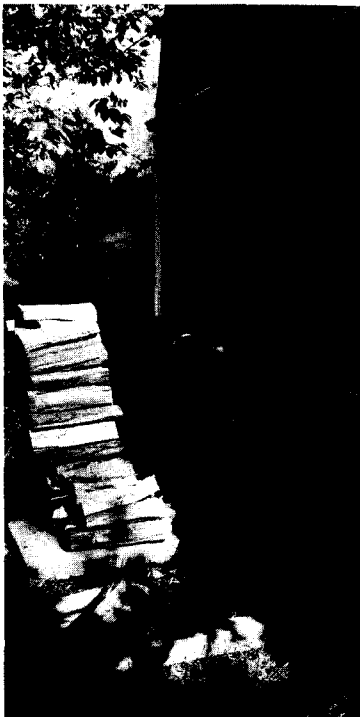
This report presents data on the U.S. consumption and expenditures for residential use of natural gas, electricity, fuel oil and kerosene, and liquefied petroleum gas (LPG) during the year from April 1981 through March 1982. The consumption and expenditures data are based on actual household bills obtained, with the permission of the household, from the companies supplying energy to the household.

These data come from the 1981 Residential Energy Consumption Survey (RECS), the fourth in a series of comparable surveys beginning in 1978. Each survey is based on a different sample of households. This summary gives the highlights of a comparison of the findings for the four years.

The data cover all types of occupied housing units in the 50 States and the District of Columbia including single-family units, apartments, and mobile homes. For households with indirect energy costs, such as costs that are included in the rent or paid by third parties, the consumption and expenditures are estimated and included in the figures reported here.

This report does not cover household use of motor fuel or wood. Consumption of wood is given in Residential Energy Consumption Survey: Housing Characteristics, 1981 (DOE/EIA-0314(81), Washington, D.C., August 1983), which also provides information on energy-related housing characteristics, fuel use, conservation improvements, and appliances. The use of motor fuel is reported separately.<sup>1</sup>

## Recent Trends



The average household consumed about the same amount of energy in 1981 as in the preceding year.<sup>2</sup> Total energy consumption per household averaged 114 (+ 3)<sup>3</sup> million Btu, as shown in Figure 1. Figure 1 also shows the consumption per household of specific fuels for the past four years. Consumption of fuel oil and kerosene continued to decline, while consumption of electricity, natural gas, and liquefied petroleum gas remained stable. The estimate for natural gas consumption is higher in 1981 than 1980, although the difference is not statistically significant.

<sup>1</sup>The most recent report on motor fuel using sample households from the RECS survey is Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, Supplement: January 1981 to September 1981, DOE/EIA-0328 (Washington, D.C., February 1983).

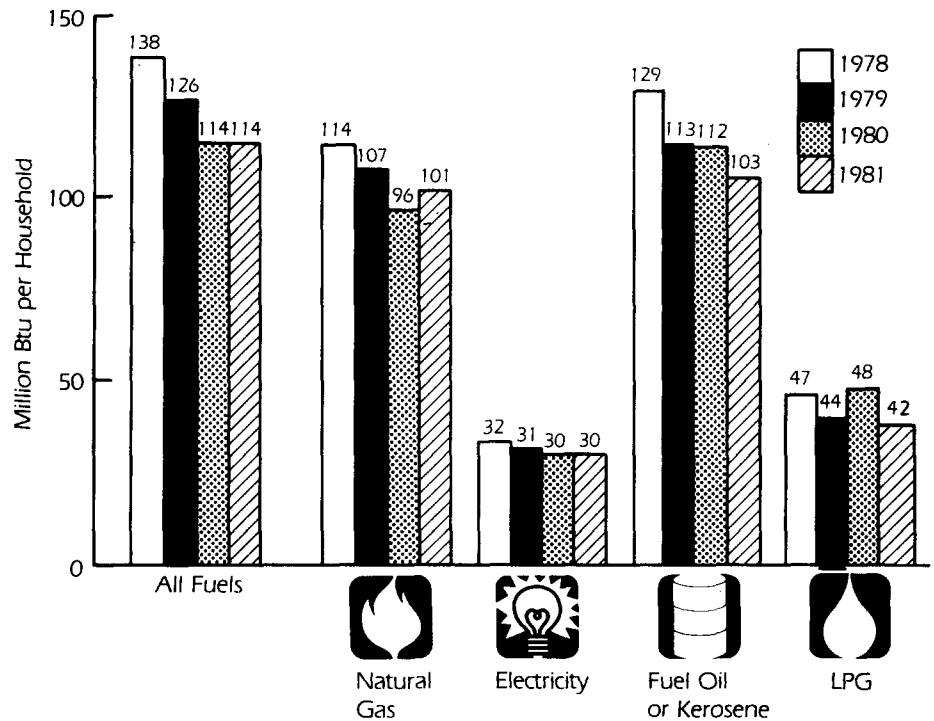
<sup>2</sup>Throughout this summary, 1980 refers to the period April 1980 through March 1981, and 1981 to April 1981 through March 1982. A separate analysis indicates there is little difference in estimates of consumption for these heating-year periods compared with the calendar year. See Residential Energy Consumption Survey: Regression Analysis of Energy Consumption by End Use (to be published).

<sup>3</sup>The + value in parentheses after a statistic quoted in the text represents two standard errors of the statistic. The standard error is a measure of the variability of an estimate that is based on a sample survey. For further explanation of standard errors, see Appendix C, "Limitations of the Data."



## Summary of Findings (Continued)

**Figure 1. Average Household Total Energy Consumption of All Fuels and of Specific Fuels — 1978, 1979, 1980, and 1981 (Million Btu per Household)**



Note: For specific fuels, the average is for all households using the fuel, except for fuel oil or kerosene, for which the average is only for households using it as the main heating fuel.

Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys. For 1981 data, see Tables 5, 7, 9, 12, and 13.

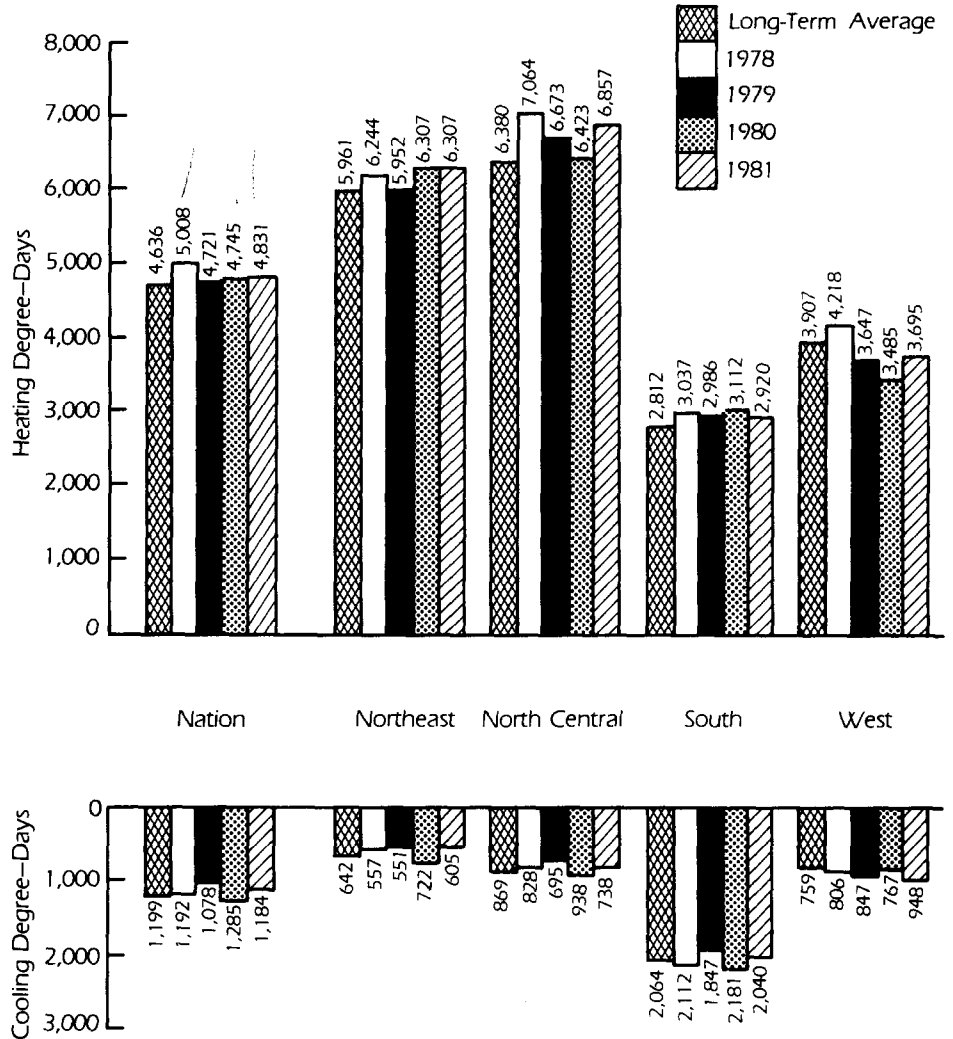
Weather is an important factor affecting residential energy consumption. The winter of 1981 was slightly colder than that of the preceding year. Figure 2 shows that for the Nation as a whole, there were about 2 percent more heating degree-days in 1981 than in 1980. The similarity in winter temperatures was an important factor in the stability of energy consumption for the Nation.



## Summary of Findings (Continued)

Regional variations in weather patterns, however, are a factor in the apparent rise in natural gas consumption. Figure 2 shows that the North Central Census region had a much colder winter in 1981 than in 1980; there were 7 percent more heating degree-days in 1981 than in 1980 in this region. The North Central region is the section of the country depending most heavily on natural gas for residential space heating.

**Figure 2. U.S. and Regional Heating and Cooling Degree-Days, Long-Term Averages — 1978, 1979, 1980, and 1981**



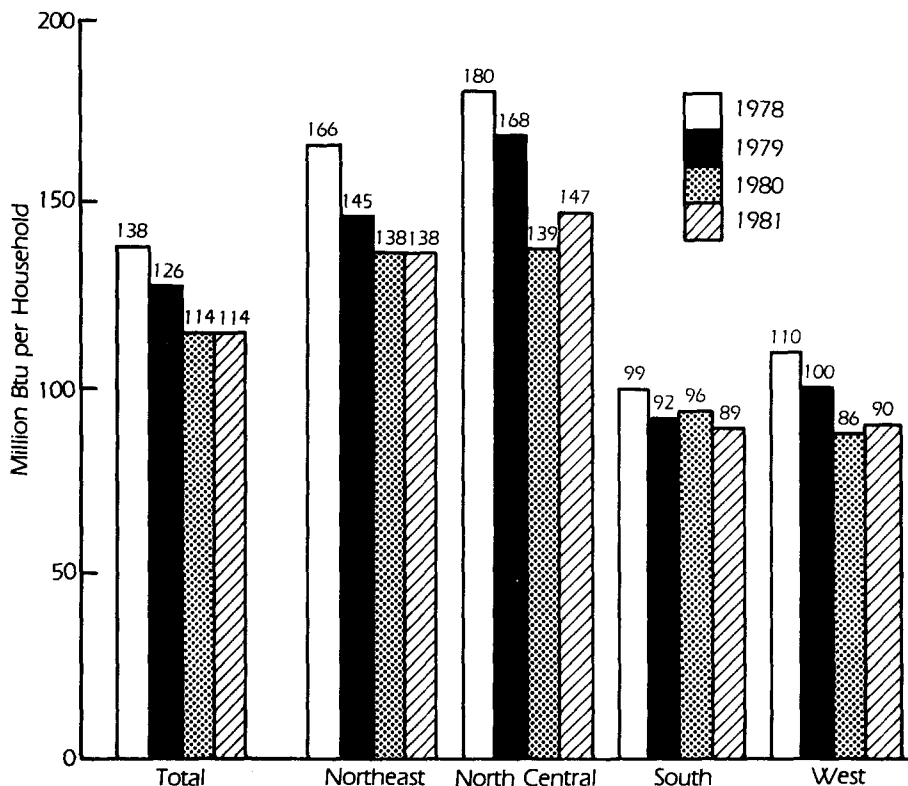
Sources: National Oceanic and Atmospheric Administration, U.S. Department of Commerce, State, Regional, and National Monthly and Seasonal Heating Degree Days Weighted by Population (1980 Census), July 1931-June 1981 (September 1981), July 1981-September 1982 (December 1982); State, Regional, and National Monthly and Seasonal Cooling Degree Days Weighted by Population (1980 Census), July 1931-June 1981 (September 1981), January 1931-December 1982 (April 1983).



## Summary of Findings (Continued)

The rise in total energy consumption per household in the North Central region, shown in Figure 3, was comparable to the increase in heating degree-days. The West region also had a rise in consumption, which was associated with an increase in the number of both heating and cooling degree-days. In the South, on the other hand, both the winter and summer climates were milder, which contributed to the reduction in consumption in this region. In the Northeast, the climate stayed about the same from 1980 to 1981, as did energy consumption.

**Figure 3. Average Household Total Energy Consumption, by Region — 1978, 1979, 1980, and 1981 (Million Btu per Household)**



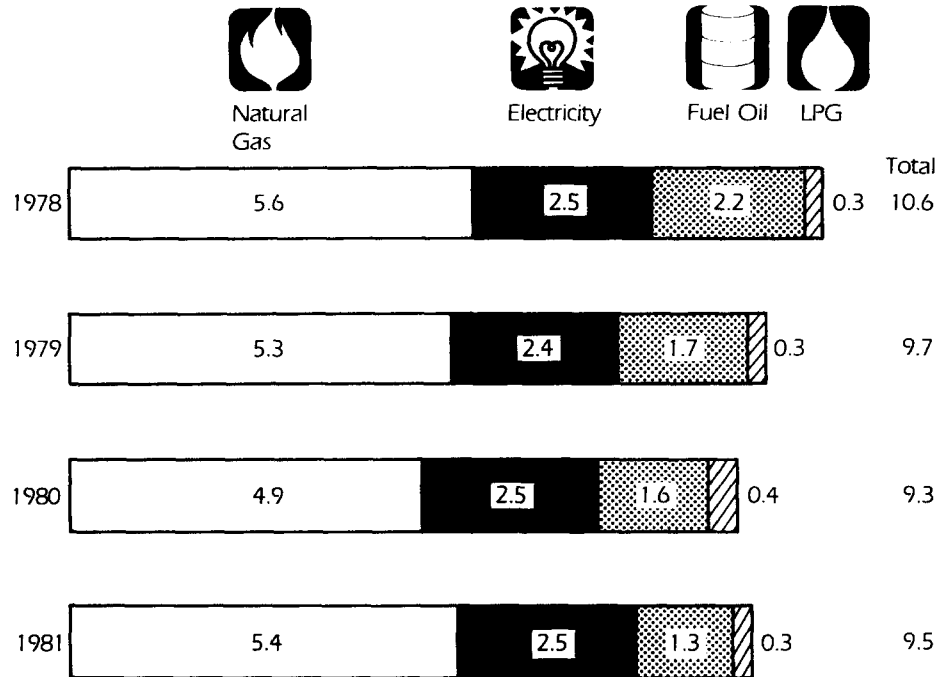
Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys. For 1981 data, see Table 5.



## Summary of Findings (Continued)

Total residential consumption of energy by fuel type also remained unchanged between 1980 and 1981, as shown in Figure 4. While there was a slight increase in the number of households over the year, the increase was not enough to give a statistically significant increase in total energy consumption. There was an increase in total natural gas consumption and a decrease in fuel oil, corresponding to the changes on a per household basis.

**Figure 4. Total Residential Energy Consumption, by Fuel Type — 1978, 1979, 1980, and 1981 (Quadrillion Btu)**



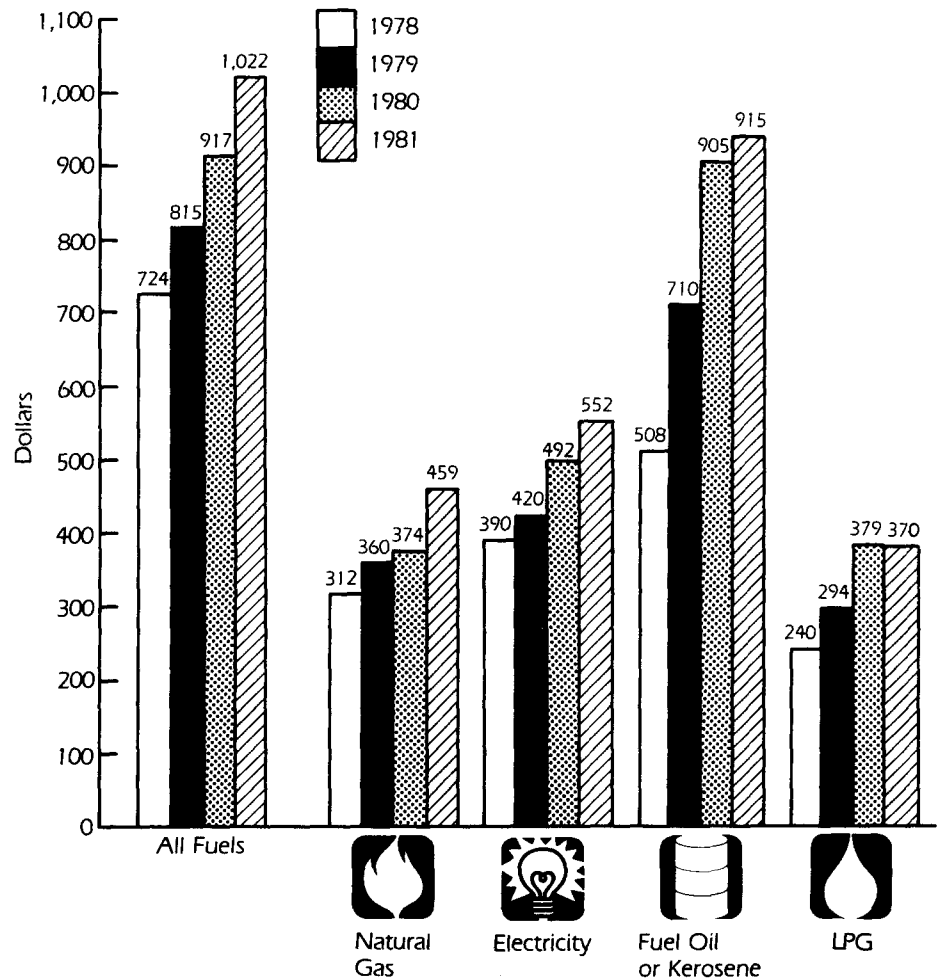
Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys. For 1981 data, see Table 1.



## Summary of Findings (Continued)

Rising fuel prices led to an increase in average energy expenditures per household, even though consumption was constant. The average household spent \$105 (+ 44) more in 1981 than in 1980 for energy used in the home, as shown in Figure 5. Average energy expenditures per household have increased in each successive year of the RECS. Average expenditures per household for natural gas and electricity increased from 1980 to 1981, while expenditures for fuel oil or kerosene and for LPG remained about the same.

**Figure 5. Average Household Expenditures for All Fuels and for Specific Fuels — 1978, 1979, 1980, and 1981 (Nominal Dollars per Household)**



Note: For specific fuels, the average is for all households using the fuel, except for fuel oil or kerosene, for which the average is only for households using it as the main heating fuel. The average for all fuels is an average of specific fuels weighted by the proportion of households that use each fuel. To approximate the average for all fuels, multiply the average for a specific fuel by the proportion of households that use each fuel, and add the totals for the four fuels.

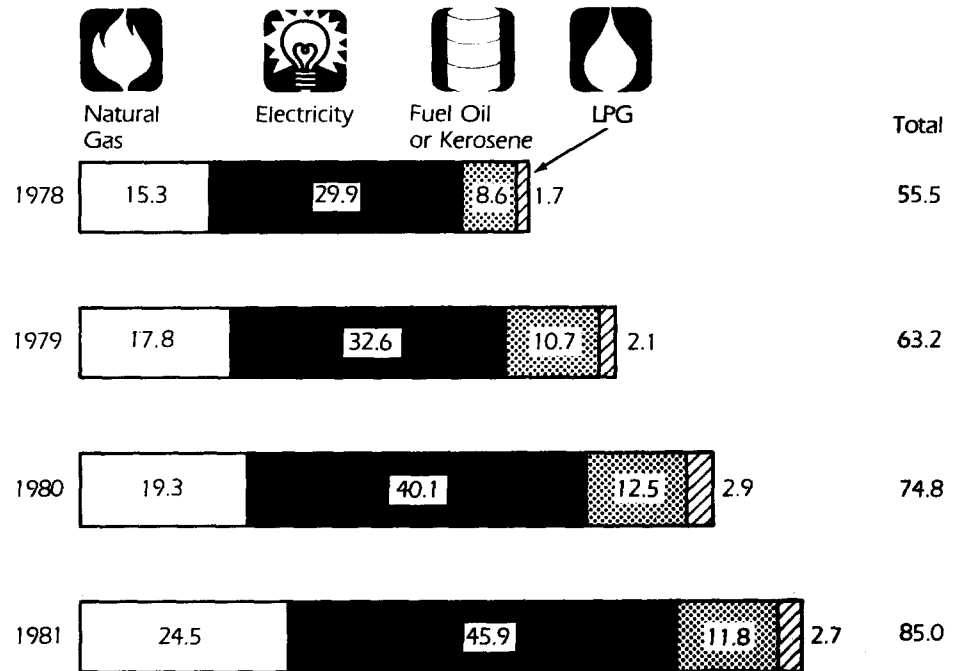
Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys. For 1981 data, see Tables 6, 7, 9, 12, and 13.



## Summary of Findings (Continued)

Total expenditures for energy increased \$10.2 (+ 3.1) billion (\$74.8 to \$85.0 billion), from 1980 to 1981. Figure 6 shows total expenditures for all energy and for specific energy sources. Total expenditures for natural gas and electricity increased, corresponding to the increase in average expenditures for these fuels. Total expenditures for fuel oil or kerosene and for LPG showed no statistically significant change.

**Figure 6. Total Residential Energy Expenditures, by Fuel Type — 1978, 1979, 1980, and 1981 (Billions of Nominal Dollars)**



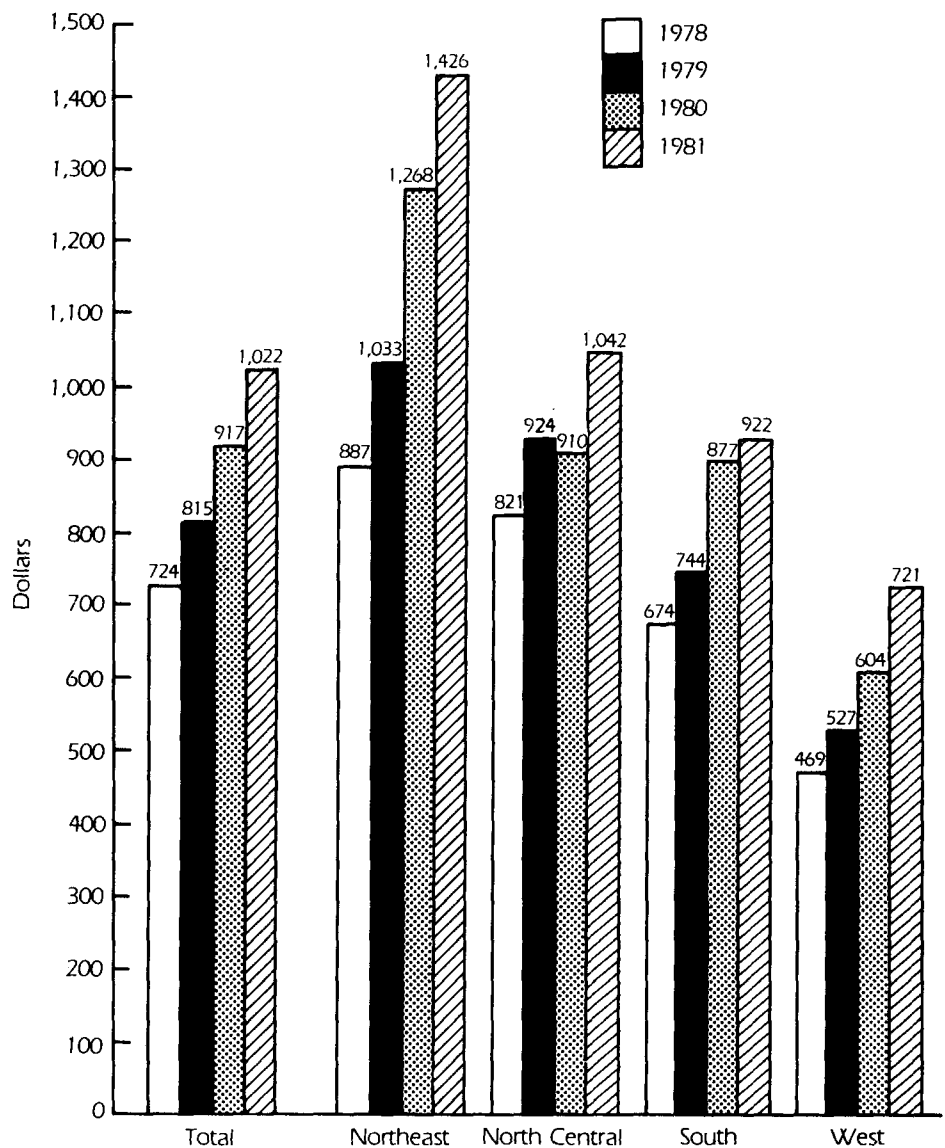
Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys. For 1981 data, see Table 1.



## Summary of Findings (Continued)

Average expenditures for energy in different regions vary widely, reflecting differences in consumption, prices, and mix of fuels used in different parts of the Nation (Figure 7). The Northeast continues to be the region with the highest average energy expenditure per household, \$1,426 (+ 68) in 1981. Households in this region have a lower estimate of energy use than those in the North Central region. Households in the Northeast rely heavily on fuel oil, however, which is a relatively expensive fuel, and they also pay more for the other fuels. The West region, on the other hand, benefits from both low levels of consumption and low prices, so it has the lowest average expenditures, \$721 (+ 35) in 1981.

**Figure 7. Average Total Energy Expenditures, by Region — 1978, 1979, 1980, and 1981 (Nominal Dollars per Household)**



Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys. For 1981 data, see Table 6.

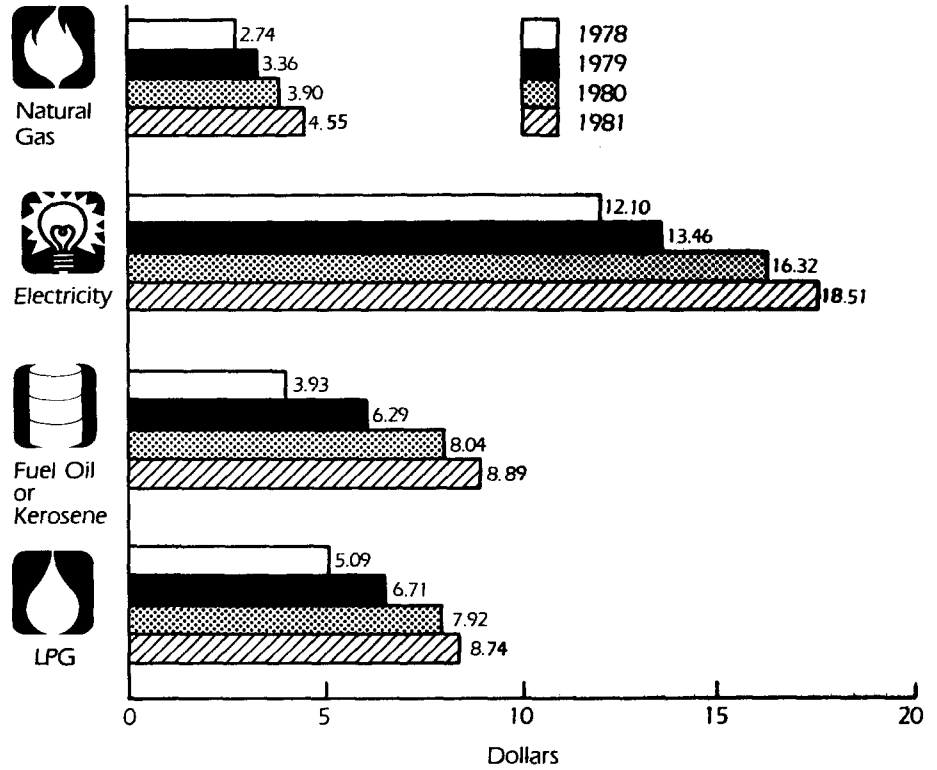




## Summary of Findings (Continued)

Prices by year and fuel type are shown in Figure 8.

**Figure 8. Average Energy Prices — 1978, 1979, 1980, and 1981 (Nominal Dollars per Million Btu)**



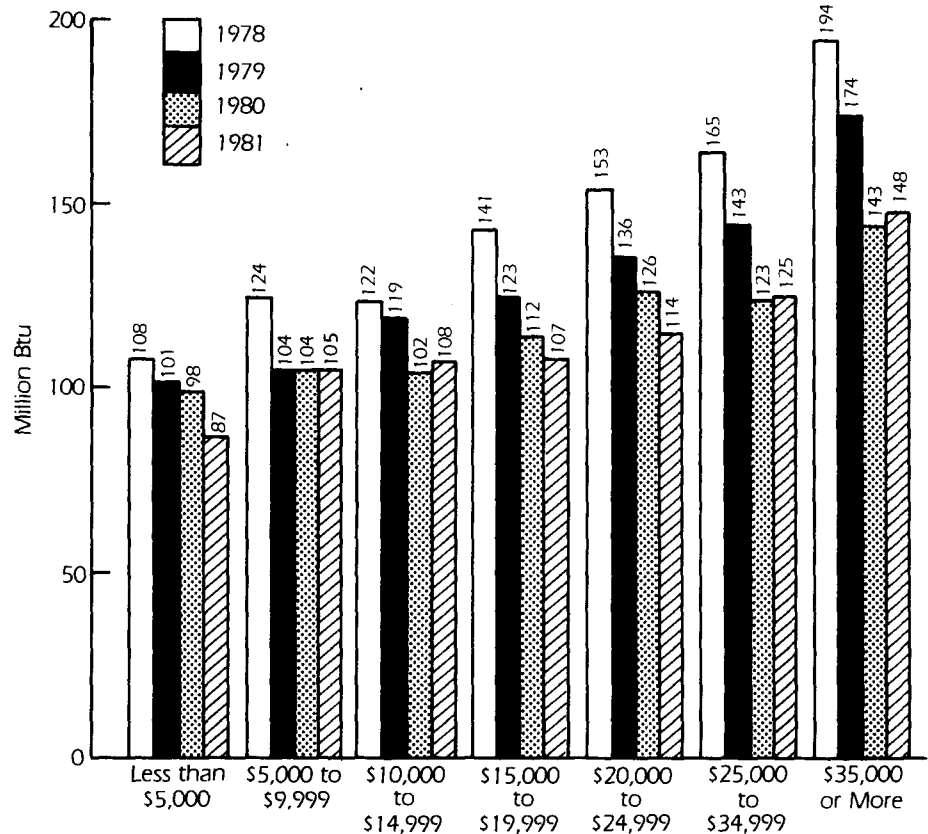
Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys. For 1981 data, see Table 17.



## Summary of Findings (Continued)

There is a large difference in average energy consumption and expenditures among households with different incomes. The highest income households use about 70 percent more energy than the lowest income group; their living quarters are about twice the size of the lowest income group and they have more appliances. In the first three years of RECS, however, there was a trend towards parity, with high-income households lowering their energy consumption more than low-income households did. The 1981 RECS data, however, show a slight reversal of this trend. Households earning less than \$5,000 reduced their consumption by an estimated 11 (+ 7) million Btu, while households with incomes over \$24,000 did not show a continued drop (Figure 9). The small increase of 2 to 5 million Btu for these households may be due to sampling variance rather than a true increase.

**Figure 9. Average Total Energy Consumption, by Income Class — 1978, 1979, 1980, and 1981 (Million Btu per Household)**



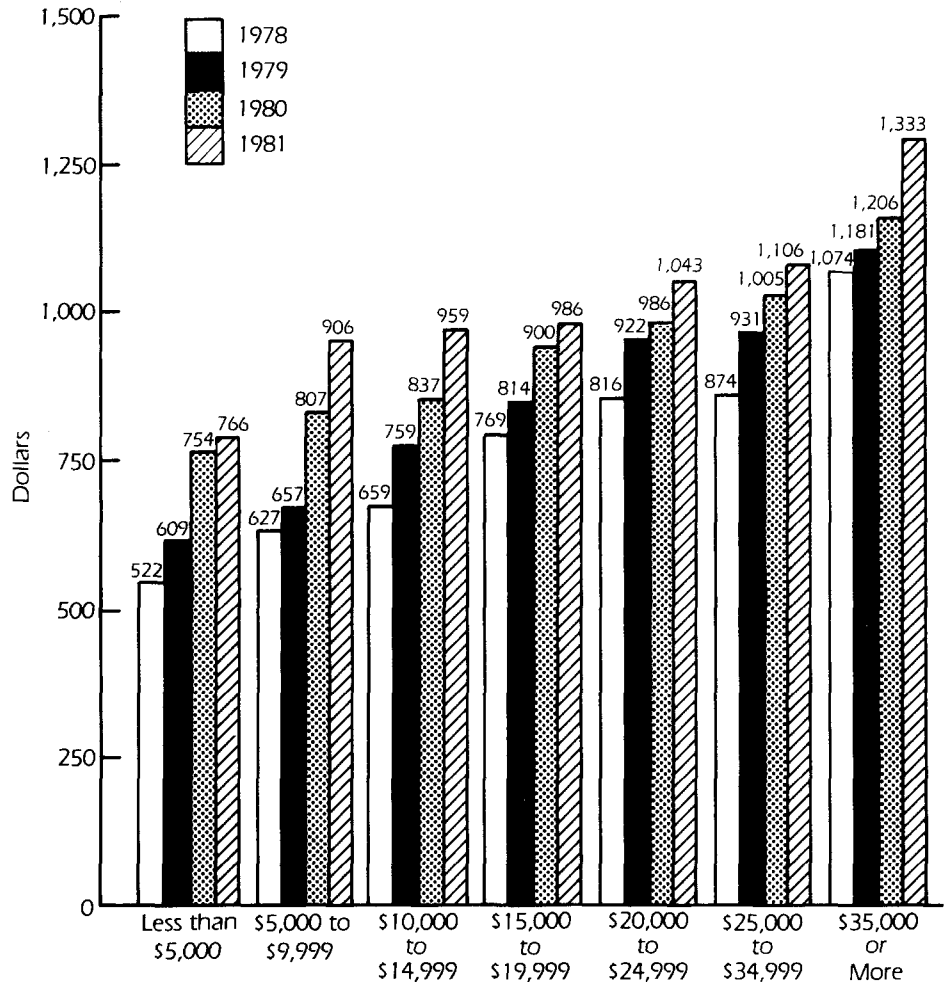
Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys. For 1981 data, see Table 5.



## Summary of Findings (Continued)

Rising energy prices affected all income groups, so that energy expenditures increased for all income groups from 1980 to 1981 as shown in Figure 10. Expenditures for households in the highest income group (\$35,000 or more) averaged \$1,333 (+ 61), almost 75 percent more than expenditures for the lowest income group (less than \$5,000), which were \$766 (+ 39).

**Figure 10. Average Total Energy Expenditures, by Income Class — 1978, 1979, 1980, and 1981 (Nominal Dollars per Household)**



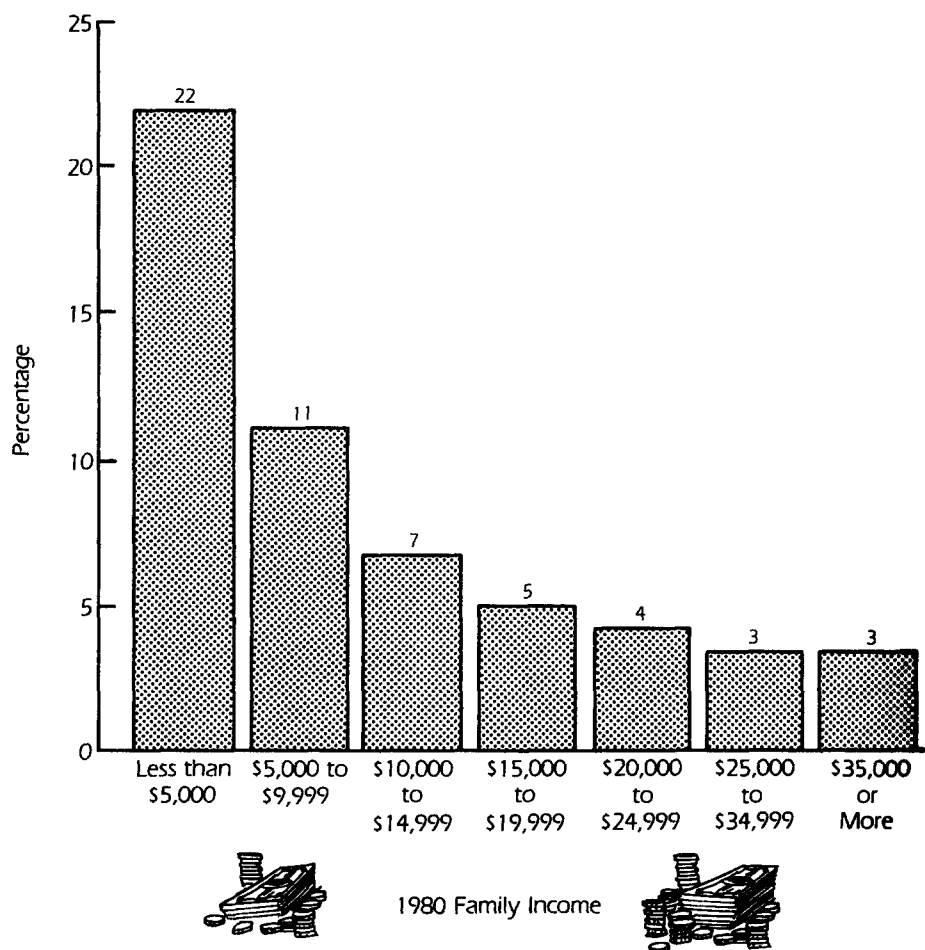
Source: Energy Information Administration, 1978, 1979, 1980, and 1981 Residential Energy Consumption Surveys. For 1981 data, see Table 6.



## Summary of Findings (Continued)

Expenditures as a percentage of income, however, are much higher for lower income groups than for higher income groups, as shown in Figure 11.<sup>4</sup> Low-income households typically spent about 20 percent of their income on energy, while high-income households spent from 3 to 4 percent of their income on energy.

**Figure 11. Percentage of Income Spent on Household Energy, by Income Class — 1981**



Note: Household energy includes all uses of natural gas, electricity, fuel oil or kerosene, and LPG. It does not include motor gasoline.

Source: Energy Information Administration, 1981 Residential Energy Consumption Survey. See Table 6.

<sup>4</sup>The measure of expenditures as a percentage of income is determined by taking each household's energy expenditure for 1981 and dividing that by the family's income in 1980. The medians of this statistic for a group of households in each income group are given in Figure 11 and in Table 6. This particular statistic has some limitations since income and expenditures are not for the same time period. (See the Glossary and Appendix C, "Limitations of the Data," for further discussions of this statistic.)



## Summary of Findings (Continued)

### Apartment Buildings

Apartment buildings containing 5 or more units are an important part of the RECS survey, since 14 (+ 2) percent of U.S. households live in apartments of this type. However, the consumption data for these households are not of the same quality as for other types of housing units. Data on consumption of electricity and natural gas for apartment buildings of five or more units are based largely on imputed estimates and data for fuel oil are entirely imputed. For this reason, the statistical section of the report does not contain tables based solely on apartments. Rather, limited data on apartments are reported here.

An estimated 911,000 (+ 120,000) buildings of five or more units used 923 (+ 110) trillion Btu of energy for the year ending March 1982. The apartment buildings house 12 (+ 1.5) million households and contain 9.8 (+ 1.4) billion square feet of floorspace, or 8 (+ 1) percent of all residential floorspace.

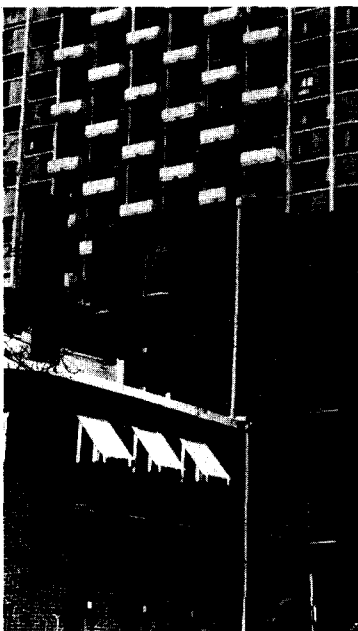
Most of these buildings have two or three floors with only 8 (+ 2) percent having four or more floors. Forty-one percent of the buildings with five or more apartment units have a central heating system for the building. Very few (3 percent) have a central air-conditioning system for the building. These buildings are fairly equally spread out among the four Census regions as shown below:

**Table S1. Number of Apartment Buildings (Five or More Units) and Energy Consumed, by Census Region, 1981**

Region	Number of Buildings	Energy Consumed (Trillion Btu)
Northeast	232,000 (+ 43,000)	409 (+ 66)
North Central	214,000 (+ 81,000)	189 (+ 80)
South	256,000 (+ 80,000)	192 (+ 56)
West	209,000 (+ 54,000)	136 (+ 23)

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

Consumption of energy by apartment buildings in each region is related to the size of buildings that predominate in each region. The Northeast has the highest consumption and the highest proportion of large buildings--those containing 20 or more units (Table S2). The West is lowest in consumption and has a high proportion of small apartment buildings.





## Summary of Findings (Continued)

**Table S2. Percentage of Apartment Buildings (Five or More Units), by Census Region and Size of Building, 1981**

Units in the Structure	Northeast	North Central	South	West
5 to 9 .....	59 (+ 19)	50 (+ 18)	57 (+ 23)	71 (+ 27)
10 to 19 .....	20 (+ 9)	45 (+ 36)	33 (+ 22)	19 (+ 6)
20 or More .....	20 (+ 5)	6 (+ 4)	10 (+ 9)	10 (+ 4)
Total .....	100	100	100	100

Note: Because of rounding, data may not sum to totals.

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

The fuels used for space heating also tend to be the fuels used for water heating and, to a lesser extent, for cooking. About one-fourth of the buildings (258,000 ± 85,000) use electricity for space heating, water heating, and cooking. A smaller group (237,000 ± 89,000) uses natural gas for these three functions. The next largest group of buildings (195,000 ± 62,000) uses natural gas for space heating and water heating but electricity for cooking. Fuel oil is used for space heating and water heating in 116,000 ± 43,000 buildings.

Table S3 shows the energy consumed for buildings heated by natural gas, electricity, or fuel oil. Most of the fuel consumed in these buildings is the same fuel that is used for heating the building. The reason for this is that heating requires a larger amount of energy than does cooling or lighting, and furthermore, as shown earlier, the heating fuel is often the same fuel used for water heating and cooking.

**Table S3. Annual Energy Consumption of Buildings Containing Five or More Housing Units and Heating with Natural Gas, Electricity, or Fuel Oil, 1981**

Main Heating Fuel	Number of Buildings (Thousands)	Consumption of Fuel (Trillion Btu)			
		Natural Gas	Electricity	Fuel Oil	Total <sup>a</sup>
Natural Gas	447 (+122)	347 (+86)	65 (+18)	Q	421 (+109)
Electricity	302 (+88)	20 (+12)	173 (+42)	Q	193 (+ 45)
Fuel Oil	130 (+41)	27 (+10)	26 (+42)	239 (+37)	292 (+ 45)

<sup>a</sup>Total Btu includes LPG not shown separately.

"Q" = Data withheld because of a large variance.

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



## Summary of Findings (Continued)

### Average Annual Fuel Bills

Two factors have a large effect on the amount of heating fuel that is used by U.S. households over the course of a year: the size of the home and the severity of outdoor winter temperatures. Table S4 shows the distribution of U.S. homes according to these factors for the major heating fuels. Only homes that pay directly to the fuel supplier for the fuels listed are included in the table. This means that 65.4 million or 79 percent of all homes pay directly to the energy supplier for their use of natural gas, fuel oil or kerosene, electricity, or LPG as the main heating fuel.

**Table S4. Households Paying Directly for Main Heating Fuel, by Size of Home and Winter Temperatures (Million Households)**



Size of Home/ Winter Temperature	Main Heating Fuel				
	Natural Gas	Fuel Oil or Kerosene	Electricity		LPG
With Air Condi- tioning			Without Air Condi- tioning		
Total Households ...	46.2	12.1	10.6	3.7	3.7
Households that Pay Directly to the Supplier .....	40.1	8.7	9.7	3.4	3.6
Small Home					
Warm .....	5.1	0.5	2.3	0.5	0.9
Moderate .....	0.9	0.4	0.7	0.6	0.2
Cold .....	3.9	1.1	0.8	0.5	0.3
Medium-Size Home					
Warm .....	9.2	0.4	2.9	0.4	1.1
Moderate .....	2.1	0.9	0.9	0.6	0.2
Cold .....	8.0	2.3	0.4	0.4	0.4
Large Home					
Warm .....	2.1	0.1	0.7	Q	0.2
Moderate .....	1.4	0.5	0.4	0.2	0.1
Cold .....	7.4	2.5	0.5	0.1	0.2

"Q" = Data withheld because of a large variance.

Note: Temperature categories and size categories correspond to categories used in Table 14.

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



## Summary of Findings (Continued)

Table S5 shows the range of consumption of main heating fuel for households that pay directly to a fuel supplier for their energy. Consumption ranges are given by type of heating fuel for housing units of similar sizes with similar winter temperatures. The table presents a range of energy use that brackets 50 percent of U.S. households. Twenty-five percent of U.S. households will be above the range and 25 percent will be below the range.

**Table S5. Average Annual Household Consumption of the Main Heating Fuel**

Size of Home/ Winter Temperatures	Main Heating Fuel <sup>a</sup>			
	Natural Gas (Thousand Cubic Feet)	Fuel Oil or Kerosene (Gallons)	Electricity	
			With Air Conditioning (Thousand kWh)	Without Air Conditioning (Thousand kWh)
<b>Small Home</b>				
Warm .....	40 - 74	Q	6.9 - 13.2	2.8 - 6.6
Moderate ...	58 - 97	235 - 625	7.9 - 14.6	8.9 - 16.3
Cold .....	77 - 129	377 - 842	7.2 - 19.2	9.7 - 15.7
<b>Medium-Size Home</b>				
Warm .....	51 - 90	Q	10.8 - 19.6	6.8 - 13.1
Moderate ...	74 - 120	380 - 768	11.1 - 21.7	13.7 - 26.6
Cold .....	100 - 162	500 - 1,078	16.7 - 27.3	17.8 - 29.0
<b>Large Home</b>				
Warm .....	74 - 124	Q	17.8 - 33.6	Q
Moderate ...	97 - 157	411 - 876	15.0 - 26.3	18.2 - 29.2
Cold .....	127 - 215	635 - 1,258	21.4 - 32.2	21.1 - 38.5

<sup>a</sup>LPG not shown because of limited data. Figures include uses of the fuel for nonheating purposes such as water heating, cooking, lighting, clothes drying, refrigeration, and other uses. The ranges are based on households that pay directly to the supplier for their heating fuel.

"Q" = Data withheld because of a large variance.

Note: Temperature categories and housing-size categories correspond to the categories used in Table 14.

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

If the household's energy use falls:

Within the range--The household is using a similar amount of the heating fuel as many other households. Its energy use is considered average.

Below the range--The household is using less heating fuel than other households.

Above the range--The household is using more heating fuel than other households.

33  
66

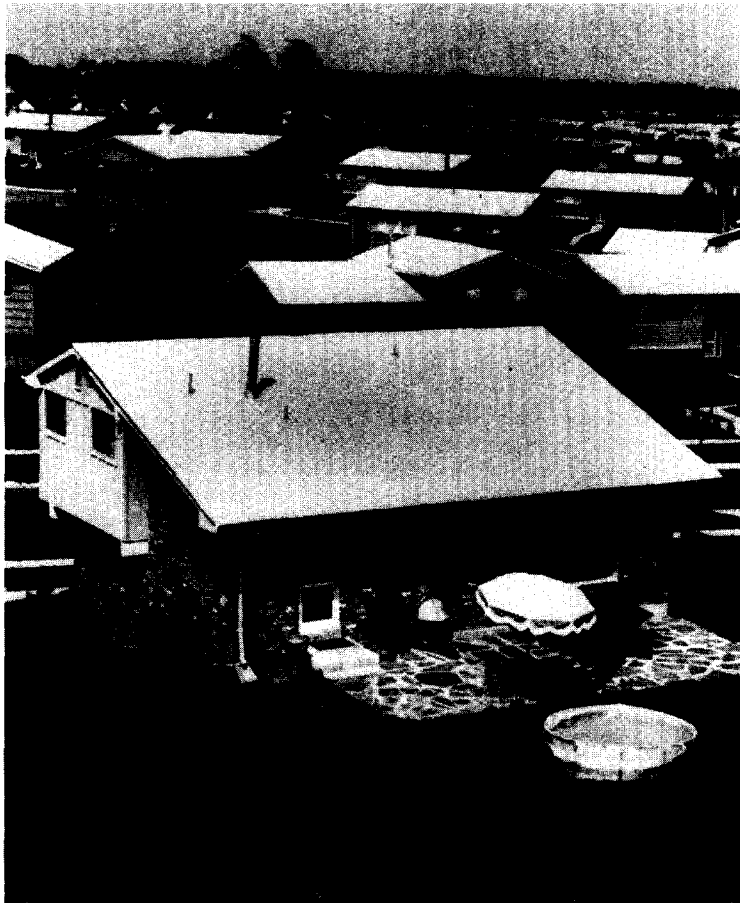
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## Summary of Findings (Continued)

These ranges are quite large, with energy use at the upper end of the range twice that of the lower end. The range is wide because a number of factors affect the amount of heating fuel used and households show a great amount of variation in their use of energy. These factors include absence from home when reduced heating is required, the presence of insulation, the amount of outside air that leaks into the house, thermostat settings, heat gain from the sun, presence of people and appliances that give off heat, and use of the heating fuel for other purposes such as water heating, clothes drying, cooking, or refrigeration. Any number of factors may account for unusually high or low consumption of the heating fuel. The individual householder or trained technician must determine the cause for the level of consumption in a particular home.







# Consumption and Expenditures of Total and Specific Fuels

Table 1. U.S. Residential Energy Consumption and Expenditures — April 1981 Through March 1982

HOUSEHOLD CHARACTERISTICS	ALL FUELS			NATURAL GAS		ELECTRICITY		FUEL OIL OR KEROSENE		LIQUEFIED PETROLEUM GAS	
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)
TOTAL HOUSEHOLDS .....	83.1	9.51	85.0	5.39	24.5	2.48	45.9	1.33	11.8	0.31	2.7
CENSUS REGION AND DIVISION											
NORTHEAST.....	17.9	2.47	25.6	1.06	6.1	.42	10.6	.96	8.6	.03	.3
NEW ENGLAND.....	4.3	.54	6.0	.17	1.2	.09	2.3	.27	2.4	.01	.1
MIDDLE ATLANTIC.....	13.7	1.93	19.5	.88	4.9	.32	8.2	.70	6.2	.02	.2
NORTH CENTRAL.....	21.2	3.12	22.1	2.24	9.3	.57	10.3	.17	1.5	.13	1.0
EAST NORTH CENTRAL.....	14.6	2.23	15.6	1.67	7.1	.37	6.9	.13	1.1	.06	.6
WEST NORTH CENTRAL.....	6.6	.88	6.5	.57	2.3	.20	3.4	.05	.4	.06	.5
SOUTH.....	27.7	2.46	25.5	1.16	5.3	1.03	17.7	.16	1.4	.12	1.1
SOUTH ATLANTIC.....	14.1	1.15	13.2	.45	2.4	.49	8.9	.14	1.3	.07	.7
EAST SOUTH CENTRAL.....	5.6	.53	5.0	.24	1.0	.25	3.7	.01	.1	.02	.2
WEST SOUTH CENTRAL.....	8.0	.78	7.3	.47	2.0	.28	5.1	Q	Q	.03	.2
WEST.....	16.3	1.47	11.7	.93	3.8	.46	7.4	.03	.3	.04	.3
MOUNTAIN.....	4.0	.42	3.1	.28	1.1	.11	1.8	.01	Q	.02	.1
PACIFIC.....	12.3	1.05	8.6	.65	2.6	.35	5.5	.03	.3	.02	.2
AREA TYPE											
URBAN.....	57.3	6.93	58.6	4.45	20.5	1.53	29.6	.91	8.1	.04	.3
RURAL.....	25.9	2.58	26.4	.94	4.0	.95	16.3	.42	3.7	.28	2.4
SMSA/NON-SMSA											
SMSA.....	56.6	6.75	59.5	4.10	18.9	1.60	31.2	.97	8.6	.08	.8
NON-SMSA.....	26.5	2.76	25.4	1.29	5.6	.88	14.7	.36	3.2	.23	2.0
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD) --LONG-TERM AVERAGE											
<2,000 CDD AND >7,000 HDD.....	8.8	1.07	8.9	.56	2.4	.23	4.1	.22	1.9	.06	.5
<2,000 CDD AND 5,500 TO 7,000 HDD.....	21.0	3.17	24.2	2.16	9.5	.55	10.6	.39	3.5	.07	.6
<2,000 CDD AND 4,000 TO 5,499 HDD.....	21.6	2.59	24.9	1.24	6.4	.64	12.2	.65	5.7	.06	.5
<2,000 CDD AND <4,000 HDD.....	19.5	1.74	15.6	1.02	4.2	.59	10.3	.06	.5	.07	.6
>2,000 CDD AND <4,000 HDD.....	12.2	.94	11.3	.42	2.0	.46	8.7	.02	.2	.05	.5

-See footnotes at end of table.



# Consumption and Expenditures of Total and Specific Fuels

Table 1. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL FUELS			NATURAL GAS		ELECTRICITY		FUEL OIL OR KEROSENE		LIQUEFIED PETROLEUM GAS	
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)
<b>HOW UTILITIES ARE PAID</b>											
ALL PAID BY HOUSEHOLD.....	69.6	8.12	71.6	4.67	20.7	2.23	40.1	0.93	8.3	0.30	2.6
SOME PAID, SOME IN RENT.....	7.0	.70	6.7	.35	1.9	.11	2.7	.23	2.1	Q	Q
ALL INCLUDED IN RENT.....	4.6	.44	4.3	.22	1.2	.09	2.1	.12	1.1	Q	Q
OTHER.....	2.0	.25	2.3	.15	.7	.05	1.1	.05	.4	.01	.1
<b>HOUSING STRUCTURE BY OWNERSHIP</b>											
SINGLE-FAMILY DETACHED.....	54.6	6.92	59.4	4.06	17.7	1.81	32.5	.80	7.1	.25	2.1
OWN.....	46.4	6.09	52.2	3.58	15.6	1.58	28.3	.73	6.5	.20	1.7
RENT.....	8.2	.83	7.2	.48	2.1	.24	4.1	.07	.6	.05	.4
SINGLE-FAMILY ATTACHED.....	3.0	.32	3.1	.19	1.0	.07	1.5	.06	.5	Q	Q
OWN.....	2.1	.23	2.2	.15	.8	.05	1.1	.04	.3	Q	Q
RENT.....	.9	.09	.8	.04	.2	.02	.4	.02	.2	Q	Q
BUILDING WITH 2 TO 4 UNITS....	9.3	1.01	9.0	.62	3.2	.20	4.1	.19	1.7	.01	.1
OWN.....	2.1	.28	2.5	.17	.9	.05	1.1	.06	.5	Q	Q
RENT.....	7.2	.73	6.5	.44	2.3	.15	3.0	.13	1.2	Q	Q
BUILDING WITH 5 OR MORE UNITS.....	12.0	.92	10.0	.41	2.1	.27	5.6	.25	2.2	Q	Q
OWN.....	1.0	.07	.8	.03	.1	.02	.5	.02	.2	Q	Q
RENT.....	11.0	.85	9.2	.38	2.0	.24	5.1	.23	2.0	Q	Q
MOBILE HOME.....	4.2	.34	3.5	.12	.5	.13	2.2	.04	.3	.06	.5
OWN.....	3.6	.29	3.1	.10	.4	.11	1.9	.03	.3	.05	.5
RENT.....	.6	.05	.5	.02	.1	.02	.3	.01	.1	.01	.1
<b>NUMBER OF ROOMS</b>											
1.....	.5	.04	.4	.02	.1	.01	.2	.02	.1	Q	Q
2.....	1.9	.13	1.4	.07	.3	.04	.8	.02	.2	Q	Q
3.....	7.7	.56	5.7	.25	1.3	.15	2.9	.15	1.3	.01	.1
4.....	17.4	1.48	14.0	.79	3.7	.42	7.9	.21	1.9	.05	.5
5.....	19.4	2.09	18.5	1.20	5.4	.55	10.1	.26	2.3	.08	.7
6.....	16.5	2.03	17.7	1.20	5.4	.52	9.5	.24	2.2	.07	.6
7.....	9.6	1.37	11.9	.80	3.5	.36	6.4	.18	1.6	.03	.3
8 OR MORE.....	10.2	1.81	15.5	1.07	4.8	.44	8.0	.25	2.2	.06	.5
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>											
ALL.....	30.7	3.42	32.5	1.91	8.4	1.21	21.4	0.21	1.9	0.09	0.8
SOME.....	17.7	2.33	20.5	1.33	6.3	.47	9.5	.44	4.0	.08	.7
NONE.....	34.7	3.76	32.0	2.15	9.8	.80	14.9	.67	6.0	.15	1.3
<b>MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE</b>											
LESS THAN 600 SQUARE FEET.....	7.2	.49	5.0	.25	1.2	.13	2.7	.10	.9	.02	.2
600 TO 999 SQUARE FEET.....	21.8	1.89	17.7	.99	4.6	.51	9.6	.33	2.9	.07	.6
1,000 TO 1,599 SQUARE FEET....	25.2	2.68	24.4	1.48	6.7	.76	13.9	.31	2.7	.13	1.1
1,600 TO 1,999 SQUARE FEET....	10.6	1.38	12.1	.82	3.7	.36	6.7	.16	1.4	.03	.3
2,000 TO 2,399 SQUARE FEET....	7.4	1.07	9.1	.64	2.9	.27	4.7	.14	1.3	.03	.2
2,400 TO 2,999 SQUARE FEET....	5.6	.91	7.5	.55	2.4	.21	3.8	.12	1.0	.03	.2
3,000 OR MORE SQUARE FEET....	5.4	1.09	9.0	.66	2.9	.24	4.5	.18	1.6	.01	.1
<b>YEAR HOUSE BUILT</b>											
1939 OR EARLIER.....	24.2	3.23	26.4	1.95	9.2	.53	10.6	.61	5.5	.14	1.2
1940 TO 1949.....	6.9	.79	6.7	.47	2.1	.18	3.4	.11	1.0	.02	.2
1950 TO 1959.....	13.5	1.62	13.4	1.00	4.3	.37	6.9	.24	2.1	.02	.2
1960 TO 1964.....	7.6	.92	8.1	.55	2.5	.23	4.4	.10	.9	.03	.3
1965 TO 1969.....	8.5	.92	8.7	.52	2.4	.27	5.1	.11	.9	.02	.2
1970 TO 1974.....	10.7	1.05	10.6	.49	2.2	.40	7.0	.11	1.0	.05	.5
1975 TO 1978.....	7.7	.69	7.6	.30	1.3	.33	5.7	.04	.3	.03	.2
1979 OR LATER.....	4.0	.30	3.5	.11	.5	.17	2.8	.01	.1	.01	.1
<b>OWN/RENT</b>											
OWN.....	55.1	6.96	60.7	4.03	17.9	1.81	32.9	.87	7.7	.25	2.2
RENT.....	28.0	2.55	24.2	1.36	6.6	.67	13.0	.46	4.1	.06	.5

See footnotes at end of table.



# Consumption and Expenditures of Total and Specific Fuels

Table 1. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL FUELS			NATURAL GAS		ELECTRICITY		FUEL OIL OR KEROSENE		LIQUEFIED PETROLEUM GAS	
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)
<b>1980 FAMILY INCOME</b>											
LESS THAN \$5,000.....	9.8	0.85	7.5	0.50	2.3	0.20	3.8	0.11	1.0	0.04	0.4
\$5,000 TO \$9,999.....	13.5	1.41	12.3	.80	3.7	.32	6.0	.23	2.0	.06	.5
\$10,000 TO \$14,999.....	12.5	1.35	12.0	.75	3.4	.34	6.2	.22	1.9	.04	.4
\$15,000 TO \$19,999.....	10.7	1.14	10.5	.61	2.8	.33	6.0	.15	1.3	.05	.4
\$20,000 TO \$24,999.....	10.8	1.23	11.2	.67	3.1	.34	6.2	.17	1.5	.04	.4
\$25,000 TO \$34,999.....	13.3	1.66	14.7	.99	4.4	.45	8.3	.19	1.7	.03	.3
\$35,000 OR MORE.....	12.6	1.87	16.8	1.07	4.8	.50	9.4	.26	2.3	.05	.4
<b>BELOW 100% OF POVERTY.....</b>											
BELOW 125% OF POVERTY.....	11.0	1.05	9.1	.63	2.9	.25	4.7	.12	1.1	.05	.4
RECEIVE ASSISTANCE IN ENERGY PAYMENTS.....	15.8	1.53	13.3	.91	4.2	.35	6.7	.19	1.7	.08	.7
<b>ORIGIN OF HOUSEHOLDER</b>											
WHITE.....	4.4	.50	4.2	.30	1.4	.09	1.8	.09	.8	.02	.2
BLACK.....	72.5	8.29	73.9	4.67	21.0	2.22	40.6	1.12	9.9	.29	2.5
OTHER.....	9.0	1.09	9.6	.66	3.2	.22	4.5	.18	1.6	.02	.2
<b>AGE OF HOUSEHOLDER</b>											
UNDER 25 YEARS.....	1.6	.13	1.5	.06	.3	.04	.8	.03	.3	.01	.1
25 TO 34 YEARS.....	6.6	.55	5.0	.32	1.4	.17	3.0	.04	.4	.02	.1
35 TO 44 YEARS.....	21.0	2.21	19.8	1.30	6.0	.62	11.4	.22	2.0	.06	.5
45 TO 59 YEARS.....	14.6	1.92	17.7	1.05	4.8	.53	9.8	.29	2.6	.05	.5
60 YEARS AND OVER.....	18.4	2.38	21.3	1.33	6.1	.61	11.4	.35	3.1	.08	.7
<b>HOUSEHOLD SIZE</b>											
1 PERSON.....	22.5	2.45	21.2	1.38	6.3	.54	10.3	.42	3.8	.10	.9
2 PERSONS.....	15.4	1.35	11.8	.77	3.6	.29	5.6	.26	2.3	.03	.3
3 PERSONS.....	27.7	2.95	26.5	1.63	7.4	.77	14.3	.43	3.8	.11	1.0
4 PERSONS.....	15.4	1.85	16.5	1.07	4.9	.50	9.1	.21	1.9	.07	.6
5 PERSONS.....	14.4	1.84	16.6	1.04	4.7	.52	9.4	.23	2.1	.05	.5
6 OR MORE PERSONS.....	6.3	.90	7.9	.52	2.4	.24	4.4	.10	.9	.03	.3
	4.1	.63	5.7	.35	1.6	.16	3.1	.09	.9	.02	.1

See footnotes at end of table.



# Consumption and Expenditures of Total and Specific Fuels

Table 1. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL FUELS			NATURAL GAS		ELECTRICITY		FUEL OIL OR KEROSENE		LIQUEFIED PETROLEUM GAS	
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)
<b>FUEL COMBINATIONS</b>											
NATURAL GAS USED MAIN HEAT....	46.2	6.30	44.6	5.17	23.1	1.11	21.3	0.02	0.2	Q	Q
NATURAL GAS FOR HOT WATER AND HAVE AIR CONDITIONING...	25.1	3.58	26.2	2.89	12.9	.68	13.2	.01	.1	Q	Q
NATURAL GAS FOR HOT WATER AND NO AIR CONDITIONING.....	17.0	2.19	14.2	1.90	8.3	.28	5.8	.01	.1	Q	Q
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	2.6	.35	2.8	.24	1.1	.11	1.7	Q	Q	Q	Q
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	1.4	.17	1.3	.13	.7	.04	.6	Q	Q	Q	Q
OTHER.....	.1	.02	.2	.01	.1	Q	.1	.01	.1	Q	Q
ELECTRICITY USED MAIN HEAT....	14.2	.83	12.5	.06	.3	.76	12.1	Q	Q	0.01	0.1
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	9.5	.54	8.8	Q	Q	.53	8.8	Q	Q	Q	Q
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	3.2	.18	2.4	Q	Q	.18	2.3	Q	Q	Q	Q
OTHER.....	1.5	.11	1.3	.06	.3	.05	1.0	Q	Q	Q	Q
FUEL OIL USED MAIN HEAT.....	11.3	1.61	18.2	.10	.9	.27	6.4	1.22	10.8	.01	.2
FUEL OIL FOR HOT WATER AND HAVE AIR CONDITIONING...	2.9	.46	5.3	.02	.2	.06	1.7	.38	3.4	Q	Q
FUEL OIL FOR HOT WATER AND NO AIR CONDITIONING.....	2.8	.41	4.6	.03	.3	.04	1.3	.34	3.0	Q	Q
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	1.8	.23	2.8	Q	Q	.08	1.4	.15	1.3	Q	Q
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	2.2	.26	2.8	Q	Q	.07	1.2	.18	1.6	Q	Q
OTHER.....	1.6	.25	2.7	.05	.4	.03	.8	.17	1.5	.01	.1
WOOD USED MAIN HEAT.....	5.4	.29	3.9	.03	.1	.18	3.0	.04	.3	.04	.4
LPG USED MAIN HEAT.....	3.7	.36	4.1	Q	Q	.11	2.0	.01	Q	.25	2.1
KEROSENE USED MAIN HEAT.....	.8	.07	.9	Q	Q	.02	.4	.04	.4	Q	Q
COAL USED MAIN HEAT.....	.7	.03	.4	.01	.1	.01	.2	.01	.1	Q	Q
NO HEATING FUEL.....	.4	.02	.3	.01	Q	.01	.3	Q	Q	Q	Q
OTHER FUEL.....	.3	.01	.2	Q	Q	.01	.2	Q	Q	Q	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.



# Percentage of Consumption and Expenditures of Total and Specific Fuels

**Table 2. U.S. Residential Energy Consumption and Expenditures — April 1981 Through March 1982 (Percent)**

HOUSEHOLD CHARACTERISTICS	ALL FUELS			NATURAL GAS		ELECTRICITY		FUEL OIL OR KEROSENE		LIQUEFIED PETROLEUM GAS	
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)
TOTAL HOUSEHOLDS .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>CENSUS REGION AND DIVISION</b>											
NORTHEAST.....	21.6	25.9	30.1	19.6	24.9	16.9	23.0	72.5	72.8	9.0	10.8
NEW ENGLAND.....	5.1	5.7	7.1	3.2	4.9	3.8	5.1	20.0	20.2	2.5	3.2
MIDDLE ATLANTIC.....	16.4	20.3	23.0	16.4	20.0	13.1	17.9	52.5	52.6	6.5	7.7
NORTH CENTRAL.....	25.5	32.7	26.0	41.6	38.1	23.1	22.4	13.1	12.9	40.4	36.9
EAST NORTH CENTRAL.....	17.6	23.5	18.4	31.0	28.9	14.9	15.0	9.4	9.3	20.3	20.2
WEST NORTH CENTRAL.....	8.0	9.3	7.7	10.5	9.2	8.2	7.4	3.7	3.6	20.1	16.7
SOUTH.....	33.3	25.9	30.1	21.5	21.7	41.4	38.6	11.8	11.9	38.4	40.4
SOUTH ATLANTIC.....	17.0	12.1	15.6	8.4	9.7	19.9	19.5	10.8	10.8	21.4	24.4
EAST SOUTH CENTRAL.....	6.7	5.5	5.8	4.4	4.0	10.1	8.0	1.0	1.0	7.3	7.0
WEST SOUTH CENTRAL.....	9.6	8.2	8.6	8.7	8.0	11.4	11.1	q	q	9.7	9.1
WEST.....	19.6	15.4	13.8	17.3	15.3	18.6	16.0	2.5	2.5	12.2	11.9
MOUNTAIN.....	4.8	4.4	3.7	5.3	4.6	4.6	4.0	.4	q	4.9	4.5
PACIFIC.....	14.8	11.0	10.1	12.1	10.7	14.0	12.1	2.1	2.1	7.3	7.4
<b>AREA TYPE</b>											
URBAN.....	68.9	72.8	69.0	82.6	83.7	61.7	64.6	68.5	68.7	11.5	12.6
RURAL.....	31.1	27.2	31.0	17.4	16.3	38.3	35.4	31.5	31.3	88.5	87.4
<b>SMSA/NON-SMSA</b>											
SMSA.....	68.1	70.9	70.1	76.1	77.3	64.4	68.0	72.6	72.8	26.3	28.4
NON-SMSA.....	31.9	29.1	29.9	23.9	22.7	35.6	32.0	27.4	27.2	73.7	71.6
<b>ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)</b>											
--LONG-TERM AVERAGE											
<2,000 CDD AND >7,000 HDD.....	10.6	11.2	10.5	10.3	9.9	9.5	8.9	16.3	16.2	19.6	19.4
<2,000 CDD AND 5,500 TO 7,000 HDD.....	25.2	33.4	28.5	40.0	38.9	22.3	23.1	29.5	29.6	22.5	22.1
<2,000 CDD AND 4,000 TO 5,499 HDD.....	26.0	27.2	29.3	23.0	26.2	25.9	26.7	48.6	48.5	19.2	18.7
<2,000 CDD AND <4,000 HDD.....	23.5	18.3	18.4	18.9	17.0	23.8	22.4	4.4	4.4	22.8	23.1
>2,000 CDD AND <4,000 HDD.....	14.7	9.9	13.3	7.7	8.1	18.5	18.9	1.2	1.3	16.0	16.7

See footnotes at end of table.



# Percentage of Consumption and Expenditures of Total and Specific Fuels

Table 2. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL FUELS			NATURAL GAS		ELECTRICITY		FUEL OIL OR KEROSENE		LIQUEFIED PETROLEUM GAS	
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)
<b>HOW UTILITIES ARE PAID</b>											
ALL PAID BY HOUSEHOLD.....	83.7	85.4	84.3	86.6	84.5	90.0	87.3	69.8	69.9	94.8	95.0
SOME PAID, SOME IN RENT.....	8.4	7.3	7.9	6.6	7.8	4.4	5.9	17.5	17.5	Q	Q
ALL INCLUDED IN RENT.....	5.5	4.6	5.1	4.1	4.7	3.7	4.5	9.1	9.1	Q	Q
OTHER.....	2.4	2.7	2.7	2.7	3.0	1.9	2.3	3.5	3.5	3.4	3.4
<b>HOUSING STRUCTURE BY OWNERSHIP</b>											
SINGLE-FAMILY DETACHED.....	65.6	72.8	69.9	75.4	72.1	73.2	70.7	60.0	60.0	79.1	78.2
OWN.....	55.8	64.0	61.4	66.5	63.7	63.7	61.7	55.0	54.9	63.8	62.5
RENT.....	9.9	8.7	8.5	8.9	8.4	9.5	9.0	5.1	5.1	15.4	15.7
SINGLE-FAMILY ATTACHED.....	3.6	3.4	3.6	3.5	4.1	3.0	3.3	4.4	4.4	Q	Q
OWN.....	2.5	2.5	2.6	2.7	3.1	2.0	2.4	2.9	2.9	Q	Q
RENT.....	1.1	.9	1.0	.8	.9	1.0	1.0	1.5	1.5	Q	Q
BUILDING WITH 2 TO 4 UNITS.....	11.2	10.6	10.6	11.4	13.1	8.0	8.9	14.2	14.2	1.9	2.1
OWN.....	2.5	2.9	3.0	3.2	3.8	1.9	2.3	4.2	4.2	Q	Q
RENT.....	8.7	7.7	7.7	8.2	9.2	6.1	6.6	10.1	10.1	Q	Q
BUILDING WITH 5 OR MORE UNITS.....	14.5	9.7	11.7	7.5	8.7	10.8	12.3	18.7	18.6	Q	Q
OWN.....	1.2	.7	.9	.5	.5	1.0	1.1	1.3	1.3	Q	Q
RENT.....	13.3	9.0	10.8	7.0	8.1	9.8	11.1	17.4	17.3	Q	Q
MOBILE HOME.....	5.0	3.5	4.2	2.1	2.1	5.1	4.7	2.7	2.7	18.7	19.4
OWN.....	4.3	3.0	3.6	1.8	1.7	4.4	4.1	2.1	2.2	16.7	17.4
RENT.....	.7	.5	.6	.4	.4	.7	.6	.5	.5	2.0	2.0
<b>NUMBER OF ROOMS</b>											
1.....	.7	.4	.5	.3	.3	.3	.4	1.3	1.3	Q	Q
2.....	2.3	1.4	1.6	1.2	1.4	1.5	1.7	1.6	1.7	Q	Q
3.....	9.3	5.9	6.7	4.7	5.2	5.9	6.4	11.1	11.1	4.6	5.0
4.....	20.9	15.5	16.4	14.7	15.2	17.0	17.2	15.7	15.7	17.3	17.6
5.....	23.3	22.0	21.8	22.2	22.0	22.3	22.0	19.6	19.6	25.9	26.1
6.....	19.8	21.3	20.8	22.2	21.9	20.9	20.8	18.3	18.2	22.9	23.1
7.....	11.6	14.4	14.0	14.9	14.5	14.5	14.1	13.5	13.5	10.0	9.6
8 OR MORE.....	12.2	19.0	18.2	19.8	19.4	17.6	17.5	18.8	18.9	17.7	16.9
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>											
ALL.....	36.9	35.9	38.3	35.5	34.5	48.6	46.7	16.1	16.1	28.3	27.6
SOME.....	21.3	24.5	24.1	24.7	25.7	19.1	20.8	33.4	33.5	25.3	24.9
NONE.....	41.8	39.6	37.6	39.8	39.9	32.3	32.5	50.4	50.4	46.4	47.5
<b>MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE</b>											
LESS THAN 600 SQUARE FEET.....	8.7	5.2	5.9	4.6	5.0	5.0	5.9	7.5	7.5	6.3	6.8
600 TO 999 SQUARE FEET.....	26.2	19.9	20.9	18.3	18.9	20.5	20.9	24.6	24.7	21.9	22.4
1,000 TO 1,599 SQUARE FEET.....	30.4	28.2	28.7	27.5	27.4	30.7	30.2	23.0	23.0	40.9	42.0
1,600 TO 1,999 SQUARE FEET.....	12.7	14.5	14.3	15.3	15.3	14.6	14.6	12.0	11.9	9.8	9.2
2,000 TO 2,399 SQUARE FEET.....	8.9	11.3	10.7	11.8	11.7	10.8	10.3	10.7	10.7	8.7	8.3
2,400 TO 2,999 SQUARE FEET.....	6.7	9.6	8.9	10.3	10.0	8.6	8.4	8.9	8.8	8.2	7.6
3,000 OR MORE SQUARE FEET.....	6.5	11.5	10.6	12.2	11.8	9.7	9.7	13.4	13.4	4.2	3.8
<b>YEAR HOUSE BUILT</b>											
1939 OR EARLIER.....	29.1	34.0	31.1	36.3	37.5	21.4	23.1	46.0	46.1	43.6	42.8
1940 TO 1949.....	8.3	8.3	7.9	8.7	8.7	7.4	7.4	8.5	8.4	5.7	6.1
1950 TO 1959.....	16.2	17.0	15.8	18.5	17.5	14.8	15.0	17.7	17.6	5.9	6.1
1960 TO 1964.....	9.2	9.6	9.5	10.3	10.1	9.3	9.6	7.8	7.8	9.5	9.3
1965 TO 1969.....	10.2	9.7	10.2	9.6	9.9	11.1	11.2	8.1	8.0	7.3	7.1
1970 TO 1974.....	12.8	11.0	12.5	9.0	8.9	16.0	15.2	8.4	8.5	16.1	16.6
1975 TO 1978.....	9.3	7.3	8.9	5.5	5.5	13.4	12.4	2.8	2.8	8.3	8.3
1979 OR LATER.....	4.8	3.1	4.1	2.0	1.9	6.7	6.1	.8	.8	3.7	3.7

See footnotes at end of table.





# Percentage of Consumption and Expenditures of Total and Specific Fuels

Table 2. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL FUELS			NATURAL GAS		ELECTRICITY		FUEL OIL OR KEROSENE		LIQUEFIED PETROLEUM GAS	
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)
<b>OWN/RENT</b>											
OWN.....	66.3	73.2	71.5	74.7	73.0	72.9	71.7	65.5	65.5	81.1	80.8
RENT.....	33.7	26.8	28.5	25.3	27.0	27.1	28.3	34.5	34.5	18.9	19.2
<b>1980 FAMILY INCOME</b>											
LESS THAN \$5,000.....	11.8	8.9	8.8	9.2	9.4	7.9	8.3	8.5	8.6	13.0	13.1
\$5,000 TO \$9,999.....	16.3	14.9	14.4	14.9	15.0	12.8	13.1	17.3	17.2	19.7	19.5
\$10,000 TO \$14,999.....	15.0	14.2	14.1	13.8	14.0	13.8	13.6	16.3	16.4	12.8	12.9
\$15,000 TO \$19,999.....	12.9	12.0	12.4	11.4	11.5	13.3	13.0	11.3	11.3	15.5	15.1
\$20,000 TO \$24,999.....	12.9	12.9	13.2	12.5	12.5	13.6	13.5	13.1	13.1	14.2	15.2
\$25,000 TO \$34,999.....	16.0	17.5	17.3	18.3	18.1	18.3	18.1	14.2	14.1	10.0	10.3
\$35,000 OR MORE.....	15.2	19.7	19.8	19.9	19.5	20.2	20.4	19.3	19.3	14.9	14.0
<b>BELOW 100% OF POVERTY</b> .....	13.3	11.1	10.8	11.8	11.8	10.0	10.3	9.2	9.2	15.5	16.0
<b>BELOW 125% OF POVERTY</b> .....	19.0	16.1	15.6	16.8	17.0	14.2	14.7	14.5	14.5	24.0	24.1
<b>RECEIVE ASSISTANCE IN ENERGY PAYMENTS</b> .....	5.3	5.3	5.0	5.6	5.9	3.8	4.0	6.5	6.5	7.2	7.2
<b>ORIGIN OF HOUSEHOLDER</b>											
WHITE.....	87.2	87.2	87.0	86.6	85.5	89.6	88.4	83.9	83.8	91.6	90.9
BLACK.....	10.9	11.4	11.3	12.3	13.2	8.9	9.8	13.8	13.9	6.4	7.1
OTHER.....	2.0	1.4	1.7	1.1	1.3	1.5	1.8	2.3	2.3	2.0	1.9
<b>AGE OF HOUSEHOLDER</b>											
UNDER 25 YEARS.....	8.0	5.8	5.9	5.9	5.8	6.9	6.6	3.3	3.3	5.5	5.4
25 TO 34 YEARS.....	25.2	23.2	23.3	24.2	24.5	25.2	24.8	16.7	16.7	18.0	17.6
35 TO 44 YEARS.....	17.6	20.2	20.8	19.5	19.4	21.3	21.4	21.8	21.9	17.0	17.3
45 TO 59 YEARS.....	22.2	25.0	25.1	24.7	24.7	24.7	24.8	26.4	26.4	26.3	26.3
60 YEARS AND OVER.....	27.1	25.8	25.0	25.6	25.6	21.9	22.4	31.8	31.7	33.2	33.3
<b>HOUSEHOLD SIZE</b>											
1 PERSON.....	18.5	14.2	13.9	14.4	14.8	11.6	12.1	19.3	19.3	10.8	11.3
2 PERSONS.....	33.3	31.0	31.1	30.2	30.0	31.1	31.1	32.7	32.6	35.6	35.4
3 PERSONS.....	18.5	19.4	19.4	19.8	20.1	20.2	19.9	15.9	15.9	21.1	21.1
4 PERSONS.....	17.3	19.4	19.5	19.3	19.0	21.0	20.5	17.3	17.4	16.6	17.0
5 PERSONS.....	7.6	9.4	9.3	9.7	9.6	9.6	9.5	7.7	7.7	10.3	10.0
6 OR MORE PERSONS.....	5.0	6.6	6.7	6.6	6.5	6.5	6.8	7.1	7.2	5.5	5.2

See footnotes at end of table.



# Percentage of Consumption and Expenditures of Total and Specific Fuels

Table 2. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL FUELS			NATURAL GAS		ELECTRICITY		FUEL OIL OR KEROSENE		LIQUEFIED PETROLEUM GAS	
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	TOTAL AMOUNT CONSUMED (QUADRILLION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)
<b>FUEL COMBINATIONS</b>											
NATURAL GAS USED MAIN HEAT....	55.6	66.3	52.5	95.9	94.2	44.6	46.4	1.8	1.8	Q	Q
NATURAL GAS FOR HOT WATER AND HAVE AIR CONDITIONING...	30.1	37.6	30.8	53.7	52.8	27.3	28.7	.5	.5	Q	Q
NATURAL GAS FOR HOT WATER AND NO AIR CONDITIONING.....	20.5	23.0	16.7	35.2	34.0	11.3	12.6	.8	.8	Q	Q
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	3.1	3.7	3.3	4.5	4.5	4.3	3.6	Q	Q	Q	Q
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	1.7	1.8	1.5	2.5	2.7	1.6	1.3	Q	Q	Q	Q
OTHER.....	.2	.2	.2	.2	.2	Q	.1	.4	.4	Q	Q
ELECTRICITY USED MAIN HEAT.....	17.1	8.7	14.7	1.2	1.2	30.6	26.3	Q	Q	1.7	2.1
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	11.4	5.7	10.4	Q	Q	21.5	19.1	Q	Q	Q	Q
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	3.9	1.9	2.8	Q	Q	7.1	5.1	Q	Q	Q	Q
OTHER.....	1.8	1.2	1.5	1.1	1.1	2.0	2.1	Q	Q	Q	Q
FUEL OIL USED MAIN HEAT.....	13.6	16.9	21.4	1.9	3.5	11.1	13.9	91.3	91.2	4.8	6.4
FUEL OIL FOR HOT WATER AND HAVE AIR CONDITIONING...	3.5	4.8	6.2	.4	.9	2.2	3.7	28.5	28.5	Q	Q
FUEL OIL FOR HOT WATER AND NO AIR CONDITIONING.....	3.3	4.3	5.4	.5	1.1	1.6	2.8	25.5	25.6	Q	Q
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	2.2	2.4	3.3	Q	Q	3.1	3.1	11.3	11.2	Q	Q
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	2.6	2.7	3.3	Q	Q	2.9	2.6	13.4	13.3	Q	Q
OTHER.....	2.0	2.7	3.2	.9	1.5	1.2	1.7	12.6	12.7	2.0	2.4
WOOD USED MAIN HEAT.....	6.4	3.0	4.6	.6	.6	7.2	6.6	2.8	2.8	12.7	13.8
LPG USED MAIN HEAT.....	4.4	3.8	4.9	Q	Q	4.3	4.4	.4	Q	78.6	74.9
KEROSENE USED MAIN HEAT.....	1.0	.7	1.0	Q	Q	.9	1.0	2.9	3.0	Q	Q
COAL USED MAIN HEAT.....	.8	.3	.4	.2	.3	.5	.5	.5	.5	Q	Q
NO HEATING FUEL.....	.5	.2	.4	.2	Q	.3	.6	Q	Q	Q	Q
OTHER FUEL.....	.4	.1	.2	Q	Q	.4	.4	Q	Q	Q	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.



# Consumption of Total and Specific Fuels — Percentage of Total Btu

**Table 3. U.S. Residential Proportionate Energy Consumption of Fuels — April 1981 Through March 1982 (Percentage of Total Btu)**

HOUSEHOLD CHARACTERISTICS	ALL FUELS	NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	LIQUEFIED PETROLEUM GAS
TOTAL HOUSEHOLDS .....	100.0	56.7	26.1	14.0	3.3
<b>CENSUS REGION AND DIVISION</b>					
NORTHEAST.....	100.0	42.8	17.0	39.1	1.1
NEW ENGLAND.....	100.0	31.8	17.5	49.3	1.4
MIDDLE ATLANTIC.....	100.0	45.9	16.8	36.2	1.1
NORTH CENTRAL.....	100.0	72.0	18.4	5.6	4.1
EAST NORTH CENTRAL.....	100.0	75.0	16.6	5.6	2.8
WEST NORTH CENTRAL.....	100.0	64.4	22.9	5.6	7.1
SOUTH.....	100.0	47.0	41.7	6.4	4.9
SOUTH ATLANTIC.....	100.0	39.1	42.7	12.4	5.8
EAST SOUTH CENTRAL.....	100.0	45.4	47.8	2.5	4.3
WEST SOUTH CENTRAL.....	100.0	59.7	36.3	Q	3.9
WEST.....	100.0	63.7	31.4	2.3	2.6
MOUNTAIN.....	100.0	68.0	27.1	1.3	3.7
PACIFIC.....	100.0	62.0	33.1	2.7	2.2
<b>AREA TYPE</b>					
URBAN.....	100.0	64.3	22.1	13.2	.5
RURAL.....	100.0	36.3	36.8	16.2	10.7
<b>SMSA/NON-SMSA</b>					
SMSA.....	100.0	60.8	23.7	14.3	1.2
NON-SMSA.....	100.0	46.6	31.9	13.2	8.3
<b>ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)</b>					
--LONG-TERM AVERAGE					
<2,000 CDD AND >7,000 HDD.....	100.0	52.0	22.0	20.3	5.7
<2,000 CDD AND 5,500 TO 7,000 HDD.....	100.0	68.0	17.4	12.4	2.2
<2,000 CDD AND 4,000 TO 5,499 HDD.....	100.0	47.9	24.8	25.0	2.3
<2,000 CDD AND <4,000 HDD.....	100.0	58.7	33.9	3.3	4.1
>2,000 CDD AND <4,000 HDD.....	100.0	44.2	48.7	1.8	5.3
<b>HOW UTILITIES ARE PAID</b>					
ALL PAID BY HOUSEHOLD.....	100.0	57.4	27.5	11.4	3.7
SOME PAID, SOME IN RENT.....	100.0	50.7	15.5	33.4	Q
ALL INCLUDED IN RENT.....	100.0	50.9	20.9	27.6	Q
OTHER.....	100.0	58.3	18.7	18.7	4.3

See footnotes at end of table.



# Consumption of Total and Specific Fuels — Percentage of Total Btu

Table 3. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL FUELS	NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	LIQUEFIED PETROLEUM GAS
<b>HOUSING STRUCTURE BY OWNERSHIP</b>					
SINGLE-FAMILY DETACHED.....	100.0	58.7	26.2	11.5	3.6
OMN.....	100.0	58.8	25.9	12.0	3.3
RENT.....	100.0	57.7	28.4	8.1	5.8
SINGLE-FAMILY ATTACHED.....	100.0	59.0	22.8	18.1	Q
OMN.....	100.0	62.5	21.0	16.4	Q
RENT.....	100.0	49.6	27.3	22.8	Q
BUILDING WITH 2 TO 4 UNITS....	100.0	61.0	19.6	18.8	.6
OMN.....	100.0	62.7	16.6	20.1	Q
RENT.....	100.0	60.4	20.7	18.3	Q
BUILDING WITH 5 OR MORE UNITS.....	100.0	44.0	29.0	26.9	Q
OMN.....	100.0	38.8	35.5	25.6	Q
RENT.....	100.0	44.4	28.5	27.0	Q
MOBILE HOME.....	100.0	34.4	37.6	10.6	17.4
OMN.....	100.0	33.5	38.3	9.9	18.2
RENT.....	100.0	39.1	33.6	14.4	12.9
<b>NUMBER OF ROOMS</b>					
1.....	100.0	40.5	15.9	40.2	Q
2.....	100.0	51.3	28.9	17.0	Q
3.....	100.0	45.1	26.1	26.3	2.5
4.....	100.0	53.6	28.6	14.2	3.7
5.....	100.0	57.3	26.4	12.4	3.9
6.....	100.0	58.9	25.5	12.0	3.5
7.....	100.0	58.4	26.2	13.1	2.3
8 OR MORE.....	100.0	58.9	24.2	13.9	3.1
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>					
ALL.....	100.0	55.9	35.2	6.3	2.6
SOME.....	100.0	57.2	20.3	19.1	3.4
NONE.....	100.0	57.0	21.3	17.8	3.9
<b>MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE</b>					
LESS THAN 600 SQUARE FEET.....	100.0	50.1	25.5	20.3	4.0
600 TO 999 SQUARE FEET.....	100.0	52.2	26.9	17.3	3.6
1,000 TO 1,599 SQUARE FEET....	100.0	55.3	28.5	11.4	4.8
1,600 TO 1,999 SQUARE FEET....	100.0	59.9	26.3	11.6	2.2
2,000 TO 2,399 SQUARE FEET....	100.0	59.3	24.9	13.3	2.5
2,400 TO 2,999 SQUARE FEET....	100.0	60.8	23.4	13.0	2.8
3,000 OR MORE SQUARE FEET.....	100.0	60.4	22.1	16.3	1.2

See footnotes at end of table.



# Consumption of Total and Specific Fuels — Percentage of Total Btu

Table 3. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL FUELS	NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	LIQUEFIED PETROLEUM GAS
<b>YEAR HOUSE BUILT</b>					
1939 OR EARLIER.....	100.0	60.4	16.4	18.9	4.2
1940 TO 1949.....	100.0	59.9	23.5	14.3	2.3
1950 TO 1959.....	100.0	61.7	22.6	14.5	1.1
1960 TO 1964.....	100.0	60.4	25.1	11.3	3.2
1965 TO 1969.....	100.0	56.2	29.7	11.6	2.5
1970 TO 1974.....	100.0	46.6	37.9	10.7	4.8
1975 TO 1978.....	100.0	42.9	48.0	5.3	3.7
1979 OR LATER.....	100.0	36.6	55.9	3.5	4.0
<b>OWN/RENT</b>					
OWN.....	100.0	57.9	26.0	12.5	3.7
RENT.....	100.0	53.4	26.3	18.0	2.3
<b>1980 FAMILY INCOME</b>					
LESS THAN \$5,000.....	100.0	58.7	23.1	13.4	4.8
\$5,000 TO \$9,999.....	100.0	56.9	22.5	16.2	4.4
\$10,000 TO \$14,999.....	100.0	55.4	25.5	16.1	3.0
\$15,000 TO \$19,999.....	100.0	53.7	28.9	13.2	4.2
\$20,000 TO \$24,999.....	100.0	54.7	27.5	14.2	3.6
\$25,000 TO \$34,999.....	100.0	59.4	27.4	11.4	1.9
\$35,000 OR MORE.....	100.0	57.1	26.7	13.7	2.5
<b>BELOW 100% OF POVERTY</b> .....					
BELOW 125% OF POVERTY.....	100.0	60.2	23.6	11.6	4.6
RECEIVE ASSISTANCE IN ENERGY PAYMENTS.....	100.0	59.4	23.0	12.6	4.9
<b>ORIGIN OF HOUSEHOLDER</b>					
WHITE.....	100.0	60.0	18.4	17.1	4.5
BLACK.....	100.0	56.3	26.8	13.5	3.5
OTHER.....	100.0	60.9	20.3	16.9	1.8
<b>AGE OF HOUSEHOLDER</b>					
UNDER 25 YEARS.....	100.0	45.5	27.2	22.7	4.7
25 TO 34 YEARS.....	100.0	58.0	31.0	8.0	3.1
35 TO 44 YEARS.....	100.0	59.1	28.3	10.1	2.6
45 TO 59 YEARS.....	100.0	54.7	27.5	15.1	2.8
60 YEARS AND OVER.....	100.0	56.0	25.8	14.8	3.5
	100.0	56.4	22.2	17.2	4.2

See footnotes at end of table.



# Consumption of Total and Specific Fuels — Percentage of Total Btu

Table 3. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL FUELS	NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	LIQUEFIED PETROLEUM GAS
<b>HOUSEHOLD SIZE</b>					
1 PERSON.....	100.0	57.3	21.2	19.0	2.5
2 PERSONS.....	100.0	55.3	26.2	14.7	3.8
3 PERSONS.....	100.0	57.8	27.2	11.4	3.6
4 PERSONS.....	100.0	56.4	28.3	12.5	2.8
5 PERSONS.....	100.0	58.5	26.5	11.4	3.6
6 OR MORE PERSONS.....	100.0	56.4	25.7	15.1	2.8
<b>FUEL COMBINATIONS</b>					
NATURAL GAS USED MAIN HEAT....	100.0	82.1	17.6	.4	Q
NATURAL GAS FOR HOT WATER AND HAVE AIR CONDITIONING...	100.0	80.9	18.9	.2	Q
NATURAL GAS FOR HOT WATER AND NO AIR CONDITIONING.....	100.0	86.7	12.8	.5	Q
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	100.0	69.3	30.4	Q	Q
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	100.0	76.8	23.1	Q	Q
OTHER.....	100.0	52.4	Q	35.0	Q
ELECTRICITY USED MAIN HEAT....	100.0	7.6	91.4	Q	.6
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	100.0	Q	98.7	Q	Q
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	100.0	Q	97.7	Q	Q
OTHER.....	100.0	52.5	45.4	Q	Q
FUEL OIL USED MAIN HEAT.....	100.0	6.3	17.1	75.7	.9
FUEL OIL FOR HOT WATER AND HAVE AIR CONDITIONING...	100.0	4.6	12.1	83.1	Q
FUEL OIL FOR HOT WATER AND NO AIR CONDITIONING.....	100.0	7.0	9.8	82.9	Q
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	100.0	Q	33.5	65.3	Q
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	100.0	Q	28.3	70.0	Q
OTHER.....	100.0	19.7	11.9	65.9	2.5
WOOD USED MAIN HEAT.....	100.0	11.0	62.3	12.8	13.8
LPG USED MAIN HEAT.....	100.0	Q	30.0	1.4	68.5
KEROSENE USED MAIN HEAT.....	100.0	Q	33.4	55.8	Q
COAL USED MAIN HEAT.....	100.0	30.7	44.7	23.0	Q
NO HEATING FUEL.....	100.0	48.6	37.4	Q	Q
OTHER FUEL.....	100.0	Q	78.4	Q	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.



# Expenditures for Total and Specific Fuels — Percentage of Total Dollars

**Table 4. U.S. Residential Proportionate Energy Expenditures for Fuels — April 1981 Through March 1982 (Percentage of Total Dollars)**

HOUSEHOLD CHARACTERISTICS	ALL FUELS	NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	LIQUEFIED PETROLEUM GAS
TOTAL HOUSEHOLDS .....	100.0	28.8	54.0	13.9	3.2
CENSUS REGION AND DIVISION					
NORTHEAST .....	100.0	23.9	41.3	33.6	1.2
NEW ENGLAND .....	100.0	20.1	38.8	39.6	1.4
MIDDLE ATLANTIC .....	100.0	25.0	42.1	31.8	1.1
NORTH CENTRAL .....	100.0	42.2	46.4	6.9	4.6
EAST NORTH CENTRAL .....	100.0	45.4	44.1	7.0	3.5
WEST NORTH CENTRAL .....	100.0	34.5	51.9	6.5	7.0
SOUTH .....	100.0	20.8	69.4	5.5	4.3
SOUTH ATLANTIC .....	100.0	17.9	67.4	9.7	5.0
EAST SOUTH CENTRAL .....	100.0	19.9	74.0	2.3	3.9
WEST SOUTH CENTRAL .....	100.0	26.8	69.7	Q	3.4
WEST .....	100.0	32.0	62.7	2.5	2.8
MOUNTAIN .....	100.0	36.3	58.4	Q	3.9
PACIFIC .....	100.0	30.4	64.3	2.9	2.4
AREA TYPE					
URBAN .....	100.0	35.0	50.6	13.9	.6
RURAL .....	100.0	15.1	61.7	14.0	9.1
SMSA/NON-SMSA					
SMSA .....	100.0	31.8	52.4	14.4	1.3
NON-SMSA .....	100.0	21.9	57.7	12.7	7.7
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD) --LONG-TERM AVERAGE					
<2,000 CDD AND >7,000 HDD .....	100.0	27.0	45.7	21.4	5.9
<2,000 CDD AND 5,500 TO 7,000 HDD .....	100.0	39.4	43.7	14.4	2.5
<2,000 CDD AND 4,000 TO 5,499 HDD .....	100.0	25.8	49.2	23.0	2.1
<2,000 CDD AND <4,000 HDD .....	100.0	26.6	65.9	3.4	4.1
>2,000 CDD AND <4,000 HDD .....	100.0	17.5	77.1	1.3	4.1
HOW UTILITIES ARE PAID					
ALL PAID BY HOUSEHOLD .....	100.0	28.9	55.9	11.5	3.6
SOME PAID, SOME IN RENT .....	100.0	28.4	40.4	30.8	Q
ALL INCLUDED IN RENT .....	100.0	26.9	47.7	24.9	Q
OTHER .....	100.0	31.8	46.3	18.0	4.0

See footnotes at end of table.



# Expenditures for Total and Specific Fuels — Percentage of Total Dollars

Table 4. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL FUELS	NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	LIQUEFIED PETROLEUM GAS
<b>HOUSING STRUCTURE BY OWNERSHIP</b>					
SINGLE-FAMILY DETACHED.....	100.0	29.8	54.7	11.9	3.6
OWN.....	100.0	29.9	54.3	12.4	3.3
RENT.....	100.0	28.6	57.2	8.3	6.0
SINGLE-FAMILY ATTACHED.....	100.0	32.7	50.2	17.0	Q
OWN.....	100.0	34.9	49.5	15.4	Q
RENT.....	100.0	27.0	51.8	21.1	Q
BUILDING WITH 2 TO 4 UNITS....	100.0	35.4	45.4	18.6	.6
OWN.....	100.0	37.4	42.0	19.7	Q
RENT.....	100.0	34.6	46.7	18.2	Q
BUILDING WITH 5 OR MORE UNITS.....	100.0	21.3	56.5	22.1	Q
OWN.....	100.0	16.8	63.6	19.6	Q
RENT.....	100.0	21.7	55.9	22.4	Q
MOBILE HOME.....	100.0	14.3	61.5	9.2	15.0
OWN.....	100.0	13.7	62.1	8.6	15.6
RENT.....	100.0	18.1	57.5	13.0	11.4
<b>NUMBER OF ROOMS</b>					
1.....	100.0	20.0	40.4	36.7	Q
2.....	100.0	24.9	58.1	14.5	Q
3.....	100.0	22.6	51.9	23.1	2.4
4.....	100.0	26.6	56.6	13.3	3.4
5.....	100.0	29.1	54.5	12.5	3.9
6.....	100.0	30.4	53.9	12.2	3.6
7.....	100.0	29.9	54.4	13.5	2.2
8 OR MORE.....	100.0	30.8	51.8	14.5	3.0
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>					
ALL.....	100.0	26.0	65.9	5.9	2.3
SOME.....	100.0	30.7	46.6	19.4	3.3
NONE.....	100.0	30.6	46.7	18.6	4.1
<b>MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE</b>					
LESS THAN 600 SQUARE FEET.....	100.0	24.3	54.2	17.7	3.7
600 TO 999 SQUARE FEET.....	100.0	26.1	53.9	16.5	3.5
1,000 TO 1,599 SQUARE FEET....	100.0	27.5	56.7	11.1	4.7
1,600 TO 1,999 SQUARE FEET....	100.0	30.9	55.4	11.6	2.1
2,000 TO 2,399 SQUARE FEET....	100.0	31.4	52.1	13.9	2.5
2,400 TO 2,999 SQUARE FEET....	100.0	32.4	51.0	13.8	2.8
3,000 OR MORE SQUARE FEET.....	100.0	32.0	49.4	17.5	1.1

See footnotes at end of table.





# Expenditures for Total and Specific Fuels — Percentage of Total Dollars

Table 4. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL FUELS	NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	LIQUEFIED PETROLEUM GAS
<b>YEAR HOUSE BUILT</b>					
1939 OR EARLIER.....	100.0	34.7	40.2	20.6	4.4
1940 TO 1949.....	100.0	31.8	50.8	14.9	2.5
1950 TO 1959.....	100.0	32.0	51.3	15.5	1.2
1960 TO 1964.....	100.0	30.6	54.9	11.4	3.1
1965 TO 1969.....	100.0	27.9	59.0	10.9	2.2
1970 TO 1974.....	100.0	20.6	65.7	9.4	4.3
1975 TO 1978.....	100.0	17.7	74.9	4.3	3.0
1979 OR LATER.....	100.0	13.7	80.6	2.7	3.0
<b>OWN/RENT</b>					
OWN.....	100.0	29.4	54.2	12.8	3.6
RENT.....	100.0	27.3	53.7	16.8	2.2
<b>1980 FAMILY INCOME</b>					
LESS THAN \$5,000.....	100.0	30.8	50.9	13.5	4.8
\$5,000 TO \$9,999.....	100.0	30.0	49.0	16.6	4.4
\$10,000 TO \$14,999.....	100.0	28.7	52.2	16.2	2.9
\$15,000 TO \$19,999.....	100.0	26.8	56.6	12.7	3.9
\$20,000 TO \$24,999.....	100.0	27.2	55.3	13.8	3.7
\$25,000 TO \$34,999.....	100.0	30.2	56.5	11.4	1.9
\$35,000 OR MORE.....	100.0	28.4	55.7	13.6	2.3
<b>BELOW 100% OF POVERTY</b> .....					
BELOW 125% OF POVERTY.....	100.0	31.6	51.7	11.9	4.8
RECEIVE ASSISTANCE IN ENERGY PAYMENTS.....	100.0	31.4	50.7	12.9	5.0
<b>ORIGIN OF HOUSEHOLDER</b>					
WHITE.....	100.0	34.3	42.9	18.1	4.7
BLACK.....	100.0	28.3	54.9	13.4	3.4
OTHER.....	100.0	33.7	47.1	17.2	2.0
<b>AGE OF HOUSEHOLDER</b>					
UNDER 25 YEARS.....	100.0	22.1	55.9	18.4	3.6
25 TO 34 YEARS.....	100.0	28.4	60.9	7.8	3.0
35 TO 44 YEARS.....	100.0	30.3	57.4	10.0	2.4
45 TO 59 YEARS.....	100.0	26.9	55.7	14.7	2.7
60 YEARS AND OVER.....	100.0	28.5	53.5	14.6	3.4
	100.0	29.6	48.4	17.7	4.3

See footnotes at end of table.



# Expenditures for Total and Specific Fuels — Percentage of Total Dollars

Table 4. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL FUELS	NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	LIQUEFIED PETROLEUM GAS
<b>HOUSEHOLD SIZE</b>					
1 PERSON.....	100.0	30.7	47.3	19.3	2.6
2 PERSONS.....	100.0	27.8	54.0	14.5	3.7
3 PERSONS.....	100.0	29.8	55.3	11.4	3.5
4 PERSONS.....	100.0	28.0	56.8	12.4	2.8
5 PERSONS.....	100.0	29.8	55.3	11.5	3.5
6 OR MORE PERSONS.....	100.0	28.0	54.6	14.9	2.5
<b>FUEL COMBINATIONS</b>					
NATURAL GAS USED MAIN HEAT....	100.0	51.7	47.8	.5	Q
NATURAL GAS FOR HOT WATER AND HAVE AIR CONDITIONING...	100.0	49.4	50.4	.2	Q
NATURAL GAS FOR HOT WATER AND NO AIR CONDITIONING.....	100.0	58.6	40.8	.6	Q
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	100.0	39.9	59.8	Q	Q
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	100.0	52.7	47.2	Q	Q
OTHER.....	100.0	30.8	39.8	29.5	Q
ELECTRICITY USED MAIN HEAT....	100.0	2.4	96.9	Q	.5
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	100.0	Q	99.4	Q	Q
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	100.0	Q	98.5	Q	Q
OTHER.....	100.0	20.9	77.2	Q	Q
FUEL OIL USED MAIN HEAT.....	100.0	4.7	35.0	59.3	1.0
FUEL OIL FOR HOT WATER AND HAVE AIR CONDITIONING...	100.0	4.1	32.0	63.6	Q
FUEL OIL FOR HOT WATER AND NO AIR CONDITIONING.....	100.0	6.1	27.7	65.8	Q
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	100.0	Q	51.3	47.5	Q
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	100.0	Q	42.9	55.4	Q
OTHER.....	100.0	13.3	28.7	55.6	2.5
WOOD USED MAIN HEAT.....	100.0	3.7	78.1	8.5	9.7
LPG USED MAIN HEAT.....	100.0	Q	49.1	Q	49.8
KEROSENE USED MAIN HEAT.....	100.0	Q	51.3	41.8	Q
COAL USED MAIN HEAT.....	100.0	17.1	65.7	16.3	Q
NO HEATING FUEL.....	100.0	Q	81.5	Q	Q
OTHER FUEL.....	100.0	Q	92.3	Q	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.



# Average Consumption per Household

**Table 5. U.S. Average Residential Energy Consumption of All Fuels Used In the Household, by Main Heating Fuel Type — April 1981 Through March 1982 (Million Btu per Household)**

HOUSEHOLD CHARACTERISTICS	ALL HOUSEHOLDS	HOUSEHOLDS USING:				
		NATURAL GAS AS MAIN HEATING FUEL	ELECTRICITY AS MAIN HEATING FUEL		FUEL OIL OR KEROSENE AS MAIN HEATING FUEL	LIQUEFIED PETROLEUM GAS AS MAIN HEATING FUEL
			WITH AIR CONDITIONING	WITHOUT AIR CONDITIONING		
TOTAL HOUSEHOLDS .....	114	136	59	56	138	97
<b>CENSUS REGION AND DIVISION</b>						
NORTHEAST.....	138	155	72	64	149	136
NEW ENGLAND.....	126	140	57	48	150	Q
MIDDLE ATLANTIC.....	141	158	78	68	148	155
NORTH CENTRAL.....	147	167	57	61	139	133
EAST NORTH CENTRAL.....	153	170	59	68	134	137
WEST NORTH CENTRAL.....	133	159	53	56	150	129
SOUTH.....	89	118	57	47	103	76
SOUTH ATLANTIC.....	82	121	50	48	103	74
EAST SOUTH CENTRAL.....	94	131	64	47	99	87
WEST SOUTH CENTRAL.....	98	110	68	42	Q	76
WEST.....	90	103	64	57	110	107
MOUNTAIN.....	105	119	73	63	98	111
PACIFIC.....	85	97	61	56	112	106
<b>AREA TYPE</b>						
URBAN.....	121	135	57	52	143	66
RURAL.....	100	143	63	62	127	104
<b>SMSA/NON-SMSA</b>						
SMSA.....	119	135	57	53	144	90
NON-SMSA.....	104	140	65	62	124	101
<b>ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)</b>						
--LONG-TERM AVERAGE						
<2,000 CDD AND >7,000 HDD.....	122	153	70	75	133	125
<2,000 CDD AND 5,500 TO 7,000 HDD.....	151	169	67	61	150	151
<2,000 CDD AND 4,000 TO 5,499 HDD.....	120	144	61	62	142	110
<2,000 CDD AND <4,000 HDD.....	89	102	62	45	100	90
>2,000 CDD AND <4,000 HDD.....	77	103	52	34	69	66

See footnotes at end of table.



# Average Consumption per Household

Table 5. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL HOUSEHOLDS	HOUSEHOLDS USING:				
		NATURAL GAS AS MAIN HEATING FUEL	ELECTRICITY AS MAIN HEATING FUEL		FUEL OIL OR KEROSENE AS MAIN HEATING FUEL	LIQUEFIED PETROLEUM GAS AS MAIN HEATING FUEL
			WITH AIR CONDITIONING	WITHOUT AIR CONDITIONING		
<b>HOW UTILITIES ARE PAID</b>						
ALL PAID BY HOUSEHOLD.....	117	143	58	58	139	97
SOME PAID, SOME IN RENT.....	100	93	68	55	129	Q
ALL INCLUDED IN RENT.....	96	99	67	32	136	Q
OTHER.....	127	125	Q	Q	166	91
<b>HOUSING STRUCTURE BY OWNERSHIP</b>						
SINGLE-FAMILY DETACHED.....	127	150	70	71	144	107
OWN.....	131	155	71	73	146	114
RENT.....	101	122	67	62	127	84
SINGLE-FAMILY ATTACHED.....	107	121	53	56	136	Q
OWN.....	113	129	52	Q	139	Q
RENT.....	95	101	55	52	131	Q
BUILDING WITH 2 TO 4 UNITS....	108	117	53	43	144	Q
OWN.....	133	134	55	Q	165	Q
RENT.....	101	112	53	43	136	Q
BUILDING WITH 5 OR MORE UNITS.....	77	83	47	36	129	Q
OWN.....	68	85	36	29	154	Q
RENT.....	77	83	48	38	127	Q
MOBILE HOME.....	80	110	54	53	82	74
OWN.....	80	110	55	53	84	74
RENT.....	80	114	47	Q	76	76
<b>NUMBER OF ROOMS</b>						
1.....	78	63	Q	Q	126	Q
2.....	67	80	46	27	129	31
3.....	73	82	42	36	112	70
4.....	85	102	50	46	118	72
5.....	108	127	57	65	128	88
6.....	123	140	69	67	137	113
7.....	143	169	80	84	148	126
8 OR MORE.....	178	204	92	103	198	170

See footnotes at end of table.



# Average Consumption per Household

Table 5. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL HOUSEHOLDS	HOUSEHOLDS USING:				
		NATURAL GAS AS MAIN HEATING FUEL	ELECTRICITY AS MAIN HEATING FUEL		FUEL OIL OR KEROSENE AS MAIN HEATING FUEL	LIQUEFIED PETROLEUM GAS AS MAIN HEATING FUEL
			WITH AIR CONDITIONING	WITHOUT AIR CONDITIONING		
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>						
ALL.....	111	140	59	-	134	93
SOME.....	132	145	59	-	151	104
NONE.....	108	128	-	56	131	97
<b>MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE</b>						
LESS THAN 600 SQUARE FEET.....	68	80	44	29	106	55
600 TO 999 SQUARE FEET.....	87	103	48	45	119	74
1,000 TO 1,599 SQUARE FEET.....	106	122	59	65	133	104
1,600 TO 1,999 SQUARE FEET.....	130	148	66	87	140	118
2,000 TO 2,399 SQUARE FEET.....	144	168	83	90	153	140
2,400 TO 2,999 SQUARE FEET.....	164	190	92	88	161	137
3,000 OR MORE SQUARE FEET.....	202	241	94	100	200	177
<b>YEAR HOUSE BUILT</b>						
1939 OR EARLIER.....	134	150	59	57	149	120
1940 TO 1949.....	113	127	74	61	125	92
1950 TO 1959.....	120	134	57	60	135	73
1960 TO 1964.....	120	140	56	53	128	95
1965 TO 1969.....	109	131	58	56	131	84
1970 TO 1974.....	98	125	61	51	127	90
1975 TO 1978.....	90	126	64	57	112	79
1979 OR LATER.....	74	110	50	60	125	86
<b>OWN/RENT</b>						
OWN.....	126	150	66	67	143	101
RENT.....	91	105	52	45	128	84
<b>1980 FAMILY INCOME</b>						
LESS THAN \$5,000.....	87	107	47	38	117	72
\$5,000 TO \$9,999.....	105	125	50	53	126	96
\$10,000 TO \$14,999.....	108	128	55	52	131	98
\$15,000 TO \$19,999.....	107	131	57	67	131	97
\$20,000 TO \$24,999.....	114	136	56	58	143	95
\$25,000 TO \$34,999.....	125	145	71	70	137	95
\$35,000 OR MORE.....	148	168	75	72	177	139

See footnotes at end of table.



# Average Consumption per Household

Table 5. (Continued)

HOUSEHOLD CHARACTERISTICS	ALL HOUSEHOLDS	HOUSEHOLDS USING:				
		NATURAL GAS AS MAIN HEATING FUEL	ELECTRICITY AS MAIN HEATING FUEL		FUEL OIL OR KEROSENE AS MAIN HEATING FUEL	LIQUEFIED PETROLEUM GAS AS MAIN HEATING FUEL
			WITH AIR CONDITIONING	WITHOUT AIR CONDITIONING		
BELOW 100% OF POVERTY .....	96	122	49	45	123	74
BELOW 125% OF POVERTY.....	97	120	50	47	123	81
RECEIVE ASSISTANCE IN ENERGY PAYMENTS.....	115	146	50	50	131	88
ORIGIN OF HOUSEHOLDER						
WHITE.....	114	137	59	57	136	99
BLACK.....	120	134	65	51	148	74
OTHER.....	82	93	47	51	130	Q
AGE OF HOUSEHOLDER						
UNDER 25 YEARS.....	83	106	49	43	108	72
25 TO 34 YEARS.....	105	127	56	56	125	98
35 TO 44 YEARS.....	132	154	73	71	151	121
45 TO 59 YEARS.....	129	152	71	66	152	108
60 YEARS AND OVER.....	109	129	52	52	130	85
HOUSEHOLD SIZE						
1 PERSON.....	88	102	43	33	117	63
2 PERSONS.....	106	128	54	54	132	89
3 PERSONS.....	120	147	65	68	129	117
4 PERSONS.....	128	153	75	67	150	106
5 PERSONS.....	143	167	87	72	171	144
6 OR MORE PERSONS.....	152	169	81	82	208	115

"-" = 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.



# Average Expenditures per Household

**Table 6. U.S. Average Residential Energy Expenditures for All Fuels Used in the Household and Expenditures as a Percentage of Income, by Main Heating Fuel Type — April 1981 Through March 1982 (Dollars per Household)**

HOUSEHOLD CHARACTERISTICS	AVERAGE TOTAL FUEL EXPENDITURE (DOLLARS PER HOUSEHOLD)						EXPENDITURE AS A PERCENT OF INCOME (MEDIAN PERCENT)					
	ALL HOUSEHOLDS	HOUSEHOLDS USING:					ALL HOUSEHOLDS	HOUSEHOLDS USING:				
		NATURAL GAS AS MAIN HEATING FUEL	ELECTRICITY AS MAIN HEATING FUEL		FUEL OIL OR KEROSENE AS MAIN HEATING FUEL	LIQUEFIED PETROLEUM GAS AS MAIN HEATING FUEL		NATURAL GAS AS MAIN HEATING FUEL	ELECTRICITY AS MAIN HEATING FUEL		FUEL OIL OR KEROSENE AS MAIN HEATING FUEL	LIQUEFIED PETROLEUM GAS AS MAIN HEATING FUEL
			WITH AIR CONDITIONING	WITHOUT AIR CONDITIONING					WITH AIR CONDITIONING	WITHOUT AIR CONDITIONING		
TOTAL HOUSEHOLDS .....	1022	965	932	711	1565	1114	5	5	5	5	9	7
<b>CENSUS REGION AND DIVISION</b>												
NORTHEAST .....	1426	1248	1307	1183	1709	1637	7	6	8	8	9	9
NEW ENGLAND.....	1412	1266	1242	1037	1669	1637	7	8	8	8	8	9
MIDDLE ATLANTIC.....	1431	1245	1334	1219	1723	1833	7	6	8	8	9	9
NORTH CENTRAL.....	1042	1030	841	872	1489	1334	6	6	5	5	8	8
EAST NORTH CENTRAL.....	1068	1046	902	1013	1447	1472	6	6	5	5	7	9
WEST NORTH CENTRAL.....	984	986	769	765	1609	1222	5	5	5	5	8	6
SOUTH.....	922	932	931	727	1228	956	5	5	5	6	9	7
SOUTH ATLANTIC.....	939	962	918	755	1242	984	5	5	5	6	9	7
EAST SOUTH CENTRAL.....	884	926	897	657	1103	960	5	5	5	5	9	11
WEST SOUTH CENTRAL.....	920	910	1011	620	1103	960	5	6	4	4	9	7
WEST.....	721	726	773	539	941	1251	3	3	3	3	5	4
MOUNTAIN.....	791	778	1007	670	941	1084	4	5	4	5	9	9
PACIFIC.....	698	708	682	521	941	1334	3	3	3	3	5	9
<b>AREA TYPE</b>												
URBAN.....	1023	961	904	626	1611	873	5	5	5	4	9	9
RURAL.....	1020	983	981	824	1478	1165	5	5	5	6	7	7
<b>SMSA/NON-SMSA</b>												
SMSA.....	1051	971	940	673	1639	1165	5	5	5	5	9	6
NON-SMSA.....	959	947	911	768	1398	1091	6	6	5	5	9	8
<b>ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)</b>												
<b>--LONG-TERM AVERAGE</b>												
<2,000 CDD AND >7,000 HDD.....	1016	932	1014	1070	1417	1256	6	5	9	6	8	8
<2,000 CDD AND 5,500 TO 7,000 HDD.....	1156	1068	978	868	1695	1586	6	6	5	6	7	7
<2,000 CDD AND 4,000 TO 5,499 HDD.....	1152	1100	946	660	1644	1122	6	5	5	4	9	10
<2,000 CDD AND <4,000 HDD.....	799	759	873	609	1162	1068	4	4	5	4	11	6
>2,000 CDD AND <4,000 HDD.....	925	938	950	528	999	910	5	6	4	9	7	7
<b>HOW UTILITIES ARE PAID</b>												
ALL PAID BY HOUSEHOLD.....	1029	1006	913	718	1572	1111	5	5	4	5	7	8
SOME PAID, SOME IN RENT.....	960	686	1112	694	1454	9	7	4	6	9	12	9
ALL INCLUDED IN RENT.....	947	724	1057	611	1597	9	9	7	9	9	12	9
OTHER.....	1170	986	9	9	1949	1136	6	6	9	9	10	9

See footnotes at end of table.



# Average Expenditures per Household

Table 6. (Continued)

HOUSEHOLD CHARACTERISTICS	AVERAGE TOTAL FUEL EXPENDITURE (DOLLARS PER HOUSEHOLD)						EXPENDITURE AS A PERCENT OF INCOME (MEDIAN PERCENT)					
	HOUSEHOLDS USING:											
	ALL HOUSEHOLDS	NATURAL GAS AS MAIN HEATING FUEL	ELECTRICITY AS MAIN HEATING FUEL		FUEL OIL OR KEROSENE AS MAIN HEATING FUEL	LIQUEFIED PETROLEUM GAS AS MAIN HEATING FUEL	ALL HOUSEHOLDS	NATURAL GAS AS MAIN HEATING FUEL	ELECTRICITY AS MAIN HEATING FUEL		FUEL OIL OR KEROSENE AS MAIN HEATING FUEL	LIQUEFIED PETROLEUM GAS AS MAIN HEATING FUEL
			WITH AIR CONDITIONING	WITHOUT AIR CONDITIONING					WITH AIR CONDITIONING	WITHOUT AIR CONDITIONING		
<b>HOUSING STRUCTURE BY OWNERSHIP</b>												
SINGLE-FAMILY DETACHED.....	1088	1043	1082	855	1635	1182	5	5	4	5	7	8
OWN.....	1125	1080	1094	878	1657	1239	5	5	4	5	7	7
RENT.....	878	825	997	772	1445	1002	6	6	5	6	10	9
SINGLE-FAMILY ATTACHED.....	1015	945	865	569	1531	Q	5	5	4	Q	10	Q
OWN.....	1060	1010	877	Q	1551	Q	5	4	Q	Q	Q	Q
RENT.....	916	777	839	400	1495	Q	6	7	Q	Q	Q	Q
BUILDING WITH 2 TO 4 UNITS.....	969	864	793	577	1595	Q	7	7	6	6	12	Q
OWN.....	1204	1066	852	Q	1842	Q	6	6	Q	Q	10	Q
RENT.....	902	794	789	583	1508	Q	8	7	6	6	13	Q
BUILDING WITH 5 OR MORE UNITS.....	827	627	803	543	1493	Q	6	4	5	5	11	Q
OWN.....	790	607	705	369	1855	Q	3	Q	Q	Q	Q	Q
RENT.....	831	629	817	567	1470	Q	6	4	6	7	12	Q
MOBILE HOME.....	843	800	807	624	1006	946	6	7	5	5	8	6
OWN.....	853	809	816	635	1035	947	6	7	4	5	7	6
RENT.....	787	754	755	Q	912	935	7	Q	Q	Q	Q	Q
<b>NUMBER OF ROOMS</b>												
1.....	755	445	Q	Q	1373	Q	7	Q	Q	Q	Q	Q
2.....	705	606	766	506	1437	428	7	6	8	Q	Q	Q
3.....	738	576	714	405	1278	799	7	6	6	5	10	Q
4.....	804	729	818	605	1356	848	6	6	5	5	11	9
5.....	956	901	878	793	1467	1019	5	5	4	5	9	6
6.....	1075	1009	1039	910	1520	1315	5	5	5	5	7	7
7.....	1235	1177	1198	900	1726	1437	5	4	4	Q	7	5
<b>NUMBER OF ROOMS 8 OR MORE.....</b>												
	1523	1425	1434	1349	2229	1787	4	4	4	Q	7	7
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>												
ALL.....	1059	1069	935	-	1584	1137	5	5	5	-	8	6
SOME.....	1158	1013	921	-	1749	1156	6	5	5	-	9	6
NONE.....	920	842	-	709	1449	1063	6	5	-	5	9	9
<b>MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE</b>												
LESS THAN 600 SQUARE FEET.....	696	577	723	446	1203	643	7	7	8	6	10	6
600 TO 999 SQUARE FEET.....	816	727	762	572	1380	908	6	6	5	5	11	9
1,000 TO 1,599 SQUARE FEET.....	968	890	950	772	1499	1223	5	5	5	5	8	8
1,600 TO 1,999 SQUARE FEET.....	1149	1082	1073	1132	1641	1289	5	4	4	4	7	7
2,000 TO 2,399 SQUARE FEET.....	1223	1174	1229	868	1693	1426	4	4	4	Q	6	Q
2,400 TO 2,999 SQUARE FEET.....	1358	1263	1462	1305	1804	1414	5	5	4	Q	7	Q
3,000 OR MORE SQUARE FEET.....	1668	1634	1370	1256	2237	1711	4	4	4	Q	9	Q
<b>YEAR HOUSE BUILT</b>												
1939 OR EARLIER.....	1091	981	846	633	1647	1262	7	6	7	6	10	9
1940 TO 1949.....	964	895	1032	682	1421	1142	6	6	Q	Q	7	Q
1950 TO 1959.....	998	930	900	679	1532	915	5	4	5	5	7	7
1960 TO 1964.....	1061	1048	829	531	1524	1107	5	4	4	Q	8	9
1965 TO 1969.....	1023	1008	894	710	1583	949	5	5	5	3	7	8
1970 TO 1974.....	995	936	980	700	1504	1114	5	4	5	5	7	7

See footnotes at end of table.





# Average Expenditures per Household

Table 6. (Continued)

HOUSEHOLD CHARACTERISTICS	AVERAGE TOTAL FUEL EXPENDITURE (DOLLARS PER HOUSEHOLD)						EXPENDITURE AS A PERCENT OF INCOME (MEDIAN PERCENT)						
	ALL HOUSEHOLDS	HOUSEHOLDS USING:					ALL HOUSEHOLDS	HOUSEHOLDS USING:					
		NATURAL GAS AS MAIN HEATING FUEL	ELECTRICITY AS MAIN HEATING FUEL	FUEL OIL OR KEROSENE AS MAIN HEATING FUEL	LIQUEFIED PETROLEUM GAS AS MAIN HEATING FUEL	OTHER		NATURAL GAS AS MAIN HEATING FUEL	ELECTRICITY AS MAIN HEATING FUEL	FUEL OIL OR KEROSENE AS MAIN HEATING FUEL	LIQUEFIED PETROLEUM GAS AS MAIN HEATING FUEL	OTHER	
		WITH AIR CONDITIONING	WITHOUT AIR CONDITIONING				WITH AIR CONDITIONING	WITHOUT AIR CONDITIONING					
YEAR HOUSE BUILT													
1975 TO 1978.....	977	987	1020	697	1374	968	4	4	4	6	7	5	
1979 OR LATER.....	866	850	829	904	1458	1082	4	3	4	5	Q	Q	
OWN/RENT													
OWN.....	1102	1062	1025	804	1627	1140	5	5	4	4	7	7	
RENT.....	865	748	832	611	1458	1016	7	6	6	6	12	8	
1980 FAMILY INCOME													
LESS THAN \$5,000.....	766	717	796	498	1288	835	22	21	20	16	35	27	
\$5,000 TO \$9,999.....	906	837	781	608	1396	1068	11	11	9	8	18	13	
\$10,000 TO \$14,999.....	959	883	846	616	1470	1136	7	7	6	5	11	9	
\$15,000 TO \$19,999.....	986	921	928	933	1500	1059	5	5	5	5	8	6	
\$20,000 TO \$24,999.....	1043	967	906	808	1639	1171	4	4	4	3	7	5	
\$25,000 TO \$34,999.....	1106	1057	1071	862	1581	1158	3	3	3	3	5	3	
\$35,000 OR MORE.....	1333	1247	1159	838	2061	1534	3	2	2	2	4	3	
BELOW 100% OF POVERTY.....	830	808	817	604	1366	874	19	19	19	18	34	24	
BELOW 125% OF POVERTY.....	842	805	804	581	1357	936	17	16	17	13	27	20	
RECEIVE ASSISTANCE IN ENERGY PAYMENTS.....	960	934	789	620	1450	967	15	16	18	12	17	Q	
ORIGIN OF HOUSEHOLDER													
WHITE.....	1020	969	929	730	1548	1128	5	5	4	5	8	7	
BLACK.....	1063	962	988	617	1677	922	9	9	8	7	15	Q	
OTHER.....	900	768	716	440	1548	Q	5	4	Q	Q	Q	Q	
AGE OF HOUSEHOLDER													
UNDER 25 YEARS.....	754	708	767	606	1193	899	5	5	5	5	8	Q	
25 TO 34 YEARS.....	944	922	911	651	1420	1107	4	4	4	4	6	6	
35 TO 44 YEARS.....	1209	1129	1145	899	1764	1449	5	4	4	5	7	7	
45 TO 59 YEARS.....	1156	1088	1056	829	1742	1242	5	4	4	5	7	6	
60 YEARS AND OVER.....	943	863	842	665	1449	938	8	8	7	7	14	9	
HOUSEHOLD SIZE													
1 PERSON.....	768	690	697	419	1282	730	8	8	6	6	11	10	
2 PERSONS.....	956	895	876	706	1484	999	5	5	4	4	9	6	
3 PERSONS.....	1076	1044	1057	757	1517	1303	5	4	5	4	8	7	
4 PERSONS.....	1157	1118	1095	765	1742	1288	5	4	5	5	7	6	
5 PERSONS.....	1257	1190	1353	1023	1967	1630	5	5	6	Q	8	Q	
6 OR MORE PERSONS.....	1384	1226	1188	1205	2383	1424	6	6	Q	Q	10	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.



# Natural Gas Consumption and Expenditures

**Table 7. U.S. Residential Natural Gas Consumption and Expenditures — April 1981 Through March 1982**

HOUSEHOLD CHARACTERISTICS	NATURAL GAS USED:							
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (TRILLION CU.FT.)	TOTAL AMOUNT CONSUMED (QUADRILION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	AVG PRICE (DOLLARS PER THOUSAND CU.FT.)	AVG AMOUNT CONSUMED (THOUSAND CU.FT.)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
TOTAL HOUSEHOLDS .....	53.4	5.28	5.39	24.5	4.64	99	101	459
CENSUS REGION AND DIVISION								
NORTHEAST.....	11.3	1.03	1.06	6.1	5.90	91	93	538
NEW ENGLAND.....	2.0	.17	.17	1.2	7.21	85	86	610
MIDDLE ATLANTIC.....	9.4	.87	.88	4.9	5.65	93	94	523
NORTH CENTRAL.....	16.1	2.20	2.24	9.3	4.25	136	139	580
EAST NORTH CENTRAL.....	11.4	1.64	1.67	7.1	4.32	143	146	619
WEST NORTH CENTRAL.....	4.7	.56	.57	2.3	4.05	120	122	484
SOUTH.....	14.2	1.13	1.16	5.3	4.69	80	82	374
SOUTH ATLANTIC.....	5.4	.44	.45	2.4	5.36	82	84	441
EAST SOUTH CENTRAL.....	2.6	.23	.24	1.0	4.21	91	93	385
WEST SOUTH CENTRAL.....	6.3	.46	.47	2.0	4.29	73	75	313
WEST.....	11.8	.92	.93	3.8	4.10	78	79	318
MOUNTAIN.....	3.0	.28	.28	1.1	4.08	92	94	375
PACIFIC.....	8.8	.64	.65	2.6	4.10	73	74	299
AREA TYPE								
URBAN.....	45.0	4.36	4.45	20.5	4.70	97	99	456
RURAL.....	8.4	.92	.94	4.0	4.35	109	112	476
SMSA/NON-SMSA								
SMSA.....	41.7	4.02	4.10	18.9	4.71	96	98	454
NON-SMSA.....	11.7	1.26	1.29	5.6	4.42	108	110	476
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD) --LONG-TERM AVERAGE								
<2,000 CDD AND >7,000 HDD.....	4.6	.55	.56	2.4	4.43	120	122	529
<2,000 CDD AND 5,500 TO 7,000 HDD.....	15.8	2.11	2.16	9.5	4.51	134	137	605
<2,000 CDD AND 4,000 TO 5,499 HDD.....	13.3	1.21	1.24	6.4	5.28	92	94	484
<2,000 CDD AND <4,000 HDD.....	13.4	1.00	1.02	4.2	4.16	75	76	311
>2,000 CDD AND <4,000 HDD.....	6.4	.41	.42	2.0	4.85	63	65	307

See footnotes at end of table.



# Natural Gas Consumption and Expenditures

Table 7. (Continued)

HOUSEHOLD CHARACTERISTICS	NATURAL GAS USED:							
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (TRILLION CU.FT.)	TOTAL AMOUNT CONSUMED (QUADRILION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	AVG PRICE (DOLLARS PER THOUSAND CU.FT.)	AVG AMOUNT CONSUMED (THOUSAND CU.FT.)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
<b>ALL GAS PAID BY HOUSEHOLD</b>								
YES.....	43.6	4.61	4.70	21.0	4.56	106	108	482
NO.....	9.9	.67	.69	3.5	5.20	68	70	356
<b>HOUSING STRUCTURE BY OWNERSHIP</b>								
SINGLE-FAMILY DETACHED.....	34.8	3.98	4.06	17.7	4.44	114	117	508
OWN.....	29.8	3.51	3.58	15.6	4.45	118	120	524
RENT.....	5.0	.47	.48	2.1	4.39	94	96	412
SINGLE-FAMILY ATTACHED.....	2.1	.19	.19	1.0	5.36	87	89	469
OWN.....	1.5	.14	.15	.8	5.37	95	97	508
RENT.....	.6	.04	.04	.2	5.35	70	71	372
BUILDING WITH 2 TO 4 UNITS....	7.3	.60	.62	3.2	5.31	82	84	437
OWN.....	1.8	.17	.17	.9	5.53	95	97	523
RENT.....	5.5	.43	.44	2.3	5.22	78	80	409
BUILDING WITH 5 OR MORE UNITS.....	7.8	.40	.41	2.1	5.34	51	52	271
OWN.....	.5	.03	.03	.1	5.13	54	55	277
RENT.....	7.3	.37	.38	2.0	5.35	51	52	271
MOBILE HOME.....	1.3	.11	.12	.5	4.47	86	88	384
OWN.....	1.1	.09	.10	.4	4.44	85	87	379
RENT.....	.2	.02	.02	.1	4.62	88	90	409
<b>NUMBER OF ROOMS</b>								
1.....	.4	.02	.02	.1	4.90	45	46	222
2.....	1.1	.06	.07	.3	5.19	56	58	293
3.....	4.6	.25	.25	1.3	5.17	54	55	278
4.....	10.6	.77	.79	3.7	4.80	73	75	351
5.....	12.5	1.17	1.20	5.4	4.59	94	96	433
6.....	11.3	1.17	1.20	5.4	4.59	104	106	476
7.....	6.1	.78	.80	3.5	4.52	129	131	582
8 OR MORE.....	6.8	1.04	1.07	4.8	4.56	153	156	698
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>								
ALL.....	18.9	1.87	1.91	8.4	4.51	99	101	448
SOME.....	12.4	1.30	1.33	6.3	4.82	105	107	506
NONE.....	22.1	2.10	2.15	9.8	4.65	95	97	442

See footnotes at end of table.



# Natural Gas Consumption and Expenditures

Table 7. (Continued)

HOUSEHOLD CHARACTERISTICS	NATURAL GAS USED:							
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (TRILLION CU.FT.)	TOTAL AMOUNT CONSUMED (QUADRILION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	AVG PRICE (DOLLARS PER THOUSAND CU.FT.)	AVG AMOUNT CONSUMED (THOUSAND CU.FT.)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
<b>MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE</b>								
LESS THAN 600 SQUARE FEET.....	4.4	0.24	0.25	1.2	5.05	55	56	276
600 TO 999 SQUARE FEET.....	13.4	.97	.99	4.6	4.80	72	74	348
1,000 TO 1,599 SQUARE FEET.....	16.2	1.45	1.48	6.7	4.62	90	92	414
1,600 TO 1,999 SQUARE FEET.....	7.3	.81	.82	3.7	4.64	111	113	514
2,000 TO 2,399 SQUARE FEET.....	4.9	.62	.64	2.9	4.58	126	129	578
2,400 TO 2,999 SQUARE FEET.....	3.6	.54	.55	2.4	4.50	149	152	671
3,000 OR MORE SQUARE FEET.....	3.6	.65	.66	2.9	4.47	181	185	810
<b>YEAR HOUSE BUILT</b>								
1939 OR EARLIER.....	17.8	1.91	1.95	9.2	4.80	107	110	515
1940 TO 1949.....	5.0	.46	.47	2.1	4.60	92	94	422
1950 TO 1959.....	10.0	.98	1.00	4.3	4.40	98	100	431
1960 TO 1964.....	5.4	.54	.55	2.5	4.56	100	102	454
1965 TO 1969.....	5.4	.51	.52	2.4	4.77	95	97	451
1970 TO 1974.....	5.1	.48	.49	2.2	4.58	93	95	426
1975 TO 1978.....	3.3	.29	.30	1.3	4.59	90	92	412
1979 OR LATER.....	1.4	.11	.11	.5	4.48	77	78	344
<b>OWN/RENT</b>								
OWN.....	34.7	3.94	4.03	17.9	4.53	114	116	515
RENT.....	18.7	1.34	1.36	6.6	4.96	71	73	354
<b>1980 FAMILY INCOME</b>								
LESS THAN \$5,000.....	6.1	.49	.50	2.3	4.73	80	82	378
\$5,000 TO \$9,999.....	8.7	.79	.80	3.7	4.66	90	92	422
\$10,000 TO \$14,999.....	8.0	.73	.75	3.4	4.69	91	93	427
\$15,000 TO \$19,999.....	6.3	.60	.61	2.8	4.70	96	98	450
\$20,000 TO \$24,999.....	6.7	.66	.67	3.1	4.64	98	100	455
\$25,000 TO \$34,999.....	9.1	.97	.99	4.4	4.59	106	108	487
\$35,000 OR MORE.....	8.5	1.05	1.07	4.8	4.56	124	126	565
<b>BELOW 100% OF POVERTY</b>								
BELOW 100% OF POVERTY.....	6.9	.62	.63	2.9	4.65	90	91	417
<b>BELOW 125% OF POVERTY</b>								
BELOW 125% OF POVERTY.....	10.2	.89	.91	4.2	4.69	88	89	411
<b>RECEIVE ASSISTANCE IN ENERGY PAYMENTS</b>								
RECEIVE ASSISTANCE IN ENERGY PAYMENTS.....	3.0	.30	.30	1.4	4.89	100	102	490

See footnotes at end of table.



# Natural Gas Consumption and Expenditures

Table 7. (Continued)

HOUSEHOLD CHARACTERISTICS	NATURAL GAS USED:							
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (TRILLION CU.FT.)	TOTAL AMOUNT CONSUMED (QUADRILION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	AVG PRICE (DOLLARS PER THOUSAND CU.FT.)	AVG AMOUNT CONSUMED (THOUSAND CU.FT.)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
<b>ORIGIN OF HOUSEHOLDER</b>								
WHITE.....	45.4	4.57	4.67	21.0	4.58	101	103	461
BLACK.....	7.0	.65	.66	3.2	4.98	93	95	464
OTHER.....	1.0	.06	.06	.3	5.44	59	60	319
<b>AGE OF HOUSEHOLDER</b>								
UNDER 25 YEARS.....	3.9	.31	.32	1.4	4.53	80	82	363
25 TO 34 YEARS.....	13.9	1.28	1.30	6.0	4.69	92	94	431
35 TO 44 YEARS.....	9.5	1.03	1.05	4.8	4.62	108	110	499
45 TO 59 YEARS.....	11.9	1.31	1.33	6.1	4.64	109	112	508
60 YEARS AND OVER.....	14.1	1.35	1.38	6.3	4.64	96	98	444
<b>HOUSEHOLD SIZE</b>								
1 PERSON.....	10.2	.76	.77	3.6	4.77	75	76	356
2 PERSONS.....	17.0	1.60	1.63	7.4	4.61	94	96	433
3 PERSONS.....	10.0	1.05	1.07	4.9	4.70	105	107	493
4 PERSONS.....	9.3	1.02	1.04	4.7	4.57	110	112	503
5 PERSONS.....	4.2	.51	.52	2.4	4.58	123	126	565
6 OR MORE PERSONS.....	2.9	.35	.35	1.6	4.59	122	124	559
<b>FUEL COMBINATIONS</b>								
NATURAL GAS USED MAIN HEAT....	46.2	5.07	5.17	23.1	4.56	110	112	499
NATURAL GAS FOR HOT WATER AND HAVE AIR CONDITIONING...	25.1	2.83	2.89	12.9	4.56	113	115	516
NATURAL GAS FOR HOT WATER AND NO AIR CONDITIONING....	17.0	1.86	1.90	8.3	4.48	109	111	489
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	2.6	.24	.24	1.1	4.67	92	94	432
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING....	1.4	.13	.13	.7	5.07	90	92	456
OTHER.....	.1	.01	.01	.1	6.31	63	64	396
ELECTRICITY USED MAIN HEAT....	1.6	.06	.06	.3	4.84	38	38	182
FUEL OIL USED MAIN HEAT.....	4.4	.10	.10	.9	8.77	22	23	197
WOOD USED MAIN HEAT.....	.6	.03	.03	.1	4.60	56	57	256
OTHER/NONE.....	.6	.02	.02	.1	5.36	37	38	199
<b>MAIN HEATING EQUIPMENT USING NATURAL GAS</b>								
CENTRAL WARM AIR FURNACE.....	28.5	3.35	3.42	14.8	4.41	118	120	518
STEAM OR HOT-WATER SYSTEM....	7.2	.95	.97	5.0	5.20	132	135	688
FLOOR, WALL OR PIPELESS FURNACE.....	5.6	.39	.40	1.6	4.08	69	70	280
ROOM HEATER.....	4.7	.36	.36	1.7	4.76	76	78	362
NONE/OTHER.....	7.4	.23	.24	1.5	6.50	31	32	204

"-" = 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.



# Natural Gas as a Main Heating Fuel

**Table 8. U.S. Residential Natural Gas Consumption and Expenditures for Households Using Natural Gas as Main Heating Fuel — April 1981 Through March 1982**

HOUSEHOLD CHARACTERISTICS	NATURAL GAS USED:							
	AS MAIN HEATING FUEL				NOT AS MAIN HEATING FUEL			
	NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND CU.FT.)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)	NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND CU.FT.)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
TOTAL HOUSEHOLDS .....	46.2	110	112	499	7.2	30	30	198
<b>CENSUS REGION AND DIVISION</b>								
NORTHEAST.....	7.0	133	135	742	4.3	24	24	205
NEW ENGLAND.....	1.2	122	125	858	.8	29	30	245
MIDDLE ATLANTIC.....	5.9	135	137	719	3.5	23	23	196
NORTH CENTRAL.....	15.4	141	144	596	.6	31	31	191
EAST NORTH CENTRAL.....	11.2	145	148	627	.2	32	32	180
WEST NORTH CENTRAL.....	4.2	129	132	515	.4	30	31	196
SOUTH.....	13.0	84	86	394	1.2	32	33	169
SOUTH ATLANTIC.....	4.8	90	92	478	.6	22	23	147
EAST SOUTH CENTRAL.....	2.5	93	95	389	.1	52	54	244
WEST SOUTH CENTRAL.....	5.7	76	78	325	.5	40	41	183
WEST.....	10.8	80	82	329	1.0	52	53	211
MOUNTAIN.....	2.8	95	97	386	.2	46	47	212
PACIFIC.....	7.9	75	76	308	.8	53	54	211
<b>AREA TYPE</b>								
URBAN.....	38.3	109	111	502	6.8	28	29	194
RURAL.....	8.0	112	115	487	.4	56	57	267
<b>SMSA/NON-SMSA</b>								
SMSA.....	35.2	109	111	502	6.6	28	29	196
NON-SMSA.....	11.1	111	114	490	.6	44	45	229
<b>ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)</b>								
--LONG-TERM AVERAGE								
<2,000 CDD AND >7,000 HDD.....	4.1	129	132	563	.5	38	38	236
<2,000 CDD AND 5,500 TO 7,000 HDD.....	14.3	145	148	646	1.5	30	30	216
<2,000 CDD AND 4,000 TO 5,499 HDD.....	9.8	115	118	584	3.4	23	23	194
<2,000 CDD AND <4,000 HDD.....	12.2	78	79	323	1.2	45	46	183
>2,000 CDD AND <4,000 HDD.....	5.8	67	68	320	.6	33	33	182

See footnotes at end of table.



# Natural Gas as a Main Heating Fuel

Table 8. (Continued)

HOUSEHOLD CHARACTERISTICS	NATURAL GAS USED:							
	AS MAIN HEATING FUEL				NOT AS MAIN HEATING FUEL			
	NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND CU. FT.)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)	NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND CU. FT.)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
<b>ALL GAS PAID BY HOUSEHOLD</b>								
YES.....	39.0	114	117	514	4.6	33	33	209
NO.....	7.3	84	86	419	2.6	25	25	179
<b>HOUSING STRUCTURE BY OWNERSHIP</b>								
SINGLE-FAMILY DETACHED.....	32.5	119	122	527	2.3	42	43	233
OWN.....	27.8	123	126	545	2.0	42	43	235
RENT.....	4.7	97	99	424	.3	38	39	218
SINGLE-FAMILY ATTACHED.....	1.7	99	101	524	.4	34	35	225
OWN.....	1.3	106	108	561	.3	41	42	251
RENT.....	.5	83	85	426	.1	20	21	174
BUILDING WITH 2 TO 4 UNITS....	5.6	99	101	507	1.7	26	26	202
OWN.....	1.5	112	114	600	.3	22	23	195
RENT.....	4.2	95	97	475	1.3	27	27	204
BUILDING WITH 5 OR MORE UNITS.....	5.1	67	68	329	2.8	21	22	164
OWN.....	.3	68	69	312	.1	18	18	188
RENT.....	4.7	67	68	331	2.6	21	22	163
MOBILE HOME.....	1.3	87	89	390	Q	Q	Q	Q
<b>NUMBER OF ROOMS</b>								
1.....	.3	54	55	244	.1	19	19	155
2.....	.8	67	68	337	.4	34	35	200
3.....	3.2	68	69	329	1.4	21	22	162
4.....	8.8	83	85	386	1.8	25	25	177
5.....	11.1	102	104	461	1.3	29	29	201
6.....	10.2	111	113	504	1.1	35	36	215
7.....	5.7	136	139	612	.4	32	32	180
8 OR MORE.....	6.1	165	168	742	.7	52	53	313
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>								
ALL.....	17.2	106	108	473	1.7	33	34	180
SOME.....	10.5	120	122	563	2.0	26	27	200
NONE.....	18.5	108	110	487	3.6	30	31	207
<b>MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE</b>								
LESS THAN 600 SQUARE FEET....	3.2	66	68	318	1.3	25	25	170
600 TO 999 SQUARE FEET.....	10.8	84	86	387	2.5	23	24	177
1,000 TO 1,599 SQUARE FEET....	14.4	97	99	439	1.8	35	36	212
1,600 TO 1,999 SQUARE FEET....	6.7	118	120	541	.6	29	30	197
2,000 TO 2,399 SQUARE FEET....	4.5	134	137	609	.4	42	43	236
2,400 TO 2,999 SQUARE FEET....	3.4	157	160	703	.2	31	32	202
3,000 OR MORE SQUARE FEET....	3.2	197	201	868	.4	51	52	330
<b>YEAR HOUSE BUILT</b>								
1939 OR EARLIER.....	14.2	127	130	592	3.6	28	28	211
1940 TO 1949.....	4.4	102	104	458	.7	28	28	186
1950 TO 1959.....	9.0	106	109	460	1.0	23	24	167
1960 TO 1964.....	4.8	109	112	491	.6	27	27	178
1965 TO 1969.....	4.8	102	104	484	.5	28	29	151
1970 TO 1974.....	4.8	95	97	432	.3	65	66	316
1975 TO 1978.....	2.9	94	96	433	.3	53	54	235
1979 OR LATER.....	1.2	82	84	371	.1	32	33	123
<b>OWN/RENT</b>								
OWN.....	31.9	120	123	540	2.8	39	39	229
RENT.....	14.3	86	88	408	4.4	24	25	179

See footnotes at end of table.



# Natural Gas as a Main Heating Fuel

Table 8. (Continued)

HOUSEHOLD CHARACTERISTICS	NATURAL GAS USED:							
	AS MAIN HEATING FUEL				NOT AS MAIN HEATING FUEL			
	NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND CU.FT.)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)	NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND CU.FT.)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
<b>1980 FAMILY INCOME</b>								
LESS THAN \$5,000.....	5.1	90	92	418	1.1	29	30	183
\$5,000 TO \$9,999.....	7.2	104	106	473	1.5	26	26	184
\$10,000 TO \$14,999.....	6.7	104	106	474	1.3	27	28	187
\$15,000 TO \$19,999.....	5.5	106	108	488	.8	26	26	195
\$20,000 TO \$24,999.....	5.8	108	110	491	.9	31	32	211
\$25,000 TO \$34,999.....	8.2	114	116	517	.9	34	35	212
\$35,000 OR MORE.....	7.8	131	134	594	.7	41	42	246
<b>BELOW 100% OF POVERTY</b> ..... 5.7 102 104 465 1.2 30 31 188								
<b>BELOW 125% OF POVERTY</b> ..... 8.3 100 102 459 1.9 32 33 198								
<b>RECEIVE ASSISTANCE IN ENERGY PAYMENTS</b> ..... 2.2 126 129 587 .8 31 31 228								
<b>ORIGIN OF HOUSEHOLDER</b>								
WHITE.....	40.0	110	112	497	5.4	30	31	195
BLACK.....	5.5	110	113	532	1.5	31	32	220
OTHER.....	.7	75	76	382	.3	16	17	154
<b>AGE OF HOUSEHOLDER</b>								
UNDER 25 YEARS.....	3.4	87	89	390	.6	35	36	196
25 TO 34 YEARS.....	12.1	100	103	464	1.8	35	36	213
35 TO 44 YEARS.....	8.2	121	124	550	1.3	25	26	183
45 TO 59 YEARS.....	10.4	121	123	550	1.6	35	36	230
60 YEARS AND OVER.....	12.2	107	110	487	1.9	22	22	170
<b>HOUSEHOLD SIZE</b>								
1 PERSON.....	8.5	85	87	395	1.7	20	20	156
2 PERSONS.....	14.9	103	106	468	2.1	27	28	188
3 PERSONS.....	8.6	117	120	541	1.4	28	29	200
4 PERSONS.....	8.1	120	122	544	1.2	41	42	218
5 PERSONS.....	3.7	134	137	609	.5	38	39	224
6 OR MORE PERSONS.....	2.4	134	137	600	.4	50	51	327

"-" = 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.





# Electricity Consumption and Expenditures

**Table 9. U.S. Residential Electricity Consumption and Expenditures — April 1981 Through March 1982**

HOUSEHOLD CHARACTERISTICS	ELECTRICITY							
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (QUADRILION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	AVG PRICE (CENTS PER KWH)	TOTAL AMOUNT CONSUMED (BILLION KWH)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
TOTAL HOUSEHOLDS .....	83.1	2.48	45.9	6.3	727	8.7	30	552
CENSUS REGION AND DIVISION								
NORTHEAST.....	17.9	.42	10.6	8.6	123	6.8	23	589
NEW ENGLAND.....	4.3	.09	2.3	8.5	28	6.5	22	548
MIDDLE ATLANTIC.....	13.7	.32	8.2	8.7	95	7.0	24	602
NORTH CENTRAL.....	21.2	.57	10.3	6.1	168	7.9	27	484
EAST NORTH CENTRAL.....	14.6	.37	6.9	6.3	109	7.4	25	471
WEST NORTH CENTRAL.....	6.6	.20	3.4	5.7	59	9.0	31	511
SOUTH.....	27.7	1.03	17.7	5.9	301	10.9	37	640
SOUTH ATLANTIC.....	14.1	.49	8.9	6.2	144	10.2	35	633
EAST SOUTH CENTRAL.....	5.6	.25	3.7	5.0	74	13.1	45	654
WEST SOUTH CENTRAL.....	8.0	.28	5.1	6.1	83	10.4	36	641
WEST.....	16.3	.46	7.4	5.5	135	8.3	28	453
MOUNTAIN.....	3.9	.11	1.8	5.5	33	8.4	29	464
PACIFIC.....	12.3	.35	5.5	5.4	102	8.3	28	449
AREA TYPE								
URBAN.....	57.3	1.53	29.6	6.6	448	7.8	27	517
RURAL.....	25.8	.95	16.3	5.8	279	10.8	37	630
SMSA/NON-SMSA								
SMSA.....	56.6	1.60	31.2	6.7	463	8.3	28	551
NON-SMSA.....	26.5	.88	14.7	5.7	259	9.8	33	554
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)								
--LONG-TERM AVERAGE								
<2,000 CDD AND >7,000 HDD.....	8.8	.23	4.1	5.9	69	7.8	27	465
<2,000 CDD AND 5,500 TO 7,000 HDD.....	20.9	.55	10.6	6.5	162	7.7	26	505
<2,000 CDD AND 4,000 TO 5,499 HDD.....	21.6	.64	12.2	6.5	188	8.7	30	566
<2,000 CDD AND <4,000 HDD.....	19.5	.59	10.3	6.0	173	8.8	30	527
>2,000 CDD AND <4,000 HDD.....	12.2	.46	8.7	6.5	135	11.0	38	713
ALL ELECTRICITY PAID BY HOUSEHOLD								
YES.....	76.6	2.32	42.5	6.2	681	8.9	30	555
NO.....	6.5	.16	3.4	7.4	46	7.1	24	521
HOUSING STRUCTURE BY OWNERSHIP								
SINGLE-FAMILY DETACHED.....	54.6	1.81	32.5	6.1	532	9.7	33	595
OWN.....	46.3	1.58	28.3	6.1	463	10.0	34	612
RENT.....	8.2	.24	4.1	6.0	69	8.4	29	502
SINGLE-FAMILY ATTACHED.....	3.0	.07	1.5	7.1	21	7.2	24	510
OWN.....	2.1	.05	1.1	7.6	14	6.9	24	525
RENT.....	.9	.02	.4	6.2	7	7.7	26	477
BUILDING WITH 2 TO 4 UNITS....	9.3	.20	4.1	7.1	58	6.2	21	440
OWN.....	2.1	.05	1.1	7.8	13	6.5	22	506
RENT.....	7.2	.15	3.0	6.9	44	6.1	21	421
BUILDING WITH 5 OR MORE UNITS.....	12.0	.27	5.6	7.2	78	6.5	22	467
OWN.....	1.0	.02	.5	7.1	7	7.1	24	503
RENT.....	11.0	.24	5.1	7.2	71	6.5	22	464
MOBILE HOME.....	4.2	.13	2.2	5.9	37	8.9	30	520
OWN.....	3.6	.11	1.9	5.9	32	9.0	31	530
RENT.....	.6	.02	.3	5.7	5	8.0	27	461
NUMBER OF ROOMS								
1.....	.5	.01	.2	8.4	2	3.6	12	305
2.....	1.9	.04	.8	7.2	11	5.7	19	409
3.....	7.7	.15	2.9	6.9	43	5.6	19	384
4.....	17.4	.42	7.9	6.4	123	7.1	24	455
5.....	19.4	.55	10.1	6.2	162	8.4	29	521
6.....	16.5	.52	9.5	6.3	152	9.2	31	580
7.....	9.6	.36	6.4	6.1	105	11.0	37	671
8 OR MORE.....	10.2	.44	8.0	6.2	128	12.6	43	789

See footnotes at end of table.



# Electricity Consumption and Expenditures

Table 9. (Continued)

HOUSEHOLD CHARACTERISTICS	ELECTRICITY							
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (QUADRILION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	AVG PRICE (CENTS PER KWH)	TOTAL AMOUNT CONSUMED (BILLION KWH)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>								
ALL.....	30.7	1.21	21.4	6.1	353	11.5	39	698
SOME.....	17.7	.47	9.5	6.9	139	7.9	27	539
NONE.....	34.7	.80	14.9	6.4	235	6.8	23	430
<b>MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE</b>								
LESS THAN 600 SQUARE FEET.....	7.2	.13	2.7	7.4	37	5.1	17	379
600 TO 999 SQUARE FEET.....	21.8	.51	9.6	6.4	149	6.9	23	440
1,000 TO 1,599 SQUARE FEET....	25.2	.76	13.9	6.2	223	8.9	30	549
1,600 TO 1,999 SQUARE FEET....	10.6	.36	6.7	6.3	106	10.0	34	636
2,000 TO 2,399 SQUARE FEET....	7.4	.27	4.7	6.1	78	10.5	36	638
2,400 TO 2,999 SQUARE FEET....	5.6	.21	3.8	6.2	63	11.3	38	693
3,000 OR MORE SQUARE FEET....	5.4	.24	4.5	6.3	71	13.1	45	824
<b>YEAR HOUSE BUILT</b>								
1939 OR EARLIER.....	24.2	.53	10.6	6.8	156	6.4	22	439
1940 TO 1949.....	6.9	.18	3.4	6.3	54	7.8	27	490
1950 TO 1959.....	13.5	.37	6.9	6.4	107	8.0	27	512
1960 TO 1964.....	7.6	.23	4.4	6.6	67	8.9	30	583
1965 TO 1969.....	8.5	.27	5.1	6.4	80	9.5	32	603
1970 TO 1974.....	10.7	.40	7.0	6.0	116	10.9	37	654
1975 TO 1978.....	7.7	.33	5.7	5.8	98	12.6	43	732
1979 OR LATER.....	4.0	.17	2.8	5.8	48	12.1	41	698
<b>OWN/RENT</b>								
OWN.....	55.1	1.81	32.9	6.2	530	9.6	33	597
RENT.....	28.0	.67	13.0	6.6	197	7.0	24	464
<b>1980 FAMILY INCOME</b>								
LESS THAN \$5,000.....	9.8	0.20	3.8	6.6	57	5.9	20	390
\$5,000 TO \$9,999.....	13.5	.32	6.0	6.4	93	6.9	24	444
\$10,000 TO \$14,999.....	12.5	.34	6.2	6.2	100	8.1	27	501
\$15,000 TO \$19,999.....	10.7	.33	6.0	6.2	97	9.1	31	559
\$20,000 TO \$24,999.....	10.8	.34	6.2	6.3	99	9.2	31	576
\$25,000 TO \$34,999.....	13.3	.45	8.3	6.2	133	10.0	34	625
\$35,000 OR MORE.....	12.6	.50	9.4	6.4	147	11.6	40	742
<b>BELOW 100% OF POVERTY</b>								
BELOW 100% OF POVERTY.....	11.0	.25	4.7	6.5	73	6.6	23	430
<b>BELOW 125% OF POVERTY</b>								
BELOW 125% OF POVERTY.....	15.8	.35	6.7	6.5	103	6.6	22	428
<b>RECEIVE ASSISTANCE IN ENERGY PAYMENTS</b>								
RECEIVE ASSISTANCE IN ENERGY PAYMENTS.....	4.4	.09	1.8	6.7	27	6.2	21	412
<b>ORIGIN OF HOUSEHOLDER</b>								
WHITE.....	72.5	2.22	40.6	6.2	651	9.0	31	560
BLACK.....	9.0	.22	4.5	7.0	65	7.2	24	501
OTHER.....	1.6	.04	.8	7.7	11	6.6	23	510
<b>AGE OF HOUSEHOLDER</b>								
UNDER 25 YEARS.....	6.6	.17	3.0	6.1	50	7.6	26	460
25 TO 34 YEARS.....	21.0	.62	11.4	6.2	183	8.7	30	542
35 TO 44 YEARS.....	14.6	.53	9.8	6.4	155	10.6	36	674
45 TO 59 YEARS.....	18.4	.61	11.4	6.3	180	9.8	33	619
60 YEARS AND OVER.....	22.5	.54	10.3	6.4	159	7.1	24	456
<b>HOUSEHOLD SIZE</b>								
1 PERSON.....	15.3	.29	5.6	6.6	84	5.5	19	363
2 PERSONS.....	27.7	.77	14.3	6.3	226	8.2	28	516
3 PERSONS.....	15.3	.50	9.1	6.2	147	9.6	33	596
4 PERSONS.....	14.4	.52	9.4	6.2	153	10.6	36	657
5 PERSONS.....	6.3	.24	4.4	6.3	70	11.1	38	696
6 OR MORE PERSONS.....	4.1	.16	3.1	6.6	47	11.5	39	756

See footnotes at end of table.



# Electricity Consumption and Expenditures

Table 9. (Continued)

HOUSEHOLD CHARACTERISTICS	ELECTRICITY							
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (QUADRILION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	AVG PRICE (CENTS PER KWH)	TOTAL AMOUNT CONSUMED (BILLION KWH)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
ALL-ELECTRIC HOME								
YES.....	12.4	0.70	10.8	5.3	204	16.4	56	872
BURNS 1/3 CORD OF WOOD OR MORE.....	1.7	.13	1.9	4.8	39	22.1	76	1069
BURNS LITTLE OR NO WOOD.....	10.6	.56	8.9	5.4	165	15.5	53	840
NO.....	70.7	1.78	35.1	6.7	523	7.4	25	496
BURNS 1/3 CORD OF WOOD OR MORE.....	13.8	.48	8.7	6.1	142	10.2	35	626
BURNS LITTLE OR NO WOOD.....	56.9	1.30	26.4	6.9	381	6.7	23	465
FUEL COMBINATIONS								
NATURAL GAS USED MAIN HEAT....	46.2	1.11	21.3	6.6	324	7.0	24	461
NATURAL GAS FOR HOT WATER AND HAVE AIR CONDITIONING...	25.1	.68	13.2	6.6	199	7.9	27	526
NATURAL GAS FOR HOT WATER AND NO AIR CONDITIONING.....	17.0	.28	5.8	7.1	82	4.8	17	341
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	2.6	.11	1.7	5.3	31	12.1	41	648
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	1.4	.04	.6	5.0	12	8.1	28	408
OTHER.....	.1	Q	.1	11.4	1	4.5	15	511
FUEL COMBINATIONS								
ELECTRICITY USED MAIN HEAT....	14.2	0.76	12.1	5.4	223	15.6	53	848
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	9.5	.53	8.8	5.6	157	16.5	56	925
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	3.2	.18	2.3	4.5	51	15.9	54	718
OTHER.....	1.5	.05	1.0	6.7	15	9.6	33	645
FUEL OIL USED MAIN HEAT.....	11.3	.27	6.4	7.9	81	7.1	24	563
FUEL OIL FOR HOT WATER AND HAVE AIR CONDITIONING...	2.9	.06	1.7	10.5	16	5.6	19	588
FUEL OIL FOR HOT WATER AND NO AIR CONDITIONING.....	2.8	.04	1.3	10.8	12	4.2	14	458
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	1.8	.08	1.4	6.3	23	12.3	42	776
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	2.2	.07	1.2	5.7	21	9.6	33	551
OTHER.....	1.6	.03	.8	8.7	9	5.4	19	473
WOOD USED MAIN HEAT.....	5.3	.18	3.0	5.7	53	9.9	34	568
LPG USED MAIN HEAT.....	3.7	.11	2.0	6.4	32	8.5	29	547
KEROSENE USED MAIN HEAT.....	.8	.02	.4	6.5	7	8.0	27	515
COAL USED MAIN HEAT.....	.7	.01	.2	6.4	4	5.6	19	358
NO HEATING FUEL.....	.4	.01	.3	13.3	2	4.4	15	584
OTHER FUEL.....	.3	.01	.2	6.3	3	7.6	26	475

"-" = 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.



# Electricity as a Main Heating Fuel

**Table 10. U.S. Residential Electricity Consumption and Expenditures for Households Using Electricity as Main Heating Fuel — April 1981 Through March 1982**

HOUSEHOLD CHARACTERISTICS	ELECTRICITY USED: AS MAIN HEATING FUEL											
	NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (THOU-SAND KWH)	AVG AMOUNT CON-SUMED (MIL-LION BTU)	AVG EXPEND-ITURES PER HOUSEHOLD (DOL-LARS)	FOR AIR CONDITIONING				NOT FOR AIR CONDITIONING			
					NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (THOU-SAND KWH)	AVG AMOUNT CON-SUMED (MIL-LION BTU)	AVG EXPEND-ITURES PER HOUSEHOLD (DOL-LARS)	NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (THOU-SAND KWH)	AVG AMOUNT CON-SUMED (MIL-LION BTU)	AVG EXPEND-ITURES PER HOUSEHOLD (DOL-LARS)
TOTAL HOUSEHOLDS .....	14.2	15.6	53	848	10.6	16.0	55	909	3.7	14.6	50	674
CENSUS REGION AND DIVISION												
NORTHEAST.....	1.5	18.6	64	1220	.9	19.0	65	1258	.6	18.0	61	1160
NEW ENGLAND.....	.4	15.3	52	1160	.3	16.1	55	1220	.1	13.4	46	1015
MIDDLE ATLANTIC.....	1.1	19.8	67	1241	.7	20.2	69	1275	.5	19.1	65	1194
NORTH CENTRAL.....	1.6	16.2	55	827	1.3	16.1	55	828	.3	16.5	56	822
SOUTH.....	7.7	15.3	52	889	6.9	15.6	53	913	.8	12.3	42	687
SOUTH ATLANTIC.....	4.4	14.0	48	881	3.9	14.2	48	905	.6	12.6	43	721
EAST SOUTH CENTRAL.....	1.8	17.8	61	870	1.7	18.2	62	887	.1	13.3	46	647
WEST SOUTH CENTRAL.....	1.5	16.2	55	941	1.4	16.6	57	964	.1	7.3	25	477
WEST.....	3.4	14.8	51	596	1.4	15.7	53	730	2.0	14.3	49	502
MOUNTAIN.....	.6	18.1	62	840	.4	20.2	69	938	.2	14.8	51	607
PACIFIC.....	2.8	14.1	48	539	1.0	13.9	47	630	1.7	14.2	48	487
AREA TYPE												
URBAN.....	8.8	14.2	49	804	6.7	14.8	51	876	2.1	12.4	42	573
RURAL.....	5.4	17.9	61	921	3.8	18.1	62	967	1.6	17.6	60	809
SMSA/NON-SMSA												
SMSA.....	10.1	14.6	50	849	7.9	15.1	51	910	2.2	12.9	44	629
NON-SMSA.....	4.1	18.1	62	847	2.7	18.7	64	904	1.5	17.1	58	741
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)												
--LONG-TERM AVERAGE												
<2,000 CDD AND >7,000 HDD.....	.5	19.4	66	999	.2	18.0	61	974	.3	20.3	69	1014
<2,000 CDD AND 5,500 TO 7,000 HDD.....	2.1	18.4	63	920	1.4	19.0	65	955	.7	17.3	59	853
<2,000 CDD AND 4,000 TO 5,499 HDD.....	3.6	17.0	58	810	2.2	16.6	57	922	1.5	17.6	60	644
<2,000 CDD AND <4,000 HDD.....	3.9	14.5	49	780	3.0	16.3	55	851	.9	8.4	29	538
>2,000 CDD AND <4,000 HDD.....	4.1	13.7	47	893	3.8	14.2	49	927	.3	6.4	22	455
ALL ELECTRICITY PAID BY HOUSEHOLD												
YES.....	12.9	15.7	54	836	9.6	15.9	54	890	3.3	15.3	52	679
NO.....	1.3	14.8	51	966	1.0	17.1	58	1100	.4	9.1	31	631
HOUSING STRUCTURE BY OWNERSHIP												
SINGLE-FAMILY DETACHED.....	6.6	19.4	66	994	4.8	19.6	67	1062	1.8	18.6	64	814
OWN.....	5.6	19.6	67	1013	4.2	19.7	67	1074	1.4	19.2	66	834
RENT.....	1.0	18.0	61	886	.6	18.9	65	981	.4	16.6	57	740
SINGLE-FAMILY ATTACHED.....	.7	13.7	47	804	.6	13.4	46	834	.1	16.5	56	569
BUILDING WITH 2 TO 4 UNITS.....	1.8	12.4	42	689	1.3	13.6	46	760	.5	9.5	32	508
BUILDING WITH 5 OR MORE UNITS.....	4.3	11.7	40	724	3.4	12.4	42	779	.9	9.2	32	522
MOBILE HOME.....	.8	14.8	51	707	.5	14.8	51	778	.4	14.8	51	610
NUMBER OF ROOMS												
1.....	.1	10.9	37	698	Q	Q	Q	Q	Q	Q	Q	Q
2.....	.6	11.2	38	685	.5	12.5	43	750	.2	7.2	24	489
3.....	2.3	10.0	34	606	1.8	10.6	36	660	.5	8.3	28	367
4.....	4.1	12.9	44	727	2.9	13.5	46	796	1.3	11.7	40	566
5.....	2.9	16.0	55	830	2.0	15.6	53	860	.9	16.9	58	757
6.....	1.8	18.4	63	980	1.4	18.4	63	1010	.4	18.3	62	882
7.....	1.3	22.0	75	1122	1.1	21.5	73	1169	.2	24.7	84	900
8 OR MORE.....	1.2	26.7	91	1392	.9	26.8	91	1423	.2	26.4	90	1254

See footnotes at end of table.



# Electricity as a Main Heating Fuel

Table 10. (Continued)

HOUSEHOLD CHARACTERISTICS	ELECTRICITY USED: AS MAIN HEATING FUEL											
					FOR AIR CONDITIONING				NOT FOR AIR CONDITIONING			
	NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (THOU-SAND KWH)	AVG AMOUNT CON-SUMED (MIL-LION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOL-LARS)	NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (THOU-SAND KWH)	AVG AMOUNT CON-SUMED (MIL-LION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOL-LARS)	NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (THOU-SAND KWH)	AVG AMOUNT CON-SUMED (MIL-LION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOL-LARS)
NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED												
ALL.....	8.8	16.0	55	912	8.8	16.0	55	912	-	-	-	-
SOME.....	1.8	15.8	54	891	1.8	15.8	54	891	-	-	-	-
NONE.....	3.6	14.6	50	673	-	-	-	-	3.6	14.6	50	673
MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE												
LESS THAN 600 SQUARE FEET.....	1.8	9.6	33	601	1.2	10.9	37	684	0.5	6.9	23	415
600 TO 999 SQUARE FEET.....	4.7	12.3	42	678	3.4	12.5	43	732	1.3	11.6	40	541
1,000 TO 1,599 SQUARE FEET....	4.5	16.2	55	880	3.4	16.1	55	931	1.1	16.6	57	731
1,600 TO 1,999 SQUARE FEET....	1.3	20.2	69	1070	1.0	18.9	64	1058	.3	24.6	84	1110
2,000 TO 2,399 SQUARE FEET....	.8	22.5	77	1133	.7	23.0	79	1205	.1	19.5	66	742
2,400 TO 2,999 SQUARE FEET....	.5	26.0	89	1418	.4	26.1	89	1447	.1	25.7	88	1305
3,000 OR MORE SQUARE FEET.....	.6	27.5	94	1342	.5	27.5	94	1370	.1	27.3	93	1188
YEAR HOUSE BUILT												
1939 OR EARLIER.....	1.2	14.0	48	686	.6	15.3	52	809	.6	12.6	43	546
1940 TO 1949.....	.5	16.4	56	795	.3	18.7	64	980	.2	14.0	48	604
1950 TO 1959.....	1.1	15.0	51	791	.8	15.0	51	858	.3	14.9	51	637
1960 TO 1964.....	.9	14.2	48	738	.7	15.0	51	809	.2	11.0	38	461
1965 TO 1969.....	1.8	15.1	51	832	1.5	14.9	51	867	.4	15.8	54	689
1970 TO 1974.....	3.3	16.1	55	899	2.6	16.7	57	957	.7	13.7	47	680
1975 TO 1978.....	3.2	17.2	59	928	2.5	17.7	61	1002	.7	15.2	52	672
1979 OR LATER.....	2.1	14.8	51	841	1.6	13.8	47	818	.6	17.6	60	904
OWN/RENT												
OWN.....	7.4	18.0	61	943	5.5	18.0	62	1003	1.9	17.8	61	769
RENT.....	6.8	13.1	45	745	5.1	13.8	47	806	1.8	11.2	38	573
1980 FAMILY INCOME												
LESS THAN \$5,000.....	2.0	11.1	38	658	1.3	12.5	42	775	.7	8.6	29	454
\$5,000 TO \$9,999.....	2.2	12.7	43	692	1.6	13.1	45	756	.6	11.7	40	528
\$10,000 TO \$14,999.....	2.2	14.9	51	765	1.6	15.0	51	825	.6	14.6	50	601
\$15,000 TO \$19,999.....	2.1	16.6	57	910	1.5	15.7	54	907	.6	18.9	64	918
\$20,000 TO \$24,999.....	1.8	15.9	54	868	1.4	15.6	53	885	.4	17.0	58	805
\$25,000 TO \$34,999.....	1.9	18.7	64	978	1.4	18.6	64	1027	.4	18.9	64	819
\$35,000 OR MORE.....	2.1	20.2	69	1091	1.8	20.6	70	1145	.3	17.8	61	792
BELOW 100% OF POVERTY.....	2.1	12.3	42	710	1.3	13.2	45	796	0.7	10.5	36	547
BELOW 125% OF POVERTY.....	2.8	11.9	41	684	1.8	12.9	44	776	1.0	10.2	35	520
RECEIVE ASSISTANCE IN ENERGY PAYMENTS.....	.6	12.1	41	662	.3	13.2	45	756	.3	11.1	38	573
ORIGIN OF HOUSEHOLDER												
WHITE.....	12.6	15.8	54	854	9.4	16.1	55	909	3.2	15.1	52	698
BLACK.....	1.3	14.5	50	851	1.0	15.6	53	936	.3	10.5	36	544
OTHER.....	.3	12.2	42	543	.1	13.7	47	714	.1	10.7	36	362

See footnotes at end of table.



# Electricity as a Main Heating Fuel

Table 10. (Continued)

HOUSEHOLD CHARACTERISTICS	ELECTRICITY USED: AS MAIN HEATING FUEL												
	NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (THOU-SAND KWH)	AVG AMOUNT CON-SUMED (MIL-LION BTU)	AVG EXPEND-ITURES PER HOUSE-HOLD (DOL-LARS)	FOR AIR CONDITIONING				NOT FOR AIR CONDITIONING				
					NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (THOU-SAND KWH)	AVG AMOUNT CON-SUMED (MIL-LION BTU)	AVG EXPEND-ITURES PER HOUSE-HOLD (DOL-LARS)	NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (THOU-SAND KWH)	AVG AMOUNT CON-SUMED (MIL-LION BTU)	AVG EXPEND-ITURES PER HOUSE-HOLD (DOL-LARS)	
<b>AGE OF HOUSEHOLDER</b>													
UNDER 25 YEARS.....	2.1	12.4	42	687	1.4	13.0	44	741	.7	11.0	38	581	
25 TO 34 YEARS.....	4.2	14.8	50	819	3.2	15.1	52	888	1.0	13.6	46	595	
35 TO 44 YEARS.....	2.0	20.4	70	1064	1.5	20.7	71	1128	.5	19.5	67	875	
45 TO 59 YEARS.....	2.5	18.2	62	962	1.8	18.6	63	1022	.7	17.3	59	792	
60 YEARS AND OVER.....	3.4	14.1	48	777	2.6	14.2	48	821	.8	13.8	47	633	
<b>HOUSEHOLD SIZE</b>													
1 PERSON.....	3.1	10.6	36	599	2.3	11.6	39	675	.8	7.8	27	378	
2 PERSONS.....	5.4	14.6	50	811	4.1	14.5	50	849	1.2	14.8	50	686	
3 PERSONS.....	2.4	17.9	61	963	1.9	18.0	62	1032	.5	17.6	60	715	
4 PERSONS.....	2.1	18.9	65	959	1.5	20.2	69	1076	.7	16.2	55	707	
5 PERSONS.....	.8	22.9	78	1235	.5	24.4	83	1334	.2	19.0	65	981	
6 OR MORE PERSONS.....	.5	22.0	75	1171	.3	22.2	76	1169	.2	21.9	75	1175	
<b>ALL-ELECTRIC HOME</b>													
YES.....	12.4	16.4	56	872	9.3	16.5	56	922	3.1	16.1	55	726	
BURNS 1/3 CORD OF WOOD OR MORE.....	1.7	22.1	76	1069	1.3	22.4	77	1152	.5	21.4	73	850	
BURNS LITTLE OR NO WOOD.....	10.6	15.5	53	840	8.0	15.6	53	885	2.7	15.2	52	704	
NO.....	1.8	10.2	35	687	1.3	12.1	41	816	.5	5.4	19	358	
BURNS 1/3 CORD OF WOOD OR MORE.....	.1	11.9	41	904	.1	14.6	50	1083	Q	Q	Q	Q	
BURNS LITTLE OR NO WOOD.....	1.7	10.1	35	674	1.2	12.0	41	800	.5	5.5	19	358	
<b>MAIN HEATING EQUIPMENT USING ELECTRICITY</b>													
CENTRAL WARM AIR FURNACE.....	5.1	16.5	56	892	4.3	16.5	56	935	.8	16.5	56	649	
BUILT-IN ELECTRIC UNITS.....	5.5	15.5	53	805	3.2	15.7	53	873	2.4	15.2	52	714	
HEAT PUMP.....	2.7	16.1	55	929	2.7	16.0	55	930	-	-	-	-	
OTHER.....	.9	10.4	35	621	.4	12.8	44	762	.5	8.5	29	512	

"-" = 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.



# Electricity Not as a Main Heating Fuel

**Table 11. U.S. Residential Electricity Consumption and Expenditures for Households Not Using Electricity as Main Heating Fuel — April 1981 Through March 1982**

HOUSEHOLD CHARACTERISTICS	ELECTRICITY USED: NOT AS MAIN HEATING FUEL											
	NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)	FOR AIR CONDITIONING				NOT FOR AIR CONDITIONING			
					NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)	NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
TOTAL HOUSEHOLDS .....	68.9	7.3	25	491	36.5	8.5	29	564	32.4	5.9	20	409
<b>CENSUS REGION AND DIVISION</b>												
NORTHEAST.....	16.4	5.7	20	530	7.7	6.2	21	600	8.7	5.4	18	468
NEW ENGLAND.....	3.9	5.6	19	485	1.4	6.3	21	540	2.4	5.1	18	452
MIDDLE ATLANTIC.....	12.5	5.8	20	544	6.3	6.1	21	614	6.3	5.5	19	475
NORTH CENTRAL.....	19.6	7.2	25	456	11.0	8.1	28	503	8.6	6.1	21	395
EAST NORTH CENTRAL.....	13.8	6.8	23	445	6.8	7.6	26	493	6.9	6.1	21	397
WEST NORTH CENTRAL.....	5.9	8.2	28	480	4.2	9.0	31	518	1.7	6.2	21	388
SOUTH.....	20.0	9.2	31	543	13.9	10.5	36	611	6.0	6.2	21	388
SOUTH ATLANTIC.....	9.7	8.5	29	519	5.9	9.8	33	593	3.8	6.5	22	405
EAST SOUTH CENTRAL.....	3.8	10.9	37	552	3.0	12.0	41	595	.8	7.2	24	398
WEST SOUTH CENTRAL.....	6.5	9.2	31	574	5.1	10.3	35	640	1.4	5.0	17	338
WEST.....	12.9	6.6	22	415	3.8	7.6	26	501	9.0	6.2	21	379
MOUNTAIN.....	3.3	6.5	22	391	.9	8.3	28	479	2.4	5.9	20	358
PACIFIC.....	9.6	6.6	23	423	2.9	7.3	25	507	6.7	6.3	21	387
<b>AREA TYPE</b>												
URBAN.....	48.4	6.7	23	465	26.9	7.9	27	540	21.5	5.1	17	371
RURAL.....	20.4	8.9	30	553	9.5	10.4	35	633	10.9	7.6	26	483
<b>SMSA/NON-SMSA</b>												
SMSA.....	46.5	6.9	24	487	26.0	8.1	28	558	20.5	5.3	18	396
NON-SMSA.....	22.3	8.2	28	500	10.5	9.6	33	579	11.9	7.0	24	431
<b>ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD) --LONG-TERM AVERAGE</b>												
<2,000 CDD AND >7,000 HDD.....	8.3	7.2	25	435	2.4	8.0	27	474	6.0	6.9	23	419
<2,000 CDD AND 5,500 TO 7,000 HDD.....	18.8	6.5	22	458	9.6	7.4	25	503	9.2	5.7	19	412
<2,000 CDD AND 4,000 TO 5,499 HDD.....	18.0	7.1	24	517	10.8	7.6	26	577	7.2	6.3	21	428
<2,000 CDD AND <4,000 HDD.....	15.6	7.4	25	464	7.6	9.6	33	561	8.0	5.4	18	371
>2,000 CDD AND <4,000 HDD.....	8.1	9.7	33	621	6.1	11.1	38	679	2.0	5.5	19	447

See footnotes at end of table.



# Electricity Not as a Main Heating Fuel

Table 11. (Continued)

HOUSEHOLD CHARACTERISTICS	ELECTRICITY USED: NOT AS MAIN HEATING FUEL												
	NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)	FOR AIR CONDITIONING				NOT FOR AIR CONDITIONING				
					NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)	NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)	
<b>ALL ELECTRICITY PAID BY HOUSEHOLD</b>													
YES.....	63.7	7.5	26	498	34.1	8.6	29	566	29.7	6.2	21	420	
NO.....	5.1	5.0	17	406	2.4	7.2	25	543	2.7	3.1	11	284	
<b>HOUSING STRUCTURE BY OWNERSHIP</b>													
<b>SINGLE-FAMILY DETACHED.....</b>	47.9	8.4	29	540	26.0	9.6	33	609	22.0	7.0	24	459	
OWN.....	40.7	8.7	30	556	23.2	9.7	33	617	17.5	7.2	25	476	
RENT.....	7.2	7.1	24	449	2.7	8.6	29	538	4.5	6.2	21	395	
<b>SINGLE-FAMILY ATTACHED.....</b>	2.3	5.3	18	427	1.2	6.1	21	500	1.2	4.5	15	355	
OWN.....	1.7	5.5	19	445	1.0	6.2	21	509	.7	4.7	16	354	
RENT.....	.7	4.8	16	385	.2	5.7	19	453	.5	4.4	15	357	
<b>BUILDING WITH 2 TO 4 UNITS.....</b>	7.5	4.7	16	381	3.1	6.4	22	502	4.4	3.6	12	295	
OWN.....	2.0	6.1	21	495	1.2	7.2	25	564	.8	4.5	15	396	
RENT.....	5.5	4.2	14	339	1.9	5.9	20	464	3.6	3.3	11	272	
<b>BUILDING WITH 5 OR MORE UNITS.....</b>	7.7	3.6	12	324	4.2	4.4	15	380	3.5	2.6	9	256	
OWN.....	.5	3.8	13	359	.3	4.1	14	400	.2	3.3	11	294	
RENT.....	7.2	3.6	12	321	3.9	4.5	15	379	3.3	2.6	9	254	
<b>MOBILE HOME.....</b>	3.3	7.4	25	473	2.0	8.1	28	513	1.3	6.3	21	412	
OWN.....	2.9	7.5	25	483	1.7	8.2	28	524	1.2	6.4	22	424	
RENT.....	.5	6.7	23	413	.3	7.2	24	455	.2	5.8	20	320	
<b>NUMBER OF ROOMS</b>													
1.....	.5	2.8	9	258	.1	4.3	15	327	.3	2.1	7	231	
2.....	1.3	3.0	10	276	.6	4.0	14	351	.7	2.3	8	212	
3.....	5.4	3.7	13	289	2.4	4.6	16	365	3.0	3.0	10	228	
4.....	13.2	5.3	18	370	6.4	6.0	20	415	6.8	4.6	16	328	
5.....	16.5	7.0	24	468	8.7	8.0	27	522	7.8	5.9	20	406	
6.....	14.7	8.1	28	531	8.2	9.3	32	593	6.5	6.7	23	452	
7.....	8.3	9.2	31	600	4.5	10.4	36	688	3.8	7.8	27	498	
8 OR MORE.....	9.0	10.8	37	711	5.5	12.0	41	776	3.5	8.9	30	606	

See footnotes at end of table.





# Electricity Not as a Main Heating Fuel

Table 11. (Continued)

HOUSEHOLD CHARACTERISTICS	ELECTRICITY USED: NOT AS MAIN HEATING FUEL												
	NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)	FOR AIR CONDITIONING				NOT FOR AIR CONDITIONING				
					NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)	NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)	
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>													
ALL.....	21.9	9.7	33	612	20.7	9.7	33	613	1.2	8.6	29	591	
SOME.....	15.9	7.0	24	500	15.8	7.0	24	501	.1	5.3	18	366	
NONE.....	31.1	5.8	20	402	-	-	-	-	31.1	5.8	20	402	
<b>MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE</b>													
LESS THAN 600 SQUARE FEET.....	5.4	3.7	13	307	2.0	4.7	16	352	3.4	3.1	10	281	
600 TO 999 SQUARE FEET.....	17.0	5.3	18	374	8.2	6.0	21	416	8.9	4.7	16	335	
1,000 TO 1,599 SQUARE FEET.....	20.7	7.2	25	477	11.0	8.4	29	548	9.7	5.9	20	396	
1,600 TO 1,999 SQUARE FEET.....	9.2	8.6	29	574	5.5	9.5	32	643	3.8	7.2	25	474	
2,000 TO 2,399 SQUARE FEET.....	6.6	9.1	31	579	3.9	10.0	34	636	2.7	7.8	27	496	
2,400 TO 2,999 SQUARE FEET.....	5.1	9.8	33	621	3.0	10.5	36	669	2.1	8.9	30	551	
3,000 OR MORE SQUARE FEET.....	4.8	11.3	38	760	2.9	12.7	43	832	1.9	9.1	31	648	
<b>YEAR HOUSE BUILT</b>													
1939 OR EARLIER.....	23.0	6.0	21	426	9.1	7.2	25	503	13.9	5.3	18	375	
1940 TO 1949.....	6.4	7.2	24	467	3.5	8.2	28	525	3.0	6.0	20	398	
1950 TO 1959.....	12.4	7.3	25	487	6.8	8.5	29	554	5.6	6.0	21	407	
1960 TO 1964.....	6.7	8.2	28	562	4.1	9.1	31	617	2.6	6.6	23	474	
1965 TO 1969.....	6.7	7.9	27	540	4.3	8.8	30	599	2.4	6.3	21	433	
1970 TO 1974.....	7.3	8.5	29	542	4.9	9.5	32	592	2.5	6.5	22	446	
1975 TO 1978.....	4.5	9.4	32	592	2.9	10.4	36	651	1.7	7.5	26	490	
1979 OR LATER.....	1.8	9.0	31	532	.9	9.4	32	584	.9	8.5	29	478	
<b>OWN/RENT</b>													
OWN.....	47.7	8.3	28	543	27.4	9.3	32	603	20.3	6.9	24	464	
RENT.....	21.2	5.1	17	374	9.1	6.1	21	449	12.1	4.3	15	317	

See footnotes at end of table.



# Electricity Not as a Main Heating Fuel

Table 11. (Continued)

HOUSEHOLD CHARACTERISTICS	ELECTRICITY USED: NOT AS MAIN HEATING FUEL											
	NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (THOU-SAND KWH)	AVG AMOUNT CON-SUMED (MIL-LION BTU)	AVG EXPEND-ITURES PER HOUSE-HOLD (DOL-LARS)	FOR AIR CONDITIONING			NOT FOR AIR CONDITIONING				
					NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (THOU-SAND KWH)	AVG AMOUNT CON-SUMED (MIL-LION BTU)	AVG EXPEND-ITURES PER HOUSE-HOLD (DOL-LARS)	NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (THOU-SAND KWH)	AVG AMOUNT CON-SUMED (MIL-LION BTU)	AVG EXPEND-ITURES PER HOUSE-HOLD (DOL-LARS)
<b>1980 FAMILY INCOME</b>												
LESS THAN \$5,000.....	7.8	4.5	15	321	2.9	5.5	19	377	4.9	3.9	13	288
\$5,000 TO \$9,999.....	11.3	5.8	20	396	5.1	6.8	23	464	6.2	4.9	17	340
\$10,000 TO \$14,999.....	10.3	6.6	23	445	5.2	7.6	26	499	5.1	5.6	19	389
\$15,000 TO \$19,999.....	8.6	7.2	25	473	4.6	8.0	27	522	4.0	6.4	22	417
\$20,000 TO \$24,999.....	9.0	7.9	27	519	5.2	8.6	29	562	3.8	7.0	24	461
\$25,000 TO \$34,999.....	11.4	8.6	29	567	6.9	9.7	33	626	4.5	6.9	24	476
\$35,000 OR MORE.....	10.5	9.9	34	674	6.6	11.1	38	741	3.9	8.1	27	560
<b>BELOW 100% OF POVERTY</b> .....	8.9	5.3	18	365	3.0	6.9	23	444	6.0	4.5	16	327
<b>BELOW 125% OF POVERTY</b> .....	13.0	5.4	18	373	4.7	6.7	23	447	8.3	4.7	16	330
<b>RECEIVE ASSISTANCE IN ENERGY PAYMENTS</b> .....	3.8	5.3	18	374	1.3	6.2	21	449	2.5	4.8	17	336
<b>ORIGIN OF HOUSEHOLDER</b>												
WHITE.....	59.9	7.5	26	497	32.8	8.6	29	566	27.1	6.2	21	415
BLACK.....	7.7	5.9	20	440	3.2	8.0	27	559	4.4	4.4	15	354
OTHER.....	1.3	5.5	19	504	.4	5.6	19	500	.9	5.4	19	506
<b>AGE OF HOUSEHOLDER</b>												
UNDER 25 YEARS.....	4.5	5.3	18	353	2.1	6.3	21	415	2.4	4.4	15	297
25 TO 34 YEARS.....	16.8	7.2	25	472	8.6	8.3	28	545	8.2	6.0	21	395
35 TO 44 YEARS.....	12.6	9.1	31	613	6.7	10.5	36	696	5.9	7.4	25	517
45 TO 59 YEARS.....	15.9	8.4	29	565	9.0	9.8	34	643	6.9	6.6	23	464
60 YEARS AND OVER.....	19.1	5.8	20	398	10.0	6.7	23	453	9.0	4.8	16	338
<b>HOUSEHOLD SIZE</b>												
1 PERSON.....	12.3	4.2	14	305	6.2	5.0	17	360	6.1	3.3	11	249
2 PERSONS.....	22.3	6.6	23	445	12.5	7.5	26	505	9.8	5.5	19	369
3 PERSONS.....	12.9	8.0	27	527	7.1	9.3	32	601	5.8	6.5	22	436
4 PERSONS.....	12.2	9.2	31	603	6.3	10.8	37	692	5.9	7.4	25	508
5 PERSONS.....	5.5	9.5	32	622	2.7	11.5	39	739	2.8	7.6	26	510
6 OR MORE PERSONS.....	3.6	10.1	34	702	1.7	12.4	42	838	2.0	8.1	28	584

See footnotes at end of table.



# Electricity Not as a Main Heating Fuel

Table 11. (Continued)

HOUSEHOLD CHARACTERISTICS	ELECTRICITY USED: NOT AS MAIN HEATING FUEL											
	NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)	FOR AIR CONDITIONING				NOT FOR AIR CONDITIONING			
					NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)	NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (THOUSAND KWH)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
<b>FUEL COMBINATIONS</b>												
NATURAL GAS USED MAIN HEAT.....	44.6	7.0	24	463	26.3	8.3	28	534	18.3	5.1	17	361
NATURAL GAS FOR HOT WATER AND HAVE AIR CONDITIONING....	25.1	7.9	27	526	23.8	7.9	27	521	1.3	8.6	29	615
NATURAL GAS FOR HOT WATER AND NO AIR CONDITIONING.....	17.0	4.8	17	341	-	-	-	-	17.0	4.8	17	341
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING....	2.6	12.1	41	648	2.5	12.2	42	651	-	-	-	-
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	1.4	8.1	28	408	-	-	-	-	1.4	8.1	28	408
OTHER.....	.1	4.5	15	511	.1	4.7	16	699	.1	4.3	15	359
FUEL OIL USED MAIN HEAT.....	7.5	8.5	29	623	5.3	8.0	27	652	2.2	9.6	33	551
FUEL OIL FOR HOT WATER AND HAVE AIR CONDITIONING....	2.9	5.6	19	588	2.9	5.6	19	588	-	-	-	-
FUEL OIL FOR HOT WATER AND NO AIR CONDITIONING.....	2.8	4.2	14	458	-	-	-	-	2.8	4.2	14	458
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING.....	1.8	12.3	42	776	1.8	12.3	42	776	-	-	-	-
NATURAL GAS FOR HOT WATER AND HAVE AIR CONDITIONING....	.6	6.2	21	583	.6	6.2	21	583	-	-	-	-
OTHER.....	3.2	8.2	28	506	.1	9.0	31	619	3.1	8.1	28	501
WOOD USED MAIN HEAT.....	5.3	9.9	34	568	1.7	12.5	43	687	3.7	8.7	30	514
LPG USED MAIN HEAT.....	3.7	8.5	29	547	2.3	9.4	32	601	1.4	7.1	24	455
COAL USED MAIN HEAT.....	.7	5.6	19	358	.2	8.8	30	565	.5	4.0	14	256
NO HEATING FUEL.....	.4	4.4	15	584	Q	Q	Q	Q	.4	4.3	15	586
OTHER FUEL.....	1.2	7.9	27	504	.4	10.2	35	633	.8	6.5	22	431

"-" = 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 Oil or Kerosene Consumption and Expenditures

**Table 12. U.S. Residential Fuel Oil or Kerosene Consumption and Expenditures — April 1981 Through March 1982**

HOUSEHOLD CHARACTERISTICS	FUEL OIL OR KEROSENE USED:								
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (BILLION GALLONS)	TOTAL AMOUNT CONSUMED (QUADRILION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	AVG PRICE (DOLLARS PER GALLON)	AS MAIN HEATING FUEL			
						NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (GALLONS)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
TOTAL HOUSEHOLDS .....	14.6	9.60	1.33	11.8	1.23	12.2	744	103	915
CENSUS REGION AND DIVISION									
NORTHEAST.....	8.9	6.96	.96	8.6	1.24	7.9	842	117	1040
NEW ENGLAND.....	2.4	1.92	.27	2.4	1.24	2.1	856	119	1066
MIDDLE ATLANTIC.....	6.5	5.04	.70	6.2	1.23	5.8	836	116	1030
NORTH CENTRAL.....	2.3	1.26	.17	1.5	1.20	1.7	686	95	826
EAST NORTH CENTRAL.....	1.7	.91	.13	1.1	1.21	1.2	672	93	812
WEST NORTH CENTRAL.....	.6	.36	.05	.4	1.20	.4	723	100	863
SOUTH.....	2.8	1.14	.16	1.4	1.23	2.2	482	67	595
SOUTH ATLANTIC.....	2.5	1.04	.14	1.3	1.24	2.0	490	68	606
EAST SOUTH CENTRAL.....	.3	.09	.01	.1	1.20	.2	409	56	489
WEST SOUTH CENTRAL.....	Q	Q	Q	Q	Q	Q	Q	Q	Q
WEST.....	.5	.24	.03	.3	1.21	.4	504	70	611
AREA TYPE									
URBAN.....	8.9	6.58	.91	8.1	1.23	8.0	796	110	982
RURAL.....	5.7	3.02	.42	3.7	1.22	4.2	644	89	788
SMSA/NON-SMSA									
SMSA.....	9.6	6.97	.97	8.6	1.23	8.4	794	110	979
NON-SMSA.....	5.0	2.63	.36	3.2	1.22	3.7	631	87	772
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)									
--LONG-TERM AVERAGE									
<2,000 CDD AND >7,000 HDD.....	2.7	1.57	.22	1.9	1.22	1.9	715	99	871
<2,000 CDD AND 5,500 TO 7,000 HDD.....	3.8	2.83	.39	3.5	1.23	3.3	818	113	1010
<2,000 CDD AND 4,000 TO 5,499 HDD.....	6.4	4.66	.65	5.7	1.23	5.7	790	110	972
ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)									
--LONG-TERM AVERAGE									
<2,000 CDD AND <4,000 HDD.....	1.1	0.42	0.06	0.5	1.25	0.8	453	63	565
>2,000 CDD AND <4,000 HDD.....	.5	.12	.02	.2	1.27	.4	260	36	329

See footnotes at end of table.



# Fuel Oil or Kerosene Consumption and Expenditures

Table 12. (Continued)

HOUSEHOLD CHARACTERISTICS	FUEL OIL OR KEROSENE USED:								
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (BILLION GALLONS)	TOTAL AMOUNT CONSUMED (QUADRILION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	AVG PRICE (DOLLARS PER GALLON)	AS MAIN HEATING FUEL			
						NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (GALLONS)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
<b>FUEL OIL PAID BY HOUSEHOLD</b>									
YES.....	10.7	6.75	0.93	8.3	1.23	8.7	723	100	891
NO.....	3.9	2.85	.40	3.5	1.23	3.5	793	110	976
<b>HOUSING STRUCTURE BY OWNERSHIP</b>									
SINGLE-FAMILY DETACHED.....	8.9	5.76	.80	7.1	1.23	7.0	758	105	931
OWN.....	7.9	5.28	.73	6.5	1.23	6.3	774	107	951
RENT.....	1.0	.49	.07	.6	1.23	.7	614	85	756
SINGLE-FAMILY ATTACHED.....	.6	.42	.06	.5	1.23	.5	752	104	927
OWN.....	.4	.28	.04	.3	1.23	.3	760	105	935
RENT.....	.2	.14	.02	.2	1.24	.2	739	102	913
BUILDING WITH 2 TO 4 UNITS....	1.8	1.37	.19	1.7	1.23	1.7	804	111	990
OWN.....	.5	.40	.06	.5	1.24	.4	900	125	1112
RENT.....	1.3	.97	.13	1.2	1.23	1.2	770	107	947
BUILDING WITH 5 OR MORE UNITS.....	2.6	1.79	.25	2.2	1.23	2.3	758	105	932
MOBILE HOME.....	.7	.26	.04	.3	1.26	.7	379	52	477
<b>NUMBER OF ROOMS</b>									
1.....	.2	.12	.02	.1	1.23	.2	776	108	955
2.....	.3	.16	.02	.2	1.24	.2	704	98	866
3.....	1.7	1.07	.15	1.3	1.23	1.6	645	89	795
4.....	2.6	1.51	.21	1.9	1.23	2.2	659	91	810
5.....	3.1	1.88	.26	2.3	1.23	2.6	700	97	861
6.....	2.9	1.76	.24	2.2	1.22	2.4	714	99	874
7.....	1.9	1.30	.18	1.6	1.23	1.5	777	108	957
8 OR MORE.....	2.0	1.81	.25	2.2	1.24	1.6	1034	143	1280
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>									
ALL.....	2.6	1.55	0.21	1.9	1.23	2.1	693	96	851
SOME.....	4.1	3.21	.44	4.0	1.23	3.8	821	114	1014
NONE.....	7.9	4.84	.67	6.0	1.23	6.3	714	99	878
<b>MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE</b>									
LESS THAN 600 SQUARE FEET.....	1.3	.72	.10	.9	1.23	1.2	584	81	719
600 TO 999 SQUARE FEET.....	3.9	2.36	.33	2.9	1.24	3.4	668	92	826
1,000 TO 1,599 SQUARE FEET....	3.6	2.21	.31	2.7	1.23	2.9	712	99	875
1,600 TO 1,999 SQUARE FEET....	1.8	1.15	.16	1.4	1.23	1.5	737	102	904
2,000 TO 2,399 SQUARE FEET....	1.5	1.03	.14	1.3	1.23	1.1	805	111	989
2,400 TO 2,999 SQUARE FEET....	1.2	.85	.12	1.0	1.22	.9	835	116	1019
3,000 OR MORE SQUARE FEET....	1.3	1.28	.18	1.6	1.23	1.1	1088	151	1341
<b>YEAR HOUSE BUILT</b>									
1939 OR EARLIER.....	6.1	4.42	.61	5.5	1.23	5.1	817	113	1008
1940 TO 1949.....	1.3	.81	.11	1.0	1.22	1.2	673	93	824
1950 TO 1959.....	2.5	1.70	.24	2.1	1.23	2.2	739	102	905
1960 TO 1964.....	1.2	.75	.10	.9	1.23	1.1	681	94	837
1965 TO 1969.....	1.2	.77	.11	.9	1.23	1.0	718	100	881
1970 TO 1974.....	1.5	.81	.11	1.0	1.24	1.1	660	91	816
1975 TO 1978.....	.6	.27	.04	.3	1.23	.4	547	76	674
1979 OR LATER.....	.2	.08	.01	.1	1.23	.1	587	81	723

See footnotes at end of table.



# Fuel Oil or Kerosene Consumption and Expenditures

Table 12. (Continued)

HOUSEHOLD CHARACTERISTICS	FUEL OIL OR KEROSENE USED:								
	NUMBER OF HOUSEHOLDS (MILLION)	TOTAL AMOUNT CONSUMED (BILLION GALLONS)	TOTAL AMOUNT CONSUMED (QUADRILION BTU)	TOTAL EXPENDITURES (BILLION DOLLARS)	AVG PRICE (DOLLARS PER GALLON)	AS MAIN HEATING FUEL			
						NUMBER OF HOUSEHOLDS (MILLION)	AVG AMOUNT CONSUMED (GALLONS)	AVG AMOUNT CONSUMED (MILLION BTU)	AVG EXPENDITURES PER HOUSEHOLD (DOLLARS)
<b>OWN/RENT</b>									
OWN.....	9.5	6.29	0.87	7.7	1.23	7.7	758	105	933
RENT.....	5.1	3.31	.46	4.1	1.23	4.4	718	100	884
<b>1980 FAMILY INCOME</b>									
LESS THAN \$5,000.....	1.4	.82	.11	1.0	1.23	1.2	657	91	811
\$5,000 TO \$9,999.....	2.6	1.66	.23	2.0	1.23	2.3	695	96	853
\$10,000 TO \$14,999.....	2.4	1.57	.22	1.9	1.23	2.1	708	98	874
\$15,000 TO \$19,999.....	1.9	1.09	.15	1.3	1.23	1.5	704	97	865
\$20,000 TO \$24,999.....	1.9	1.26	.17	1.5	1.23	1.6	760	105	934
\$25,000 TO \$34,999.....	2.1	1.36	.19	1.7	1.23	1.8	719	100	883
\$35,000 OR MORE.....	2.2	1.85	.26	2.3	1.24	1.8	950	132	1174
<b>BELOW 100% OF POVERTY</b> .....	1.5	.89	.12	1.1	1.23	1.2	678	94	835
<b>BELOW 125% OF POVERTY</b> .....	2.4	1.40	.19	1.7	1.23	2.0	664	92	816
<b>RECEIVE ASSISTANCE IN ENERGY PAYMENTS</b> .....	1.0	.62	.09	.8	1.23	.9	674	93	831
<b>ORIGIN OF HOUSEHOLDER</b>									
WHITE.....	12.5	8.06	1.12	9.9	1.23	10.3	736	102	905
BLACK.....	1.8	1.33	.18	1.6	1.24	1.6	792	110	983
OTHER.....	.3	.22	.03	.3	1.23	.3	741	103	913
<b>AGE OF HOUSEHOLDER</b>									
UNDER 25 YEARS.....	.6	.32	.04	.4	1.23	.5	548	76	673
25 TO 34 YEARS.....	2.9	1.61	.22	2.0	1.23	2.2	661	92	813
35 TO 44 YEARS.....	2.9	2.09	.29	2.6	1.24	2.3	820	114	1013
45 TO 59 YEARS.....	3.6	2.53	.35	3.1	1.23	3.0	790	109	972
60 YEARS AND OVER.....	4.5	3.05	.42	3.8	1.23	4.1	737	102	906
<b>HOUSEHOLD SIZE</b>									
1 PERSON.....	2.9	1.85	0.26	2.3	1.23	2.6	688	95	846
2 PERSONS.....	4.8	3.14	.43	3.8	1.23	4.1	730	101	895
3 PERSONS.....	2.6	1.53	.21	1.9	1.23	2.1	660	91	813
4 PERSONS.....	2.5	1.66	.23	2.1	1.24	1.9	783	109	969
5 PERSONS.....	1.0	.74	.10	.9	1.23	.8	880	122	1083
6 OR MORE PERSONS.....	.7	.68	.09	.9	1.24	.6	1053	146	1308
<b>FUEL COMBINATIONS</b>									
FUEL OIL USED MAIN HEAT.....	11.3	8.77	1.22	10.8	1.23	11.3	775	107	952
FUEL OIL FOR HOT WATER AND HAVE AIR CONDITIONING...	2.2	1.29	.18	1.6	1.21	2.2	587	81	713
FUEL OIL FOR HOT WATER AND NO AIR CONDITIONING.....	2.9	2.73	.38	3.4	1.23	2.9	949	132	1171
ELECTRICITY HOT WATER AND HAVE AIR CONDITIONING.....	1.8	1.09	.15	1.3	1.22	1.8	591	82	719
NATURAL GAS FOR HOT WATER AND HAVE AIR CONDITIONING...	.6	.49	.07	.6	1.25	.6	803	111	1005
OTHER.....	3.8	3.17	.44	3.9	1.23	3.8	835	116	1030
OTHER FUEL.....	3.3	.83	.12	1.0	1.25	.8	331	45	420
<b>MAIN HEATING EQUIPMENT USING FUEL OIL</b>									
STEAM OR HOT WATER SYSTEM.....	6.7	5.97	.83	7.4	1.23	6.7	894	124	1103
CENTRAL WARM AIR FURNACE.....	4.1	2.56	.35	3.1	1.22	4.1	625	87	763
OTHER/NONE.....	3.8	1.07	.15	1.3	1.24	1.4	370	51	465

"-" = 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.



# LPG Consumption and Expenditures

**Table 13. U.S. Liquefied Petroleum Gas Consumption and Expenditures — April 1981 Through March 1982**

HOUSEHOLD CHARACTERISTICS	LIQUEFIED PETROLEUM GAS (LPG) USED:												
	NUMBER OF HOUSEHOLDS (MIL-LION)	TOTAL AMOUNT CON-SUMED (BIL-LION GAL-LONS)	TOTAL AMOUNT CON-SUMED (QUAD-RIL-LION BTU)	TOTAL EX-PENDITURES (BIL-LION DOL-LARS)	AVG PRICE (DOL-LARS PER GAL-LON)	AS MAIN HEATING FUEL				NOT AS MAIN HEATING FUEL			
						NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (GAL-LONS)	AVG AMOUNT CON-SUMED (MIL-LION BTU)	AVG EX-PENDITURES PER HOUSE-HOLD (DOL-LARS)	NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (GAL-LONS)	AVG AMOUNT CON-SUMED (MIL-LION BTU)	AVG EX-PENDITURES PER HOUSE-HOLD (DOL-LARS)
TOTAL HOUSEHOLDS .....	7.3	3.42	0.31	2.7	0.80	3.7	728	67	555	3.5	201	18	188
<b>CENSUS REGION AND DIVISION</b>													
NORTHEAST.....	1.2	.31	.03	.3	.96	.1	1222	112	1047	1.1	167	15	174
NORTH CENTRAL.....	2.1	1.38	.13	1.0	.73	1.0	1101	101	782	1.0	238	22	196
EAST NORTH CENTRAL.....	1.2	.69	.06	.6	.80	.5	1162	106	903	.7	222	20	190
WEST NORTH CENTRAL.....	.9	.69	.06	.5	.67	.6	1051	96	683	.3	272	25	207
SOUTH.....	3.4	1.31	.12	1.1	.84	2.1	504	46	407	1.2	190	17	189
SOUTH ATLANTIC.....	2.1	.73	.07	.7	.91	1.2	470	43	405	.9	177	16	190
EAST SOUTH CENTRAL.....	.6	.25	.02	.2	.77	.3	581	53	435	.3	232	21	190
WEST SOUTH CENTRAL.....	.7	.33	.03	.2	.75	.6	531	49	395	.1	207	19	176
WEST.....	.7	.42	.04	.3	.78	.4	831	76	629	.2	273	25	232
MOUNTAIN.....	.2	.17	.02	.1	.72	.1	991	91	710	.1	382	35	293
PACIFIC.....	.5	.25	.02	.2	.81	.3	752	69	588	.1	164	15	171
<b>AREA TYPE</b>													
URBAN.....	1.3	.39	.04	.3	.88	.6	453	41	373	.6	160	15	164
RURAL.....	6.0	3.03	.28	2.4	.79	3.1	785	72	593	2.9	210	19	194
<b>SMSA/NON-SMSA</b>													
SMSA.....	2.1	.90	.08	.8	.86	1.2	620	57	517	.9	198	18	194
NON-SMSA.....	5.2	2.52	.23	2.0	.78	2.5	777	71	572	2.6	202	18	186
<b>ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD)</b>													
--LONG-TERM AVERAGE													
<2,000 CDD AND >7,000 HDD.....	1.6	.67	.06	.5	.79	.4	1004	92	724	1.2	227	21	204
<2,000 CDD AND 5,500 TO 7,000 HDD.....	1.2	.77	.07	.6	.79	.5	1312	120	991	.7	183	17	172
<2,000 CDD AND 4,000 TO 5,499 HDD.....	1.4	.66	.06	.5	.78	.6	920	84	655	.8	184	17	185
<2,000 CDD AND <4,000 HDD.....	1.6	.78	.07	.6	.81	1.1	633	58	503	.5	209	19	194
>2,000 CDD AND <4,000 HDD.....	1.7	.55	.05	.5	.84	1.2	390	36	318	.3	174	16	165
<b>ALL LPG PAID BY HOUSEHOLD</b>													
YES.....	7.2	3.33	0.31	2.7	0.80	3.6	735	67	561	3.5	201	18	188
NO.....	.2	.09	.01	.1	.76	.1	540	49	407	Q	Q	Q	Q
<b>HOUSING STRUCTURE BY OWNERSHIP</b>													
SINGLE-FAMILY DETACHED.....	5.4	2.71	.25	2.1	.79	2.6	827	76	622	2.7	211	19	195
OWN.....	4.2	2.18	.20	1.7	.79	1.9	896	82	667	2.2	202	18	190
RENT.....	1.2	.53	.05	.4	.82	.6	611	56	484	.6	243	22	214
BUILDING WITH 2 OR MORE UNITS.....	.2	.07	.01	.1	.87	Q	Q	Q	Q	.1	202	18	206
MOBILE HOME.....	1.8	.64	.06	.5	.83	1.1	489	45	392	.7	161	15	156
<b>NUMBER OF ROOMS</b>													
1 OR 2.....	.2	.06	.01	Q	.85	.2	265	24	229	Q	Q	Q	Q
3.....	.6	.16	.01	.1	.88	.2	530	49	423	.5	139	13	139
4.....	1.6	.59	.05	.5	.81	.8	548	50	420	.8	189	17	178
5.....	2.0	.89	.08	.7	.81	1.1	623	57	476	.8	200	18	195
6.....	1.4	.78	.07	.6	.81	.7	838	77	663	.6	255	23	218
7.....	.7	.34	.03	.3	.77	.3	861	79	612	.4	196	18	188
8 OR MORE.....	.7	.60	.06	.5	.76	.4	1443	132	1056	.4	227	21	218
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>													
ALL.....	2.1	.97	.09	.8	.78	1.4	634	58	480	.7	143	13	143
SOME.....	1.6	.87	.08	.7	.79	1.0	801	73	608	.6	167	15	164
NONE.....	3.7	1.59	.15	1.3	.82	1.4	771	71	592	2.2	229	21	210

See footnotes at end of table.



# LPG Consumption and Expenditures

Table 13. (Continued)

HOUSEHOLD CHARACTERISTICS	LIQUEFIED PETROLEUM GAS (LPG) USED:												
	NUMBER OF HOUSEHOLDS (MIL-LION)	TOTAL				AS MAIN HEATING FUEL				NOT AS MAIN HEATING FUEL			
		AMOUNT CON-SUMED (MIL-GAL-LONS)	AMOUNT CON-SUMED (QUAD-RIL-LION BTU)	TOTAL EX-PENDITURES (BIL-LION DOL-LARS)	AVG PRICE (DOL-LARS PER GAL-LON)	NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (GAL-LONS)	AVG CON-SUMED (MIL-LION BTU)	AVG EX-PENDITURES PER HOUSEHOLD (DOL-LARS)	NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (GAL-LONS)	AVG CON-SUMED (MIL-LION BTU)	AVG EX-PENDITURES PER HOUSEHOLD (DOL-LARS)
<b>MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE</b>													
LESS THAN 600 SQUARE FEET.....	0.8	0.22	0.02	0.2	0.85	0.4	416	38	332	0.3	123	11	121
600 TO 999 SQUARE FEET.....	2.1	.75	.07	.6	.82	1.1	529	48	412	1.0	176	16	166
1,000 TO 1,599 SQUARE FEET....	2.6	1.40	.13	1.1	.82	1.4	774	71	615	1.1	254	23	233
1,600 TO 1,999 SQUARE FEET....	.5	.33	.03	.3	.75	.3	916	84	654	.2	175	16	183
2,000 TO 2,399 SQUARE FEET....	.6	.30	.03	.2	.77	.2	1062	97	755	.3	208	19	195
2,400 TO 2,999 SQUARE FEET....	.5	.28	.03	.2	.74	.2	1071	98	759	.3	234	21	200
3,000 OR MORE SQUARE FEET....	.3	.14	.01	.1	.71	.1	1421	130	913	.2	137	13	145
<b>YEAR HOUSE BUILT</b>													
1939 OR EARLIER.....	2.6	1.49	0.14	1.2	0.79	1.2	989	91	742	1.4	219	20	202
1940 TO 1949.....	.5	.19	.02	.2	.86	.2	666	61	546	.3	221	20	208
1950 TO 1959.....	.7	.20	.02	.2	.83	.3	480	44	358	.4	172	16	170
1960 TO 1964.....	.7	.32	.03	.3	.78	.4	701	64	523	.3	148	14	148
1965 TO 1969.....	.6	.25	.02	.2	.78	.3	648	59	483	.2	155	14	150
1970 TO 1974.....	1.3	.55	.05	.5	.82	.7	617	56	490	.6	229	21	208
1975 TO 1978.....	.7	.28	.03	.2	.80	.4	544	50	424	.2	179	16	170
1979 OR LATER.....	.4	.13	.01	.1	.80	.2	508	46	385	.2	183	17	168
<b>OWN/RENT</b>													
OWN.....	5.8	2.78	.25	2.2	.80	2.9	757	69	573	2.8	199	18	188
RENT.....	1.6	.65	.06	.5	.81	.8	618	57	486	.7	210	19	189
<b>1980 FAMILY INCOME</b>													
LESS THAN \$5,000.....	1.2	.44	.04	.4	.81	.6	558	51	439	.5	164	15	146
\$5,000 TO \$9,999.....	1.5	.67	.06	.5	.79	.7	743	68	552	.8	194	18	182
\$10,000 TO \$14,999.....	1.1	.44	.04	.4	.80	.4	729	67	556	.6	187	17	171
\$15,000 TO \$19,999.....	.9	.53	.05	.4	.78	.5	790	72	597	.4	294	27	251
\$20,000 TO \$24,999.....	1.1	.49	.04	.4	.86	.6	652	60	538	.5	208	19	204
\$25,000 TO \$34,999.....	.8	.34	.03	.3	.82	.4	672	61	520	.4	181	17	183
\$35,000 OR MORE.....	.7	.51	.05	.4	.75	.4	1034	95	733	.3	202	18	209
<b>BELOW 100% OF POVERTY</b> .....	1.4	.53	.05	.4	.83	.7	547	50	436	.7	189	17	172
<b>BELOW 125% OF POVERTY</b> .....	2.0	.82	.08	.7	.80	1.0	620	57	477	1.0	197	18	178
<b>RECEIVE ASSISTANCE IN ENERGY PAYMENTS</b> .....	.7	.25	.02	.2	.80	.3	718	66	543	.4	157	14	145

See footnotes at end of table.





# LPG Consumption and Expenditures

Table 13. (Continued)

HOUSEHOLD CHARACTERISTICS	LIQUEFIED PETROLEUM GAS (LPG) USED:												
	AS MAIN HEATING FUEL									NOT AS MAIN HEATING FUEL			
	NUMBER OF HOUSEHOLDS (MIL-LION)	TOTAL AMOUNT CON-SUMED (BILLION GALLONS)	TOTAL AMOUNT CON-SUMED (QUADRILION BTU)	TOTAL EX-PENDITURES (BILLION DOLLARS)	AVG PRICE (DOLLARS PER GALLON)	NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (GALLONS)	AVG AMOUNT CON-SUMED (MILLION BTU)	AVG EX-PENDITURES PER HOUSEHOLD (DOLLARS)	NUMBER OF HOUSEHOLDS (MIL-LION)	AVG AMOUNT CON-SUMED (GALLONS)	AVG AMOUNT CON-SUMED (MILLION BTU)	AVG EX-PENDITURES PER HOUSEHOLD (DOLLARS)
<b>ORIGIN OF HOUSEHOLDER</b>													
WHITE.....	6.5	3.14	0.29	2.5	0.79	3.4	739	68	561	3.1	199	18	186
BLACK.....	.6	.22	.02	.2	.89	.3	541	50	459	.4	207	19	201
OTHER.....	.2	.07	.01	.1	.78	Q	Q	Q	Q	Q	Q	Q	Q
<b>AGE OF HOUSEHOLDER</b>													
UNDER 25 YEARS.....	.5	.19	.02	.1	.79	.3	513	47	395	.2	248	23	209
25 TO 34 YEARS.....	1.4	.62	.06	.5	.78	.7	687	63	508	.6	230	21	208
35 TO 44 YEARS.....	1.2	.58	.05	.5	.81	.5	864	79	666	.7	176	16	171
45 TO 59 YEARS.....	1.8	.90	.08	.7	.80	.9	792	72	600	.8	195	18	193
60 YEARS AND OVER.....	2.5	1.14	.10	.9	.80	1.3	691	63	534	1.1	195	18	181
<b>HOUSEHOLD SIZE</b>													
1 PERSON.....	1.1	.37	.03	.3	.84	.6	508	47	407	.5	113	10	117
2 PERSONS.....	2.7	1.22	.11	1.0	.79	1.4	676	62	507	1.3	209	19	198
3 PERSONS.....	1.4	.72	.07	.6	.80	.6	902	83	687	.8	179	16	172
4 PERSONS.....	1.1	.57	.05	.5	.82	.6	765	70	607	.5	199	18	184
5 PERSONS.....	.6	.35	.03	.3	.78	.2	1056	97	767	.3	346	32	303
6 OR MORE PERSONS.....	.4	.19	.02	.1	.76	.2	733	67	522	.2	206	19	183
<b>MAIN HEATING EQUIPMENT USING LPG</b>													
CENTRAL WARM AIR FURNACE.....	1.9	1.46	.13	1.1	.76	1.9	761	70	580	-	-	-	-
OTHER/NONE.....	5.4	1.97	.18	1.6	.83	1.8	692	63	528	3.5	201	18	188

"-" = 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.



# Average Consumption by Climate Zone and Heated Square Footage

**Table 14. U.S. Average Residential Energy Consumption, Including Natural Gas, Electricity, Fuel Oil or Kerosene, and Liquefied Petroleum Gas, by Climate Zone and Heated Square Footage — April 1981 Through March 1982 (Million Btu per Household)**

HOUSEHOLD CHARACTERISTICS	TOTAL	HEATING DEGREE-DAYS (HDD) APRIL 1981 THROUGH MARCH 1982								
		> 5,499 HDD			4,000 TO 5,499 HDD			< 4,000 HDD		
		< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.
TOTAL HOUSEHOLDS .....	114	103	143	186	69	99	130	63	90	133
AREA TYPE										
URBAN.....	121	107	151	202	77	111	152	64	94	146
RURAL.....	100	92	124	157	59	82	99	61	82	110
SMSA/NON-SMSA										
SMSA.....	119	107	149	197	76	108	142	63	89	138
NON-SMSA.....	104	95	129	163	62	88	116	64	92	121
HOW UTILITIES ARE PAID										
ALL PAID BY HOUSEHOLD.....	117	103	145	185	62	97	130	64	90	134
SOME PAID, SOME IN RENT.....	100	106	132	Q	90	Q	Q	52	78	Q
ALL INCLUDED IN RENT.....	96	98	139	Q	99	107	Q	70	91	Q
OTHER.....	127	122	133	258	Q	113	Q	72	96	Q
HOUSING STRUCTURE BY OWNERSHIP										
SINGLE-FAMILY DETACHED.....	127	116	150	187	69	103	130	73	94	134
OWN.....	131	116	151	187	70	103	133	74	96	135
RENT.....	101	119	141	178	67	107	102	71	89	123
SINGLE-FAMILY ATTACHED.....	107	118	119	154	71	101	129	75	73	104
OWN.....	113	98	119	161	Q	103	156	91	74	92
RENT.....	95	128	118	Q	64	98	Q	51	69	118
BUILDING WITH 2 TO 4 UNITS.....	108	111	136	208	92	103	Q	58	80	Q
OWN.....	133	125	131	254	105	Q	Q	90	75	Q
RENT.....	101	109	139	170	86	108	Q	57	85	Q
BUILDING WITH 5 OR MORE UNITS.....	77	90	121	Q	63	71	Q	48	54	Q
OWN.....	68	128	105	Q	Q	54	Q	30	35	Q
RENT.....	77	88	123	Q	63	78	Q	49	62	Q
MOBILE HOME.....	80	100	106	Q	57	70	Q	65	91	Q
OWN.....	80	98	106	Q	57	70	Q	66	89	Q
RENT.....	80	110	Q	Q	57	Q	Q	65	Q	Q
AGE OF HOUSEHOLDER										
UNDER 25 YEARS.....	83	87	127	189	55	95	105	58	71	132
25 TO 34 YEARS.....	105	103	131	159	74	98	127	64	88	108
35 TO 44 YEARS.....	132	113	154	195	68	103	121	75	97	155
45 TO 59 YEARS.....	129	116	155	198	68	97	136	69	98	130
60 YEARS AND OVER.....	109	102	141	192	72	98	138	59	84	127
HOUSEHOLD SIZE										
1 PERSON.....	88	93	128	184	66	97	112	54	68	106
2 PERSONS.....	106	105	135	180	67	88	127	59	83	126
3 PERSONS.....	120	102	144	184	71	98	135	70	95	132
4 PERSONS.....	128	122	151	176	76	108	122	78	99	132
5 PERSONS.....	143	127	164	207	78	109	137	82	101	164
6 OR MORE PERSONS.....	152	141	180	214	84	135	181	83	114	139

See footnotes at end of table.



# Average Consumption by Climate Zone and Heated Square Footage

Table 14. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	HEATING DEGREE-DAYS (HDD) APRIL 1981 THROUGH MARCH 1982								
		> 5,499 HDD			4,000 TO 5,499 HDD			< 4,000 HDD		
		< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.
<b>FUEL USED FOR MAIN HEATING</b>										
NATURAL GAS USED MAIN HEAT....	136	115	158	212	97	131	170	79	104	156
ELECTRICITY USED MAIN HEAT....	58	52	81	98	45	63	81	41	58	89
FUEL OIL USED MAIN HEAT.....	142	127	144	179	105	124	145	78	106	149
WOOD USED MAIN HEAT.....	54	42	63	72	32	46	62	35	59	69
LPG USED MAIN HEAT.....	97	101	150	177	73	103	129	58	89	107
COAL USED MAIN HEAT.....	42	34	61	Q	Q	Q	25	Q	Q	Q
NO HEATING FUEL.....	40	Q	Q	Q	Q	Q	Q	40	Q	Q
OTHER FUEL.....	67	85	41	79	47	68	Q	63	86	Q
<b>HEATING CONTROLS</b>										
HAVE CONTROLS.....	122	103	148	192	71	104	133	66	92	136
DO NOT HAVE CONTROLS, UNKNOWN, NOT REPORTED.....	81	104	106	68	62	60	50	59	83	104
<b>YEAR HOUSE BUILT</b>										
1939 OR EARLIER.....	134	115	151	205	67	110	139	68	94	148
1940 TO 1949.....	113	116	144	171	83	113	113	70	94	156
1950 TO 1959.....	120	107	147	192	82	100	143	69	100	148
1960 TO 1964.....	120	112	154	186	68	127	155	67	100	139
1965 TO 1969.....	109	96	147	180	79	109	142	57	90	119
1970 TO 1974.....	98	88	116	183	58	94	129	56	79	123
1975 TO 1978.....	90	69	103	137	56	71	99	60	83	126
1979 OR LATER.....	74	56	121	128	49	62	120	43	64	101
<b>OWN/RENT</b>										
OWN.....	126	113	146	188	70	99	133	71	92	134
RENT.....	91	99	134	171	68	97	101	58	82	120
<b>1980 FAMILY INCOME</b>										
LESS THAN \$5,000.....	87	94	141	201	59	79	76	58	77	108
\$5,000 TO \$9,999.....	105	102	149	196	71	113	109	63	87	141
\$10,000 TO \$14,999.....	108	107	136	171	66	88	118	69	97	123
\$15,000 TO \$19,999.....	107	98	134	167	69	98	106	63	83	100
\$20,000 TO \$24,999.....	114	108	137	163	75	92	141	62	92	105
\$25,000 TO \$34,999.....	125	111	149	178	76	105	127	69	93	117
\$35,000 OR MORE.....	148	122	163	215	85	106	151	64	97	153
<b>BELOW 100% OF POVERTY</b> .....										
BELOW 125% OF POVERTY.....	96	98	158	209	59	94	69	62	85	105
RECEIVE ASSISTANCE IN ENERGY PAYMENTS.....	97	98	151	199	62	98	74	62	86	139
<b>ORIGIN OF HOUSEHOLDER</b>										
WHITE.....	115	104	158	208	66	109	Q	65	100	Q
BLACK.....	114	100	140	183	68	98	129	63	89	134
OTHER.....	120	129	175	243	81	109	178	69	102	123
OTHER.....	82	102	140	Q	52	69	98	41	80	Q

See footnotes at end of table.



# Average Consumption by Climate Zone and Heated Square Footage

Table 14. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	HEATING DEGREE-DAYS (HDD) APRIL 1981 THROUGH MARCH 1982								
		> 5,499 HDD			4,000 TO 5,499 HDD			< 4,000 HDD		
		< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.
<b>DAYTIME TEMPERATURE WHEN SOMEONE IS AT HOME</b>										
HEAT TURNED ON.....	124	105	148	193	73	104	134	66	94	136
66 DEGREES OR LESS.....	122	92	144	181	63	95	130	58	98	134
67-69 DEGREES.....	133	110	148	192	83	107	138	64	90	153
70 DEGREES.....	121	111	148	195	73	105	138	71	95	127
71 DEGREES OR MORE.....	118	106	151	210	67	105	124	68	96	121
HEAT TURNED OFF.....	78	72	111	Q	Q	Q	Q	68	65	129
UNKNOWN/NO ANSWER.....	85	83	149	152	47	Q	Q	57	80	Q
<b>DAYTIME TEMPERATURE WHEN NO ONE IS AT HOME</b>										
HEAT TURNED ON.....	131	106	148	193	76	108	135	68	96	143
63 DEGREES OR LESS.....	127	100	145	176	76	99	140	68	97	146
64-66 DEGREES.....	134	111	151	190	75	107	143	68	98	163
67-69 DEGREES.....	137	109	147	202	85	117	119	67	91	142
70 DEGREES OR MORE.....	129	105	149	218	66	116	130	67	97	130
HEAT TURNED OFF.....	87	91	139	168	58	78	117	66	88	122
UNKNOWN/NO ANSWER.....	88	87	151	155	48	Q	137	55	65	Q
<b>NIGHTTIME (SLEEPING HOURS)</b>										
HEAT TURNED ON.....	127	105	148	192	74	107	135	68	94	137
63 DEGREES OR LESS.....	123	97	143	180	72	103	135	70	91	139
64-66 DEGREES.....	135	107	152	195	74	108	152	67	98	164
67-69 DEGREES.....	132	114	147	189	90	107	133	64	95	135
70 DEGREES OR MORE.....	121	106	149	215	66	113	118	69	95	118
HEAT TURNED OFF.....	86	85	139	202	60	72	114	63	85	133
UNKNOWN/NO ANSWER.....	83	80	144	155	48	151	Q	55	67	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.



# Average Expenditures by Climate Zone and Heated Square Footage

**Table 15. U.S. Average Residential Energy Expenditures, Including Natural Gas, Electricity, Fuel Oil or Kerosene, and Liquefied Petroleum Gas, by Climate Zone and Heated Square Footage — April 1981 Through March 1982 (Dollars per Household)**

HOUSEHOLD CHARACTERISTICS	TOTAL	HEATING DEGREE-DAYS (HDD) APRIL 1981 THROUGH MARCH 1982								
		> 5,499 HDD			4,000 TO 5,499 HDD			< 4,000 HDD		
		< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.
TOTAL HOUSEHOLDS .....	1022	951	1177	1469	675	966	1202	639	892	1307
AREA TYPE										
URBAN.....	1023	986	1176	1497	690	1024	1298	602	866	1325
RURAL.....	1019	841	1182	1415	656	887	1064	755	951	1273
SMSA/NON-SMSA										
SMSA.....	1051	1007	1237	1547	696	986	1241	610	872	1325
NON-SMSA.....	959	804	1043	1294	655	941	1153	711	945	1263
HOW UTILITIES ARE PAID										
ALL PAID BY HOUSEHOLD.....	1029	874	1158	1457	626	959	1194	663	895	1318
SOME PAID, SOME IN RENT.....	960	1027	1286	Q	865	Q	Q	429	765	Q
ALL INCLUDED IN RENT.....	947	1024	1292	Q	880	978	Q	628	893	Q
OTHER.....	1162	1073	1283	2241	Q	1044	Q	635	945	Q
HOUSING STRUCTURE BY OWNERSHIP										
SINGLE-FAMILY DETACHED.....	1088	897	1184	1463	669	983	1204	685	912	1312
OWN.....	1125	898	1191	1462	699	980	1238	705	927	1337
RENT.....	878	896	1125	1477	589	1000	809	656	842	1043
SINGLE-FAMILY ATTACHED.....	1015	1202	1001	1492	643	1008	1154	629	783	1277
OWN.....	1060	796	1028	1545	Q	980	1304	750	829	1173
RENT.....	916	1411	913	Q	565	1059	Q	447	629	1389
BUILDING WITH 2 TO 4 UNITS....	969	990	1201	1574	796	959	Q	608	810	Q
OWN.....	1204	1204	1286	1898	810	Q	Q	1041	719	Q
RENT.....	902	958	1150	1315	790	1014	Q	594	911	Q
BUILDING WITH 5 OR MORE UNITS.....	827	965	1258	Q	646	893	Q	511	669	Q
OWN.....	790	1301	861	Q	Q	727	Q	552	529	Q
RENT.....	831	949	1306	Q	646	951	Q	508	731	Q
MOBILE HOME.....	843	910	997	Q	643	731	Q	769	1073	Q
OWN.....	853	940	1002	Q	660	731	Q	751	1058	Q
RENT.....	787	776	Q	Q	559	Q	Q	841	Q	Q

See footnotes at end of table.



# Average Expenditures by Climate Zone and Heated Square Footage

Table 15. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	HEATING DEGREE-DAYS (HDD) APRIL 1981 THROUGH MARCH 1982								
		> 5,499 HDD			4,000 TO 5,499 HDD			< 4,000 HDD		
		< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.
<b>YEAR HOUSE BUILT</b>										
1939 OR EARLIER.....	1091	1014	1212	1553	678	1051	1176	544	803	1241
1940 TO 1949.....	964	994	1073	1380	744	1044	1132	626	864	1282
1950 TO 1959.....	998	896	1213	1457	707	845	1157	660	851	1296
1960 TO 1964.....	1061	1061	1173	1553	707	1191	1335	642	896	1377
1965 TO 1969.....	1023	900	1187	1465	722	1082	1354	657	1024	1244
1970 TO 1974.....	995	930	1200	1479	587	933	1165	683	922	1268
1975 TO 1978.....	977	766	986	1196	648	855	1171	792	978	1541
1979 OR LATER.....	866	729	1170	1219	589	770	1047	670	869	1091
<b>OWN/RENT</b>										
OWN.....	1102	956	1179	1475	701	958	1240	716	913	1334
RENT.....	865	949	1173	1397	653	993	823	589	819	1069
<b>1980 FAMILY INCOME</b>										
LESS THAN \$5,000.....	765	855	1025	1325	569	815	640	559	759	1023
\$5,000 TO \$9,999.....	906	884	1149	1442	714	1082	1178	613	808	1355
\$10,000 TO \$14,999.....	959	993	1125	1311	661	839	1088	691	911	1066
\$15,000 TO \$19,999.....	986	958	1156	1323	687	965	1008	611	866	1158
\$20,000 TO \$24,999.....	1043	1057	1141	1342	723	946	1192	689	928	1028
\$25,000 TO \$34,999.....	1106	1037	1216	1350	712	998	1225	782	949	1189
\$35,000 OR MORE.....	1333	1129	1429	1770	861	1047	1361	683	948	1494
<b>BELOW 100% OF POVERTY</b> .....										
BELOW 125% OF POVERTY.....	829	875	1117	1389	595	933	731	598	826	1065
RECEIVE ASSISTANCE IN ENERGY PAYMENTS.....	841	873	1112	1399	622	959	754	595	808	1313
<b>ORIGIN OF HOUSEHOLDER</b>										
WHITE.....	960	985	1192	1436	637	962	Q	633	741	Q
BLACK.....	1020	904	1153	1443	668	958	1191	635	896	1320
OTHER.....	1062	1284	1381	1857	786	1104	1563	652	896	1115
<b>AGE OF HOUSEHOLDER</b>										
UNDER 25 YEARS.....	897	1077	1438	Q	375	710	889	658	749	Q
25 TO 34 YEARS.....	754	810	932	1225	562	872	1059	599	702	1167
35 TO 44 YEARS.....	944	905	1081	1268	726	871	1096	660	891	1127
45 TO 54 YEARS.....	1209	1094	1355	1606	710	1042	1209	730	988	1500
55 TO 64 YEARS.....	1156	1116	1303	1560	653	971	1266	676	976	1336
65 YEARS AND OVER.....	942	920	1110	1414	688	1003	1254	589	783	1154
<b>HOUSEHOLD SIZE</b>										
1 PERSON.....	767	813	1022	1316	633	849	1031	523	640	1021
2 PERSONS.....	956	1005	1096	1320	673	923	1162	642	828	1175
3 PERSONS.....	1076	955	1187	1455	716	952	1246	725	951	1299
4 PERSONS.....	1157	1114	1270	1463	674	974	1146	687	1014	1357
5 PERSONS.....	1257	1203	1354	1664	794	1081	1331	772	983	1580
6 OR MORE PERSONS.....	1383	1293	1573	1828	778	1526	1449	855	1063	1450

See footnotes at end of table.



# Average Expenditures by Climate Zone and Heated Square Footage

Table 15. (Continued)

HOUSEHOLD CHARACTERISTICS	TOTAL	HEATING DEGREE-DAYS (HDD) APRIL 1981 THROUGH MARCH 1982								
		> 5,499 HDD			4,000 TO 5,499 HDD			< 4,000 HDD		
		< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.
		<b>FUEL USED FOR MAIN HEATING</b>								
NATURAL GAS USED MAIN HEAT....	965	774	1055	1350	755	1007	1281	590	839	1308
ELECTRICITY USED MAIN HEAT....	875	861	1114	1422	516	814	1080	657	959	1380
FUEL OIL USED MAIN HEAT.....	1607	1460	1632	2019	1155	1405	1566	994	1345	1577
WOOD USED MAIN HEAT.....	723	595	831	957	422	594	771	467	778	1104
LPG USED MAIN HEAT.....	1114	1060	1580	1692	766	1132	1266	784	1113	1255
COAL USED MAIN HEAT.....	545	354	776	Q	Q	Q	407	Q	Q	Q
NO HEATING FUEL.....	717	Q	Q	Q	Q	Q	Q	717	Q	Q
OTHER FUEL.....	862	1037	752	861	634	887	Q	817	1101	Q
<b>HEATING CONTROLS</b>										
HAVE CONTROLS.....	1068	906	1185	1497	680	1003	1220	681	916	1328
DO NOT HAVE CONTROLS, UNKNOWN, NOT REPORTED.....	825	1060	1116	909	659	706	600	574	792	1116
<b>DAYTIME TEMPERATURE WHEN SOMEONE IS AT HOME</b>										
HEAT TURNED ON.....	1079	914	1185	1497	688	999	1223	690	926	1322
66 DEGREES OR LESS.....	1073	860	1190	1534	607	947	1149	624	874	1197
67-69 DEGREES.....	1158	962	1223	1517	759	1016	1280	686	913	1470
70 DEGREES.....	1041	939	1181	1482	733	1032	1213	664	913	1209
71 DEGREES OR MORE.....	1015	879	1118	1399	598	959	1221	758	974	1270
HEAT TURNED OFF.....	887	908	1275	Q	Q	Q	Q	611	783	1436
UNKNOWN/NO ANSWER.....	812	792	1149	1370	612	Q	Q	591	856	Q
<b>DAYTIME TEMPERATURE WHEN NO ONE IS AT HOME</b>										
HEAT TURNED ON.....	1123	892	1182	1500	712	1036	1244	718	955	1402
63 DEGREES OR LESS.....	1108	885	1213	1467	669	960	1238	676	919	1286
64-66 DEGREES.....	1126	900	1176	1498	741	1073	1262	707	946	1463
67-69 DEGREES.....	1192	931	1215	1550	774	1108	1163	783	936	1557
70 DEGREES OR MORE.....	1076	865	1102	1496	693	1050	1299	736	1007	1295
HEAT TURNED OFF.....	854	1074	1225	1313	571	782	1028	646	864	1167
UNKNOWN/NO ANSWER.....	868	805	1269	1467	621	Q	1293	640	795	Q
<b>NIGHTTIME (SLEEPING HOURS)</b>										
HEAT TURNED ON.....	1105	917	1184	1494	701	1033	1242	720	951	1360
63 DEGREES OR LESS.....	1104	920	1209	1542	674	1016	1222	723	874	1193
64-66 DEGREES.....	1127	902	1197	1491	725	1086	1300	674	908	1472
67-69 DEGREES.....	1143	932	1187	1460	761	1047	1267	689	974	1484
70 DEGREES OR MORE.....	1051	919	1136	1471	676	972	1182	754	1011	1371
HEAT TURNED OFF.....	799	889	1225	1746	559	716	1022	573	799	1150
UNKNOWN/NO ANSWER.....	815	749	1166	1467	618	1110	Q	620	803	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 Climate Zone and Heated Square Footage

Table 16. Number of U.S. Households, by Climate Zone and Heated Square Footage — November 1981 (Million Households)

HOUSEHOLD CHARACTERISTICS	Total	HEATING DEGREE-DAYS (HDD) APRIL 1981 THROUGH MARCH 1982								
		> 5,499 HDD			4,000 TO 5,499 HDD			< 4,000 HDD		
		< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.
TOTAL HOUSEHOLDS .....	83.1	13.1	14.7	12.0	4.3	5.8	3.1	11.5	15.3	3.4
AREA TYPE										
URBAN.....	57.3	10.0	10.4	7.9	2.4	3.3	1.8	8.7	10.6	2.2
RURAL.....	25.9	3.1	4.3	4.0	2.0	2.5	1.3	2.8	4.7	1.2
SMSA/NON-SMSA										
SMSA.....	56.6	9.5	10.2	8.3	2.1	3.2	1.7	8.2	11.1	2.4
NON-SMSA.....	26.5	3.6	4.5	3.7	2.2	2.6	1.4	3.3	4.2	1.0
HOW UTILITIES ARE PAID										
ALL PAID BY HOUSEHOLD.....	69.6	6.6	12.5	11.7	3.4	5.4	3.0	9.3	14.4	3.3
SOME PAID, SOME IN RENT.....	7.0	3.8	1.1	Q	.6	Q	Q	1.0	.4	Q
ALL INCLUDED IN RENT.....	4.6	2.3	.4	Q	.4	.2	Q	1.0	.2	Q
OTHER.....	2.0	.4	.6	.2	Q	.1	Q	.2	.3	Q
HOUSING STRUCTURE BY OWNERSHIP										
SINGLE-FAMILY DETACHED.....	54.6	3.5	10.2	10.9	1.7	4.3	2.9	5.2	12.5	3.2
OWN.....	46.4	2.7	9.2	10.4	1.2	3.8	2.7	3.1	10.3	3.0
RENT.....	8.2	.8	1.0	.5	.5	.6	.2	2.1	2.2	.3
SINGLE-FAMILY ATTACHED.....	3.0	.2	.8	.4	.1	.4	.1	.2	.6	.1
OWN.....	2.1	.1	.6	.4	Q	.3	.1	.1	.5	.1
RENT.....	.9	.1	.2	Q	.1	.1	Q	.1	.1	.1
BUILDING WITH 2 TO 4 UNITS....	9.3	3.0	2.2	.6	.6	.2	Q	2.0	.6	Q
OWN.....	2.1	.4	.8	.3	.2	Q	Q	.1	.3	Q
RENT.....	7.2	2.6	1.4	.3	.4	.2	Q	2.0	.3	Q
BUILDING WITH 5 OR MORE UNITS.....	12.0	5.3	1.1	Q	1.3	.6	Q	2.7	1.0	Q
OWN.....	1.0	.2	.1	Q	Q	.2	Q	.2	.3	Q
RENT.....	11.0	5.0	1.0	Q	1.3	.4	Q	2.5	.7	Q
MOBILE HOME.....	4.2	1.1	.3	Q	.7	.2	Q	1.4	.5	Q
OWN.....	3.6	.9	.3	Q	.5	.2	Q	1.1	.5	Q
RENT.....	.6	.2	Q	Q	.1	Q	Q	.3	Q	Q
YEAR HOUSE BUILT										
1939 OR EARLIER.....	24.2	4.9	6.5	4.5	0.8	1.2	0.5	3.0	2.3	0.6
1940 TO 1949.....	6.9	1.1	1.1	.8	.4	.6	.2	1.2	1.4	.2
1950 TO 1959.....	13.5	1.8	2.2	2.1	.6	.9	.4	1.9	3.2	.4
1960 TO 1964.....	7.6	.9	1.1	1.0	.4	.5	.4	1.0	2.0	.4
1965 TO 1969.....	8.5	1.4	1.3	.9	.8	.5	.4	1.2	1.5	.4
1970 TO 1974.....	10.7	1.8	1.1	1.3	.6	.9	.5	1.7	2.3	.6
1975 TO 1978.....	7.7	1.1	1.1	1.0	.4	.8	.5	.9	1.5	.5
1979 OR LATER.....	4.0	.2	.3	.4	.5	.5	.2	.6	1.1	.2
OWN/RENT										
OWN.....	55.1	4.3	11.1	11.0	2.0	4.4	2.8	4.6	11.9	3.0
RENT.....	28.0	8.8	3.6	.9	2.4	1.4	.3	7.0	3.4	.3
1980 FAMILY INCOME										
LESS THAN \$5,000.....	9.8	2.4	1.1	.4	1.0	.4	.1	2.7	1.6	.1
\$5,000 TO \$9,999.....	13.5	3.5	2.1	1.0	1.0	.7	.1	2.9	2.0	.2
\$10,000 TO \$14,999.....	12.5	2.3	2.4	1.4	.7	.9	.2	2.2	2.1	.2
\$15,000 TO \$19,999.....	10.7	1.7	2.6	1.2	.6	.8	.4	1.2	1.8	.3
\$20,000 TO \$24,999.....	10.8	1.3	2.3	1.8	.4	.9	.5	1.1	2.2	.3
\$25,000 TO \$34,999.....	13.3	1.3	2.7	2.7	.4	.9	.8	.9	2.9	.7
\$35,000 OR MORE.....	12.6	.6	1.6	3.4	.2	1.1	.9	.6	2.7	1.6
BELOW 100% OF POVERTY .....	11.0	2.7	1.4	.6	.9	.5	.1	3.0	1.8	.1
BELOW 125% OF POVERTY.....	15.8	3.6	2.2	.9	1.4	.8	.1	4.0	2.6	.2
RECEIVE ASSISTANCE IN ENERGY PAYMENTS.....	4.4	1.4	.9	.4	.4	.2	Q	.7	.4	Q

See footnotes at end of table.





# Number of Households by Climate Zone and Heated Square Footage

Table 16. (Continued)

HOUSEHOLD CHARACTERISTICS	Total	HEATING DEGREE-DAYS (HDD) APRIL 1981 THROUGH MARCH 1982								
		> 5,499 HDD			4,000 TO 5,499 HDD			< 4,000 HDD		
		< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.
<b>ORIGIN OF HOUSEHOLDER</b>										
WHITE.....	72.5	11.3	13.2	11.2	3.9	5.3	2.9	8.7	12.9	3.2
BLACK.....	9.0	1.5	1.2	.7	.4	.5	.1	2.3	2.1	.2
OTHER.....	1.6	.2	.3	Q	.1	.1	.1	.5	.4	Q
<b>AGE OF HOUSEHOLDER</b>										
UNDER 25 YEARS.....	6.6	1.9	1.0	.1	.7	.4	.1	1.7	.7	.1
25 TO 34 YEARS.....	21.0	3.3	3.6	2.9	1.1	1.3	.8	3.4	4.0	.6
35 TO 44 YEARS.....	14.6	1.5	2.6	3.0	.5	1.2	.6	1.2	2.9	1.0
45 TO 59 YEARS.....	18.4	2.1	3.2	3.6	.7	1.5	.9	1.7	3.6	1.0
60 YEARS AND OVER.....	22.5	4.2	4.3	2.4	1.3	1.4	.7	3.5	4.0	.7
<b>HOUSEHOLD SIZE</b>										
1 PERSON.....	15.4	4.9	2.1	.7	1.4	.7	.2	3.5	1.8	.2
2 PERSONS.....	27.7	4.3	5.0	3.4	1.7	2.0	.9	4.0	5.6	.8
3 PERSONS.....	15.4	1.9	3.1	2.6	.8	1.3	.6	1.7	2.6	.8
4 PERSONS.....	14.4	1.2	2.9	2.8	.2	1.1	.9	1.2	3.0	1.1
5 PERSONS.....	6.3	.5	1.1	1.5	.2	.4	.3	.6	1.4	.3
6 OR MORE PERSONS.....	4.1	.4	.6	1.1	.1	.2	.2	.5	.9	.2
<b>FUEL USED FOR MAIN HEATING</b>										
NATURAL GAS USED MAIN HEAT....	46.2	6.6	9.2	7.5	1.4	2.3	1.4	6.0	9.6	2.2
ELECTRICITY USED MAIN HEAT....	14.2	1.9	.9	.6	1.4	1.5	.6	3.2	3.4	.7
FUEL OIL USED MAIN HEAT.....	11.3	3.3	3.1	2.6	.5	.8	.5	.3	.2	.1
WOOD USED MAIN HEAT.....	5.4	.6	.9	.9	.6	.7	.3	.4	.8	.2
LPG USED MAIN HEAT.....	3.7	.3	.5	.2	.2	.2	.1	.9	1.1	.2
COAL USED MAIN HEAT.....	.7	.3	.1	Q	Q	Q	.1	Q	Q	Q
NO HEATING FUEL.....	.4	Q	Q	Q	Q	Q	Q	.4	Q	Q
OTHER FUEL.....	1.2	.1	.1	.2	.2	.1	Q	.3	.2	Q
<b>HEATING CONTROLS</b>										
HAVE CONTROLS.....	67.4	9.3	13.1	11.4	3.3	5.1	3.0	7.0	12.4	3.0
DO NOT HAVE CONTROLS, UNKNOWN, NOT REPORTED.....	15.7	3.9	1.6	.6	1.1	.7	.1	4.5	2.9	.3

See footnotes at end of table.



# Number of Households by Climate Zone and Heated Square Footage

Table 16. (Continued)

HOUSEHOLD CHARACTERISTICS	Total	HEATING DEGREE-DAYS (HDD) APRIL 1981 THROUGH MARCH 1982								
		> 5,499 HDD			4,000 TO 5,499 HDD			< 4,000 HDD		
		< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.	< 1,000 SQ.FT.	1,000 TO 1,999 SQ.FT.	> 1,999 SQ.FT.
<b>DAYTIME TEMPERATURE WHEN SOMEONE IS AT HOME</b>										
HEAT TURNED ON.....	64.2	8.6	12.8	11.3	3.0	5.0	2.9	6.3	11.4	2.8
66 DEGREES OR LESS.....	13.4	2.2	2.9	2.8	.7	.9	.7	1.1	1.7	.4
67-69 DEGREES.....	20.1	2.3	4.2	4.5	.9	1.7	1.1	1.1	3.2	1.1
70 DEGREES.....	17.0	2.4	3.3	2.3	.9	1.5	.7	2.1	2.9	.7
71 DEGREES OR MORE.....	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	Q	Q	.3	.8	.2
UNKNOWN/NO ANSWER.....	1.6	.6	.2	.1	.2	Q	Q	.3	.2	Q
<b>DAYTIME TEMPERATURE WHEN NO ONE IS AT HOME</b>										
HEAT TURNED ON.....	53.5	7.8	12.3	11.2	2.4	4.3	2.6	3.5	7.3	2.1
63 DEGREES OR LESS.....	17.2	2.5	4.0	3.7	.9	1.5	1.0	1.0	1.9	.6
64-66 DEGREES.....	13.2	2.1	3.3	2.8	.5	1.1	.6	.9	1.5	.2
67-69 DEGREES.....	11.4	1.4	2.5	2.8	.5	.9	.4	.5	1.8	.7
70 DEGREES OR MORE.....	11.7	1.9	2.4	1.9	.4	.8	.5	1.1	2.1	.5
HEAT TURNED OFF.....	12.3	.9	.5	.2	.6	.7	.3	3.2	4.8	.9
UNKNOWN/NO ANSWER.....	1.7	.5	.2	.1	.2	Q	.1	.3	.3	Q
<b>NIGHTTIME (SLEEPING HOURS)</b>										
HEAT TURNED ON.....	59.2	8.3	12.6	11.2	2.7	4.5	2.7	5.1	9.5	2.6
63 DEGREES OR LESS.....	16.5	2.2	3.4	3.2	.9	1.5	.9	1.2	2.3	.8
64-66 DEGREES.....	14.6	2.2	3.5	3.2	.6	1.1	.7	1.1	1.7	.4
67-69 DEGREES.....	13.1	1.7	2.9	2.8	.5	1.1	.5	.7	2.2	.7
70 DEGREES OR MORE.....	15.0	2.2	2.8	2.0	.7	.8	.6	2.0	3.3	.6
HEAT TURNED OFF.....	6.6	.4	.3	.1	.4	.5	.3	1.6	2.6	.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.



# Average Energy Prices

**Table 17. U.S. Average Residential Energy Prices — April 1981 Through March 1982 (Dollars per Million Btu)**

HOUSEHOLD CHARACTERISTICS	AVERAGE ENERGY PRICES				
	ALL FUELS	NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	LIQUEFIED PETROLEUM GAS
TOTAL HOUSEHOLDS .....	8.93	4.55	18.51	8.89	8.74
<b>CENSUS REGION AND DIVISION</b>					
NORTHEAST.....	10.36	5.78	25.23	8.92	10.52
NEW ENGLAND.....	11.16	7.06	24.80	8.98	11.32
MIDDLE ATLANTIC.....	10.14	5.53	25.36	8.89	10.22
NORTH CENTRAL.....	7.10	4.16	17.93	8.71	7.98
EAST NORTH CENTRAL.....	6.99	4.23	18.59	8.73	8.69
WEST NORTH CENTRAL.....	7.38	3.96	16.72	8.65	7.27
SOUTH.....	10.37	4.59	17.23	8.93	9.20
SOUTH ATLANTIC.....	11.48	5.25	18.14	8.95	9.94
EAST SOUTH CENTRAL.....	9.42	4.12	14.60	8.69	8.37
WEST SOUTH CENTRAL.....	9.35	4.20	17.98	8.86	8.20
WEST.....	8.00	4.01	15.98	8.76	8.50
MOUNTAIN.....	7.50	4.00	16.16	8.68	7.92
PACIFIC.....	8.19	4.02	15.92	8.77	8.89
<b>AREA TYPE</b>					
URBAN.....	8.46	4.61	19.38	8.91	9.58
RURAL.....	10.20	4.26	17.11	8.84	8.63
<b>SMSA/NON-SMSA</b>					
SMSA.....	8.82	4.61	19.55	8.90	9.44
NON-SMSA.....	9.20	4.33	16.63	8.85	8.49
<b>ANNUAL HEATING DEGREE-DAYS (HDD) AND COOLING DEGREE-DAYS (CDD) --LONG-TERM AVERAGE</b>					
<2,000 CDD AND >7,000 HDD.....	8.36	4.33	17.40	8.81	8.67
<2,000 CDD AND 5,500 TO 7,000 HDD.....	7.63	4.42	19.12	8.91	8.59
<2,000 CDD AND 4,000 TO 5,499 HDD.....	9.62	5.17	19.04	8.88	8.52
<2,000 CDD AND <4,000 HDD.....	8.98	4.08	17.47	9.03	8.88
>2,000 CDD AND <4,000 HDD.....	11.97	4.75	18.93	9.17	9.14
<b>HOW UTILITIES ARE PAID</b>					
ALL PAID BY HOUSEHOLD.....	8.81	4.44	17.94	8.89	8.76
SOME PAID, SOME IN RENT.....	9.60	5.38	25.02	8.86	8.49
ALL INCLUDED IN RENT.....	9.83	5.20	22.43	8.87	7.80
OTHER.....	9.24	5.03	22.82	8.90	8.56

See footnotes at end of table.



# Average Energy Prices

Table 17. (Continued)

HOUSEHOLD CHARACTERISTICS	AVERAGE ENERGY PRICES				
	ALL FUELS	NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	LIQUEFIED PETROLEUM GAS
<b>HOUSING STRUCTURE BY OWNERSHIP</b>					
SINGLE-FAMILY DETACHED.....	8.58	4.35	17.89	8.88	8.65
OWN.....	8.56	4.36	17.96	8.88	8.58
RENT.....	8.68	4.30	17.45	8.88	8.94
SINGLE-FAMILY ATTACHED.....	9.48	5.25	20.90	8.89	10.67
OWN.....	9.42	5.26	22.19	8.88	13.49
RENT.....	9.64	5.24	18.26	8.91	8.37
BUILDING WITH 2 TO 4 UNITS....	8.97	5.20	20.76	8.89	9.54
OWN.....	9.06	5.41	22.99	8.91	11.10
RENT.....	8.93	5.11	20.09	8.88	8.82
BUILDING WITH 5 OR MORE UNITS.....	10.79	5.23	21.01	8.87	9.48
OWN.....	11.62	5.03	20.82	8.87	0
RENT.....	10.72	5.24	21.03	8.87	9.48
MOBILE HOME.....	10.52	4.38	17.19	9.15	9.05
OWN.....	10.65	4.35	17.25	9.22	9.10
RENT.....	9.80	4.53	16.79	8.86	8.69
<b>NUMBER OF ROOMS</b>					
1.....	9.73	4.80	24.64	8.87	8.76
2.....	10.47	5.08	21.04	8.92	9.49
3.....	10.11	5.07	20.11	8.90	9.62
4.....	9.46	4.70	18.76	8.88	8.88
5.....	8.84	4.50	18.25	8.89	8.81
6.....	8.72	4.49	18.42	8.83	8.81
7.....	8.65	4.43	17.96	8.89	8.38
8 OR MORE.....	8.55	4.47	18.32	8.93	8.35
<b>NUMBER OF ROOMS THAT CAN BE AIR CONDITIONED</b>					
ALL.....	9.52	4.42	17.79	8.87	8.55
SOME.....	8.78	4.72	20.12	8.91	8.59
NONE.....	8.49	4.55	18.64	8.88	8.94
<b>MEASURED HEATED SQUARE FOOTAGE OF RESIDENCE</b>					
LESS THAN 600 SQUARE FEET.....	10.20	4.95	21.67	8.90	9.33
600 TO 999 SQUARE FEET.....	9.38	4.70	18.81	8.93	8.95
1,000 TO 1,599 SQUARE FEET.....	9.12	4.53	18.17	8.87	8.96
1,600 TO 1,999 SQUARE FEET.....	8.82	4.55	18.58	8.87	8.21
2,000 TO 2,399 SQUARE FEET.....	8.47	4.49	17.73	8.88	8.37
2,400 TO 2,999 SQUARE FEET.....	8.27	4.41	18.03	8.81	8.14
3,000 OR MORE SQUARE FEET.....	8.27	4.37	18.49	8.89	7.81

See footnotes at end of table.



# Average Energy Prices

Table 17. (Continued)

HOUSEHOLD CHARACTERISTICS	AVERAGE ENERGY PRICES				
	ALL FUELS	NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	LIQUEFIED PETROLEUM GAS
<b>YEAR HOUSE BUILT</b>					
1939 OR EARLIER.....	8.17	4.70	20.01	8.91	8.59
1940 TO 1949.....	8.50	4.51	18.37	8.83	9.37
1950 TO 1959.....	8.31	4.31	18.83	8.85	9.12
1960 TO 1964.....	8.81	4.46	19.27	8.87	8.55
1965 TO 1969.....	9.42	4.68	18.71	8.85	8.53
1970 TO 1974.....	10.15	4.49	17.61	8.93	9.00
1975 TO 1978.....	10.90	4.50	17.02	8.89	8.78
1979 OR LATER.....	11.71	4.38	16.89	8.93	8.74
<b>OWN/RENT</b>					
OWN.....	8.73	4.44	18.19	8.89	8.71
RENT.....	9.49	4.86	19.36	8.88	8.90
<b>1980 FAMILY INCOME</b>					
LESS THAN \$5,000.....	8.83	4.63	19.48	8.92	8.82
\$5,000 TO \$9,999.....	8.66	4.57	18.89	8.86	8.66
\$10,000 TO \$14,999.....	8.88	4.59	18.20	8.91	8.77
\$15,000 TO \$19,999.....	9.22	4.60	18.06	8.88	8.53
\$20,000 TO \$24,999.....	9.13	4.55	18.35	8.87	9.40
\$25,000 TO \$34,999.....	8.85	4.50	18.27	8.85	9.01
\$35,000 OR MORE.....	8.97	4.47	18.72	8.92	8.18
<b>BELOW 100% OF POVERTY</b> .....					
<b>BELOW 125% OF POVERTY</b> .....					
<b>RECEIVE ASSISTANCE IN ENERGY PAYMENTS</b> .....					
	8.38	4.79	19.51	8.89	8.74
<b>ORIGIN OF HOUSEHOLDER</b>					
WHITE.....	8.91	4.49	18.25	8.87	8.68
BLACK.....	8.82	4.87	20.45	8.97	9.77
OTHER.....	10.97	5.33	22.54	8.88	8.53
<b>AGE OF HOUSEHOLDER</b>					
UNDER 25 YEARS.....	9.07	4.44	17.82	8.84	8.67
25 TO 34 YEARS.....	8.97	4.59	18.20	8.86	8.52
35 TO 44 YEARS.....	9.18	4.52	18.64	8.93	8.89
45 TO 59 YEARS.....	8.95	4.55	18.56	8.88	8.76
60 YEARS AND OVER.....	8.65	4.54	18.89	8.88	8.78
<b>HOUSEHOLD SIZE</b>					
1 PERSON.....	8.72	4.67	19.47	8.88	9.13
2 PERSONS.....	8.98	4.52	18.52	8.85	8.69
3 PERSONS.....	8.94	4.61	18.22	8.88	8.74
4 PERSONS.....	9.01	4.48	18.08	8.94	8.94
5 PERSONS.....	8.81	4.49	18.35	8.88	8.48
6 OR MORE PERSONS.....	9.08	4.50	19.31	8.96	8.27

See footnotes at end of table.



# Average Energy Prices

Table 17. (Continued)

HOUSEHOLD CHARACTERISTICS	AVERAGE ENERGY PRICES				
	ALL FUELS	NATURAL GAS	ELECTRICITY	FUEL OIL OR KEROSENE	LIQUEFIED PETROLEUM GAS
<b>FUEL COMBINATIONS</b>					
NATURAL GAS USED MAIN HEAT....	7.08	4.46	19.26	8.87	11.67
NATURAL GAS FOR HOT WATER AND HAVE AIR CONDITIONING...	7.32	4.47	19.46	8.87	11.67
NATURAL GAS FOR HOT WATER AND NO AIR CONDITIONING.....	6.50	4.39	20.66	8.86	Q
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	7.96	4.58	15.67	8.86	Q
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	7.23	4.96	14.76	8.85	Q
OTHER.....	10.54	6.18	33.47	8.87	Q
ELECTRICITY USED MAIN HEAT....	14.99	4.74	15.89	8.86	10.99
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	16.30	6.07	16.41	8.87	11.35
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	13.14	7.17	13.24	8.86	11.36
OTHER.....	11.56	4.61	19.66	Q	10.53
FUEL OIL USED MAIN HEAT.....	11.33	8.59	23.19	8.87	11.73
FUEL OIL FOR HOT WATER AND HAVE AIR CONDITIONING...	11.62	10.44	30.71	8.90	15.63
FUEL OIL FOR HOT WATER AND NO AIR CONDITIONING.....	11.21	9.85	31.77	8.90	11.25
ELECTRICITY FOR HOT WATER AND HAVE AIR CONDITIONING...	12.07	7.84	18.46	8.78	13.22
ELECTRICITY FOR HOT WATER AND NO AIR CONDITIONING.....	11.08	6.72	16.78	8.78	11.73
OTHER.....	10.61	7.14	25.48	8.95	10.69
WOOD USED MAIN HEAT.....	13.44	4.51	16.84	8.90	9.48
LPG USED MAIN HEAT.....	11.47	10.92	18.76	8.80	8.33
KEROSENE USED MAIN HEAT.....	12.34	4.03	18.96	9.25	11.70
COAL USED MAIN HEAT.....	12.85	7.14	18.86	9.14	7.44
NO HEATING FUEL.....	17.92	3.82	39.02	9.17	10.46
OTHER FUEL.....	15.59	4.34	18.36	9.11	10.90

"-" = 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.

# 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 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.

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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, DOE/EIA-0319 (Washington, D.C., April 1982) and Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, Supplement: January 1981 to September 1981, DOE/EIA-328 (Washington, D.C., February 1983). 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)

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	<u>6</u>
		307

<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.

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.



## Appendix A (Continued)

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 6 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 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,



## Appendix A (Continued)

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 subareas 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. A relatively small proportion of all households use these heating fuels. 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).

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.



## Appendix A (Continued)

**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 or 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 "oversampled" 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 or 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 .....	633	12.4	331	28.4
Electricity .....	120	2.3	50	4.3
Fuel Oil or 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 or 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 5 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.

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



## Appendix A (Continued)

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.

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

Census Region	SMSA-		Non-SMSA	Total
	Central City	Outside Central City		
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.



## Appendix A (Continued)

### 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.

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.





## Appendix A (Continued)

**Table A5. Interviews Completed by Stage**

	Personal Interviews			Status After Third Wave	Mail	Final Status
	First Wave	Second Wave	Third Wave			
Total Listed Units.....	7,668	1,405	913	7,668	904	7,668
<b>Nonhousing Units</b>						
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
<b>Ineligible Units</b>						
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
<b>Not Completed--Personal</b>						
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
<b>Not Completed--Mail</b>						
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
<b>Total Interviews Completed</b>						
Completed .....	5,482	446	9	5,937	332	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)

### 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.

**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					
Two to Four					
Units .....	86.4	4.8	91.2	7.2	6.4
Buildings with Five					
or More Units ....	78.6	9.9	88.5	10.5	10.9

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



## Appendix A (Continued)

### 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; 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 of 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.

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

<u>Imputation Method</u>	<u>Number</u>
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.



## Appendix A (Continued)

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

Item	Cases Imputed	Percentage 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 Spouse Completed Highest Grade .....	126	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
Second Oven Is/Is Not a Microwave .....	67	1	Hot-deck
Warm Air Forced Through Ducts... Other Public Assistance Received in 1980 .....	63	1	Hot-deck
Alimony Received in 1980 .....	99	2	Hot-deck
Government Pension Received in 1980 .....	99	2	Hot-deck
Private Pension Received in 1980.....	95	2	Hot-deck
Month Window or Door Caulking Added .....	86	1	Hot-deck
Dividends Received in 1980.....	81	1	Random
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.....	79	1	Hot-deck
Unemployment Compensation Received in 1980 .....	78	1	Hot-deck
Unemployment Compensation Received in 1980 .....	78	1	Hot-deck



## Appendix A (Continued)

Table A7. (Continued)

Item	Cases Imputed	Percentage of Total Sample <sup>a</sup> (6,269)	Method of Imputing
Net Rental Income Received in 1980 .....	77	1	Hot-deck
Aid to Families with Dependent Children Payments 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 percentage. To account for these, add 5 percentage points to the percentage 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.

### 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 ensure 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 ensure completeness, logical consistency, and the legitimacy of coded values. The computer editing utilized a proprietary software package called EDITOR II.



## Appendix A (Continued)

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.

**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	Percentage 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 A (Continued)

### Fuel Supplier Survey

The overall objective of the fuel supplier survey was to provide data on which to estimate the annual fuel consumption and expenditures of sample households. Four utility fuels were covered in the annualization--electricity, natural gas, fuel oil, and LPG.<sup>3</sup> For each of the fuels, the goal was to obtain complete consumption records for the year April 1, 1981, through March 31, 1982.

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

Altogether, the fuel supplier survey included initial contact attempts with 1,123 companies. The number of companies in the survey supplying each fuel and the total number of households supplied are shown in Table A9.

**Table A9. Companies in Fuel Supplier Survey and Number of Households Supplied**

Fuel Supplier	Number of Companies <sup>a</sup>	Number of Survey Households Supplied <sup>b</sup>
Electricity .....	282	5,261
Natural Gas .....	146	2,856
Fuel Oil or Kerosene .....	521	741
LPG .....	236	550

<sup>a</sup>The total number of companies in the survey was 1,123. These included 43 that supplied both electricity and natural gas; 5 that supplied natural gas and LPG; and 14 that supplied fuel oil and LPG.

<sup>b</sup>These figures represent the number of households that signed an<sup>a</sup> authorization form and that paid directly to the utility company for all uses of the fuel. Excluded are 25 fuel oil households and 10 LPG households supplied by unknown companies.

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

<sup>3</sup>Households using LPG only for outdoor cooking grills were not included in the LPG data collection; LPG used by these households is excluded from consumption and expenditures estimates. Data on usage of wood fuel were collected during the household interview, since it was not practical to collect these data from suppliers as is done with the major home fuels. Unless otherwise noted, consumption of wood is not included in the tables for this report.



## Appendix A (Continued)

### Data Collection Procedures

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

- an initial letter from the Administrator of the Energy Information Administration, addressed to the president or other official in the company outlining the general nature of the request for participation. This letter also announced that a telephone contact would be made to determine the name of the person to whose attention the survey materials should be sent. Enclosures in the letter included a printed statement "About the Residential Energy Consumption Survey," specimen copies of reporting and authorization forms, and a postage-paid postcard with a checklist of available publications and data tapes;
- the telephone contact referred to in the initial letter;
- the mailing of survey materials to the person named as contact person;
- a follow-up telephone contact a few days later to answer questions or discuss survey procedures as necessary;
- completed forms or copies of records returned by mail; and
- a letter from the EIA thanking the company for its effort.

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

Procedures for fuel oil or kerosene and LPG dealers were the same as for electric and natural gas companies up through and including the mailing of survey materials to the company person named as the contact. These companies, however, most often had only one or two households for which information was to be supplied, and data collection was generally completed by telephone. An earlier pretest of the procedure had indicated a somewhat greater likelihood that companies would respond by telephone than as a result of a request to complete and return the forms by mail.<sup>4</sup> Companies that chose to return the forms by mail, however, were not discouraged from doing so. After the company returned the information, additional contact with companies and households was sometimes required to identify the correct record in the company files.

### Energy Consumption Records

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

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<sup>4</sup>The test is described in Residential Energy Consumption Survey: Consumption and Expenditures--April 1980 Through March 1981, Part 1: National Data, DOE/EIA-0321/1 (Washington, D.C., September 1982, Appendix A, 103).





## Appendix A (Continued)

Households lacking consumption records because they do not pay fuel bills directly to fuel suppliers occur most frequently among users of natural gas and fuel oil or kerosene (see Table A10). These households are 18.3 percent of users of natural gas and 24.9 percent of users of fuel oil or kerosene.

The proportion of households that did not sign authorization forms (access to records denied) was in the range of 7 to 8 percent for the four fuels. Most households that signed authorization forms did so at the time of the personal interview or at the time of completing the mailed questionnaire. To maximize the number of households with records, however, a follow-up request was mailed to those who did not sign a form at the time of the personal interview. About 3 percent of this group returned signed forms in response to the mail request and therefore were included in the fuel supplier survey.

**Table A10. Energy Consumption Records and Missing Data for Survey Households Using Electricity, Natural Gas, Fuel Oil or Kerosene, or LPG (Percentage of Households Using the Fuel)**

Survey Households	Elec- tric- ity	Natural Gas	Fuel Oil or Kerosene	LPG
Total Households				
Using the Fuel .....	100.0	100.0	100.0	100.0
(Sample Number) .....	(6,263)	(3,850)	(1,122)	(627)
Usable Records Received from Fuel Supplier <sup>a</sup> .....	80.8	71.7	46.7	61.3
Unusable Records Received from Fuel Supplier .....	0.9	0.8	6.7	13.2
Household Pays Directly to Supplier--No Record Available for the Household .....	10.5	9.2	21.7	22.8
Household Not Identified in				
Company Records .....	2.3	1.7	11.9	12.7
Company Refused to Participate ...	*	*	0.8	0.5
Company Unknown or Not Located ...	*	*	2.2	1.6
Authorization Form Not Signed ....	8.2	7.5	6.8	8.0
Fuel Used Included in Rent or Paid in Other Way <sup>b</sup> .....	7.8	18.3	24.9	2.7

<sup>a</sup>Data were unusable for electricity and natural gas if the records covered less than 5 months and for fuel oil or kerosene and LPG if the record covered less than 1 year.

<sup>b</sup>Includes households with mixed payment methods: one or more uses of a specified fuel paid directly to a supplier, and other uses included in rent or paid in other way.

"\*" represents or rounds to zero.

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



## Appendix A (Continued)

Table A10 shows that factors affecting nonresponse are somewhat different for fuel oil or kerosene and LPG than they are for electricity and natural gas. For example, the most frequent reason for nonresponse from fuel oil or kerosene and LPG dealers was their inability to identify survey households in their company records. Some dealers provide these fuels to households on a cash-and-carry basis and simply do not keep records of individual purchases. A second reason related to fuel oil or kerosene and LPG was the inability to locate the fuel oil or kerosene or LPG dealer. Some companies were no longer in business; others could not be contacted during the survey period even after repeated attempts over a period of several months; and some cash-and-carry customers could not identify their suppliers.

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

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

Comparison with 1980 RECS. The proportion of households with usable fuel consumption records is lower in 1981 than 1980. The difference is 2 percentage points for electricity, 4 for natural gas, 8 for fuel oil or kerosene, and 4 for LPG. This decrease is attributed to a small increase in the proportion of sample households not signing authorization forms and in the proportion of sample households whose energy bills are included in their rent. The latter condition, for which energy billing records are not available, was fostered by the intentional oversampling of low-income households, which more often have energy costs included in their rent. In the case of fuel oil or kerosene, additional factors include a change in the mix of single-family and multifamily homes using fuel oil and increased use of kerosene that is usually purchased on a "cash-and-carry" basis.

### Data Collection Dates

The first set of advance letters was mailed to utility companies during the first two weeks of April 1982. The cut-off date for receipt of usable information was August 31, 1982.

### Fuel Consumption Imputations

Not all the fuel records that were collected in the fuel suppliers' survey could be used. For example, some covered too few months of usage and for others it was uncertain how the records were incomplete. The extent of these unusable records is shown in Table A10. The problem of unusable records is small for the metered fuels. For electricity and natural gas, 1 percent of the records covered fewer than 146 days and therefore were considered unusable. For fuel oil, kerosene, and LPG, however, the problem of unusable records is more serious inasmuch as 7 percent of fuel oil or kerosene records and 13 percent of LPG records were unusable. One reason for this is that partial year records of electricity and natural gas usage are considered usable, whereas a partial year record for the storage fuels (fuel oil, kerosene, LPG) is not used.<sup>5</sup>

<sup>5</sup>The number of households with partial year records, as a proportion of total households using the fuel, is 7.6 percent for electricity and 6.2 percent for natural gas.



## Appendix A (Continued)

A variety of information from household respondents as well as from suppliers is reviewed and used as a basis for declaring a fuel oil, kerosene, or LPG record complete or incomplete. Questionnaire information from respondents includes number of suppliers and an estimate of the annual number of deliveries. Suppliers provided dates of onset and termination of service to the household. In addition, followup contacts were made at some households that used combinations of fuel oil and kerosene when it was determined that delivery records did not include supplementary "cash-and-carry" purchases of kerosene that may have been made by the household. Estimates of the quantities of kerosene purchased (usually small relative to quantities of fuel oil) were then added to the delivery records for fuel oil to preclude the need for imputations.

Households with unusable records, as described earlier, and households with no records had their fuel consumption imputed using regression modeling techniques. The regression consumption models were developed using RECS sample households for which approximately a full year of data were available and acceptable. Separate regression models were developed for the four fuels: electricity, natural gas, fuel oil or kerosene, and LPG. Fuel oil and kerosene were treated as if they were identical fuels. The number of kerosene users in the sample is very small and the number of usable consumption records for these households is even smaller, since many kerosene users are "cash-and-carry" customers who leave no records of their transactions.

The strategy for modeling consumption was not the same for all fuels. There were five models of electricity consumption--one for each of the major types of housing structure. For the other fuels, dominance of the heating component was acknowledged, and modeling was by end use instead of structure type. This entails one model for all cases in which the modeled fuel is used as the main heating fuel and a separate model for cases in which the fuel is used only for appliances and/or hot water. Apart from electricity then, all structure types are modeled simultaneously with an allowance for differentiation of structure types within the models by inclusion of dummy variables (for each type of structure). The regression models make full use of the data including such variables as measured square footage of the housing unit, uses of fuels, heating and cooling degree-days, household size, and appliances.

Some electricity and utility gas models also contain a price variable calculated from the survey data. Some electricity models also include an income variable. The fuel oil and LPG models contain a variable on fuel wood burned. Fuel expenditures were imputed by applying a cost factor to the imputed consumption. The cost factor for electricity and utility gas was derived from the fuel consumption records of households in the same neighborhood or geographic area as the household for which data were missing; the cost factor for fuel oil and LPG was based on regression fits for cost versus quantity for all fuel users.

The consumption data were standardized to a 365-day period. For fuel oil, kerosene, and LPG, no adjustment was necessary since the annual consumption data were the accumulation of all delivery records between April 1, 1981, and March 31, 1982. For electricity and natural gas, an adjustment was made for those records covering 330 days or more. For those covering fewer than 330 days and those cases requiring regression imputations, the imputed quantity was for a 365-day period.



## Appendix A (Continued)

The 12-month fuel consumption quantities were scaled down in accordance with respondent-supplied information as to the proportion of the fuel used for nonhousehold purposes such as for drying grain or operating a commercial welding shop. This adjustment was made to the consumption and expenditures for 3 percent of the households using electricity, 3 percent using LPG, 1 percent using natural gas, and 0.4 percent using fuel oil or kerosene.

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

Table A11 shows the availability of consumption records by the type of housing structure. Usable records were most often obtained for single-family units, more often for electricity (88.5 percent of the units) and natural gas (88.2 percent) than for fuel oil or kerosene (64.2 percent) or LPG (62.8 percent). The problems inherent in collecting data for the storage fuels were described earlier: multiple suppliers, "cash-and-carry" customers, purchase data being supplied instead of usage data, and economic instability of the supplying companies.

The consumption and expenditures data for large apartment buildings, especially the natural gas and fuel oil, are mostly imputed data. Usable records were obtained for only 13.0 percent of the apartments in large buildings that used natural gas and for none of those using fuel oil or kerosene. Liquefied petroleum gas is infrequently used in large apartment buildings. Electricity data for these apartments were obtained in 52.1 percent of the cases.



## Appendix A (Continued)

**Table A11. Energy Consumption Records and Missing Data for Survey Households, by Fuels Used, and by Type of Housing Structure (Percent)**

Type of Fuel Used	Total Households Using the Fuel	Mobile Home	Single-Family	Two to Four Units	Five or More Units
Electricity .....	100.0	100.0	100.0	100.0	100.0
(Sample Number) .....	(6,263)	(390)	(4,343)	(697)	(833)
Usable Record .....	80.8	80.0	88.5	67.3	52.1
Unusable Record <sup>a</sup> .....	0.9	1.5	0.6	1.6	2.1
Records Not Available .....	10.5	11.6	9.7	13.8	11.5
Fuel Used Is Included in Rent or Paid in Other Ways <sup>b</sup> ...	7.8	6.9	1.2	17.3	34.3
Natural Gas .....	100.0	100.0	100.0	100.0	100.0
(Sample Number) .....	(3,850)	(119)	(2,650)	(544)	(537)
Usable Record .....	71.7	69.7	88.2	49.5	13.0
Unusable Record <sup>a</sup> .....	0.8	3.4	0.6	1.8	0.2
Records Not Available .....	9.2	10.1	9.6	11.9	4.5
Fuel Used Is Included in Rent or Paid in Other Ways <sup>b</sup> ...	18.3	16.8	1.6	36.8	82.3
Fuel Oil or Kerosene .....	100.0	100.0	100.0	100.0	100.0
(Sample Number) .....	(1,122)	(70)	(724)	(159)	(169)
Usable Record .....	46.7	37.1	64.2	20.7	*
Unusable Record <sup>a</sup> .....	6.7	12.9	8.6	1.9	0.6
Records Not Available .....	21.7	50.0	26.0	12.6	*
Fuel Used Is Included in Rent or Paid in Other Ways <sup>b</sup> ...	24.9	*	1.2	64.8	99.4
LPG .....	100.0	100.0	100.0		
(Sample Number) .....	(627)	(144)	(465)	(16)	(2)
Usable Record .....	61.3	56.9	62.8	(9)	(1)
Unusable Record <sup>a</sup> .....	13.2	13.2	13.5	(1)	*
Records Not Available .....	22.8	23.6	22.8	(2)	(1)
Fuel Used Is Included in Rent or Paid in Other Ways <sup>b</sup> ...	2.7	6.3	0.9	(4)	*

<sup>a</sup>Data were unusable for electricity and natural gas if the records covered fewer than 5 months and for fuel oil, kerosene, and LPG if the record covered less than 1 year.

<sup>b</sup>Includes households with mixed payment methods: one or more uses of a specified fuel paid directly to a supplier, and other uses included in rent or paid in another way.

"\*" represents or rounds to zero.

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



## Appendix A (Continued)

The reason consumption and expenditures data are so often imputed for multiunit structures is that energy use is not directly metered for individual apartments. A master meter registers the usage for a number of units in the building. Under these circumstances, there is no way of measuring the consumption of individual apartments, and imputations based on metered units may be biased since the imputations assume similar energy use for metered and nonmetered apartments.

Other segments of the data for which the lack of usable records may lead to an imputation bias include natural gas and fuel oil or kerosene for apartments in smaller buildings (two to four units per building) and fuel oil or kerosene and LPG used in mobile homes. Usable records in these segments were obtained for between 20.7 percent and 56.9 percent of the households.

### Bias in Estimates of Fuel Usage in Apartments

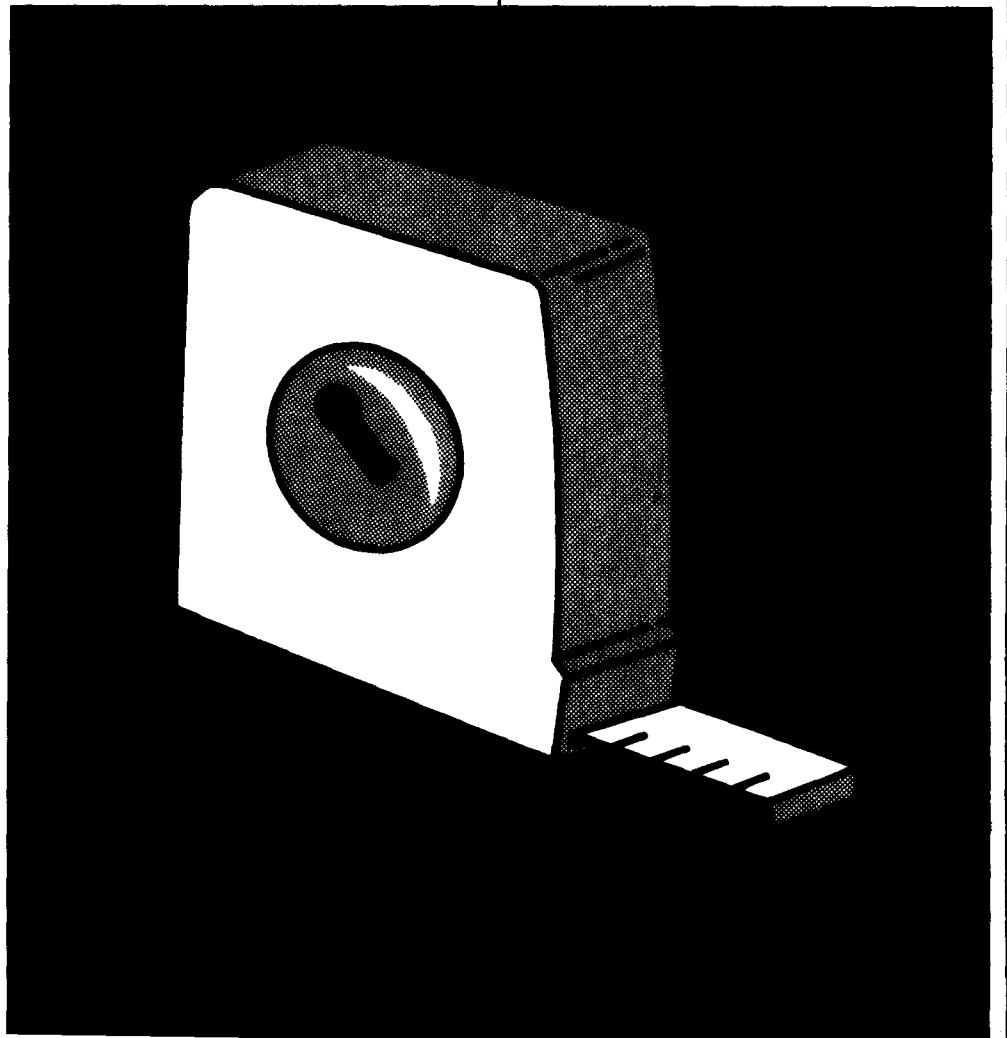
Concern with the large amount of imputed fuel data for apartment units led to a special effort in 1981 to obtain consumption records for apartment buildings. This effort used the permission of the apartment building's agent to obtain actual fuel records for the building. These records were used to estimate fuel consumption for each apartment in the building, including the sample units that were the main concern of the collection effort. The building's fuel use was allocated to individual apartments proportionate to the number of units in the building. A comparison of these estimates, derived from actual records, with the imputed values assigned by the regression modeling indicates the following bias in some imputed values:

<u>Households Using</u>	<u>Imputed Values Are</u>	<u>Corrective Multipliers Are</u>
Electricity with air conditioning	Too low by 50 percent	1.84
Electricity without air conditioning	Too high by 10 percent	None
Natural gas for space heating	About right	None
Natural gas, but not for space heating	Too low by 50 percent	2.04

The number of records for fuel oil and LPG were insufficient for making estimates of the bias in their imputed values. The imputations for fuel use in apartments were corrected to counteract the imputation bias. The corrective multipliers are given in the preceding tabulation.

## Appendix B

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









# Appendix B

## Introduction

Interviewers for the 1981 Residential Energy Consumption 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>

$$\text{SCALE} = 902 + 1.93\text{E-}04 \times \text{HOMEAREA} - 3.63\text{E-}08 \times (\text{HOMEAREA})^2 \quad (\text{B1})$$

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

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

## Nonsampling Error

### Completeness of Data

This section discusses a number of factors related to the completeness of the consumption and expenditures data. Data are not collected for the following two types of housing units:

- Vacant housing units. These units may have minimal heating for protection from the weather and lighting for security. They also may not be vacant all year long. The Annual Housing Survey (AHS) estimated that there were about 5.5 million vacant housing units in 1977.
- Second homes for the owner's use. The AHS estimated that these homes numbered about 3 million in 1977.

These two types of units are not included primarily because of the difficulty in acquiring data and limitations in the availability of funds. The RECS data are collected by interviewing *someone who knows the housing unit and who may sign an authorization form for release of fuel records from the fuel supplier.* In these units, that type of person is not likely to be available.

In addition, the consumption and expenditures data for the household's primary residence do not include the following fuels:

- Gasoline and other fuels used in household vehicles. The RECS collects gasoline data through monthly purchase diaries from a subset of respondents composing a Household Transportation Panel and is reported separately.



## Appendix C (Continued)

- Wood used for heating. Although wood consumption data are collected, they are not included in this report. (Wood consumption is reported in Residential Energy Consumption Survey: Housing Characteristics, 1981, DOE/EIA-0314(81), (Washington, D.C., August 1983). This was done because the wood data are for the 12 months before the interview, rather than the April 1981 through March 1982 period, and are probably inflated estimates. Evidence indicates that more detailed questioning often leads a respondent to lower initial estimates of wood use. Some change in the questioning procedures and exhibits used is being planned for future RECS. These changes are designed to reduce confusion between a cord and a face cord (a face cord is 4 feet high and 8 feet wide, but the depth varies according to the length of the cut wood). Although the price of the most recent purchase of wood was collected, no attempt was made to use these data to estimate the total expenditures for wood.
- LPG used in outdoor gas grills, for camping, or for other recreational activities occurring away from the home.
- Coal, coke, corncobs, charcoal, alcohol, purchased steam, and solar energy used for household purposes.

The effect of these omissions is to underestimate the amount of energy consumed in the residential sector.

Upward adjustments were not made to account for these omissions. The effect of these omissions on average consumption and expenditures per household is difficult to assess and will require further methodological research. The most serious omission because of its size is for wood fuel consumption. The size of the underestimation for the omission of wood can be estimated from data collected in the survey and is estimated to equal 10 million Btu for 1981, about the same level as for 1980. If added to the average household energy use, the average would increase from 114 million to 124 million Btu. This estimate of wood fuel use is subject to the errors affecting data on wood fuel consumption (see Wood Burned in the Glossary).

One source of overcounting arises because some household bills contain nonhousehold uses such as for operating a welding shop or drying grain. Double counting could also occur when an owner's billing record also contains consumption for a rental unit. The RECS respondents estimated the amount of this nonhousehold use that is included on their bill. Using these estimates, downward adjustments were made for individual households to subtract their nonhousehold uses from their consumption and expenditures data.

The reader should also be aware that the data for fuel oil, kerosene, and LPG are for fuel delivered to the household between April 1, 1981, and March 31, 1982, not for fuel consumed. For this reason and because attempts to acquire actual fuel bills for these fuels are more often unsuccessful, these data should be viewed as less reliable than the electricity and natural gas data. Readers should also be aware that natural gas and fuel oil data for apartment buildings of five or more units are based largely on imputed estimates and, therefore, may contain an unknown amount of error from the imputation procedures.





## Appendix C (Continued)

### Quality of Specific Data Items

Expenditures as a Percentage of Income. The 1981 RECS is the first one for which expenditures for energy are shown as a percentage of the family's income. Several problems have stood in the way of reporting this statistic. First, RECS collects income data in categories, so that a family's income is known only by a range. The problem of not having a precise value was resolved for incomes less than \$20,000 by using the category midpoint when dividing the expenditures by the income, that is, \$3,500 was used for each household in the category \$3,000 to \$3,999. For incomes above \$20,000, the following values were assigned:

Income Category	Value Assigned		
	Family Size Is Not Used	Family Size Is One	Family Size Is More than One
\$20,000-24,999	\$22,323		
\$25,000-29,999	\$27,248		
\$30,000-34,999	\$32,177		
\$35,000-39,999			\$37,157
\$35,000-49,999		\$40,898	
\$40,000-49,999			\$44,153
\$50,000-74,999			\$58,370
\$50,000 and over		\$68,064	
\$75,000 and over			\$99,547

The second problem is that energy expenditures are based on the period April 1981 through March 1982, while income is based on calendar year 1980. The difference in time periods has the effect of increasing the size of the percentage, since an income from an earlier period is likely to be smaller, having been subject to less inflation. If the income had been "aged" to represent income for the consumption period, the 5.3-percent figure for the United States would probably have been reduced to 4.8 percent. This represents a 9-percent reduction in the national figure. It is not known how much the percentages would change for various income categories by using "aged" income data.

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 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.



## Appendix C (Continued)

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.

Urban-Rural. The U.S. Bureau of the 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 the 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 the Census. For this reason, estimates of urban and rural populations from the RECS, Screener, and NIECS surveys may differ from the Bureau of the Census figures. The classification scheme for metropolitan areas (SMSA and non-SMSA) used for the RECS, Screener, and NIECS surveys 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.

### Sampling Errors

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

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

Thus the standard error of Y is given by

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

This section provides generalized procedures and examples for use in calculating relative standard errors for several types of statistics from the 1981 RECS survey.<sup>1</sup> The generalized procedures involve the use of tables that relate the RSE of a statistic to the number of households over which the statistic applies. These tables are based on regression equations developed using RSE's computed by a half-sample replication procedure. They were developed for the 1981 RECS data and will change for subsequent surveys. The end of this section provides a discussion of the half-sample replication technique and the generalized sampling error equations developed and used in this section. Generalized procedures are provided for household counts, percentages based upon counts, aggregate totals, and averages per household for consumption and expenditures for each fuel and the total of all fuels.

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<sup>1</sup>The source of data for the calculation of relative standard errors is the 1981 Residential Energy Consumption Survey.



## Appendix C (Continued)

### Determination of Relative Sampling Errors for Household Counts

Procedures are presented here for determining relative sampling errors (RSE) for statistics that are counts of households. The counts can be obtained from this report, previous reports of the 1981 RECS, or the public-use data tape for the 1981 RECS. For some household counts, the RSE is zero. Household counts with a zero RSE are called control totals. A simplified method for determining RSE's for household counts that are not control totals is presented, followed by a more complete, longer method. The simplified method can be used for any household count, but it will produce overestimates of sampling errors in some cases.

Control Totals. For each of the four Census regions, the number of households that live in central cities of SMSA's, the number that live in SMSA's but outside central cities, and the number that do not live in SMSA's were used as design parameters for the 1981 RECS. These household counts are listed in Table C3. The counts will have zero RSE's or sampling error in the RECS. They are based on results of the Current Population Survey (CPS) compiled by the U.S. Bureau of the Census. The CPS surveys are subject to their own sampling variances. Any errors in these numbers can be considered to be biases of the 1981 RECS. In this report, these household counts or sums of these counts are referred to as control totals.

Simplified Method. For a household count that is not a control total, read or extrapolate its RSE value from Table C1. (The RSE's listed in Table C1 can be obtained by using the first equation listed in Table C9.) The value should be adjusted by multiplying by the appropriate value or values for  $10^B$  from Table C2.

If the characteristic of the statistic being considered is not listed in Table C2, use  $B=0$  ( $10^B=1$ ), or use a value for a characteristic that has similar clustering tendencies. If two characteristics define the statistic, multiply by both values of  $10^B$  from Table C2. If more than two characteristics define the variable, choose no more than two and select the two that are the least correlated. A more complete discussion of the clustering factors is given later in this appendix. (See "Discussion of Generalized Variance Equations.")



## Appendix C (Continued)

**Table C1. Relative Standard Errors for Survey Estimates of the Number of Households**

Million Household	One Relative Standard Error (Percent)
0.1	44.4
0.2	34.1
0.3	29.0
0.4	25.8
0.5	23.5
0.6	21.7
0.7	20.3
0.8	19.2
0.9	18.2
1.0	17.4
1.5	14.5
2.0	12.7
3.0	10.5
4.0	9.1
5.0	8.2
10.0	5.7
20.0	4.0
40.0	2.7

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

**Table C2. Clustering Factors for Calculation of Relative Standard Errors for Survey Estimates of the Number of Households**

Cell Definition	Value of 10 <sup>B</sup>
Heating and Cooling Degree-Days .....	1.67
Electricity Is Main Heating Fuel .....	1.21
Other Main Heating Fuel <sup>a</sup> .....	1.15
Natural Gas Is Main Heating Fuel .....	1.07
LPG Is Main Heating Fuel .....	1.06
Temperature Setting When At Home .....	1.06
Wood Is Main Heating Fuel .....	1.04
Year Built .....	1.03
Age of Head of Household .....	0.98
Number of Heated Square Footage .....	0.89
Fuel Oil Is Main Heating Fuel .....	0.87
Family Income .....	0.85
Number of Household Members .....	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.



## Appendix C (Continued)

Longer Method. The second method for calculating sampling errors for household counts uses the control totals listed in Table C3.

- Step 1: Find the statistic's appropriate control from Table C3. The control total is the number of households in the Census division/SMSA status cell for which the sampling error is being determined. The control may be the sum of several control totals provided. If the correct control is not obvious, use the larger of several, which may be correct. If the household count is a control total, set the RSE equal to zero; otherwise, proceed to Step 2.
- Step 2: If the household count is less than one-half of its control total, use method one described earlier. If not, compute a control complement for the household count and proceed to Step 3. Control complement = (control total - household count).
- Step 3: Use the control complement as the new household count. Then read or extrapolate its RSE value from Table C1. Multiply this value by the appropriate  $10^3$  value or values from Table C2. Denote this as CCRSE.
- Step 4: Multiply the CCRSE value from Step 3 by the control complement and divide by the household count. This yields:  
$$RSE = CCRSE \times (\text{control complement}) / (\text{household count}).$$



## Appendix C (Continued)

**Table C3. Relative Standard Error Control Totals (Million Households)**

Type of Aggregate	Control Totals	Upper Bound for Direct Application of Formula or Table
National .....	83.1	41.6
Census Region		
Northeast .....	17.9	9.0
North Central .....	21.2	10.6
South .....	27.7	13.8
West .....	16.3	8.1
SMSA Status		
SMSA-Central City .....	24.6	12.3
SMSA-Outside Central City .....	32.0	16.0
Non-SMSA .....	26.5	13.3
Census Region by SMSA		
Northeast		
SMSA-Central City .....	6.0	3.0
SMSA-Outside Central City .....	8.1	4.1
Non-SMSA .....	3.8	1.9
North Central		
SMSA-Central City .....	5.9	2.9
SMSA-Outside Central City .....	8.0	4.0
Non-SMSA .....	7.4	3.7
South		
SMSA-Central City .....	7.4	3.7
SMSA-Outside Central City .....	8.5	4.2
Non-SMSA .....	11.9	5.9
West		
SMSA-Central City .....	5.4	2.7
SMSA-Outside Central City .....	7.4	3.7
Non-SMSA .....	3.5	1.7

Source: Estimates derived from the 1980 Decennial Census and Current Population Surveys.

Consider the computation of sampling error for the estimate, 15.4 million households heat with natural gas in the North Central region.

- Step 1: From Table C3, the control total is 21.2 million, the number of households that live in the North Central region.
- Step 2: The number 15.4 million is more than one-half of 21.2. Its control complement then is  $(21.2 - 15.4 = 5.8)$ .
- Step 3: Extrapolating from Table C1, the RSE for 5.8<sup>B</sup> is 7.58 percent. Multiply 7.58 by the values for 10<sup>B</sup> from Table C2 for household counts over categories restricted to households whose main space-heating fuel is natural gas.  $(7.58 \times 1.07 = 8.11$  percent.)



## Appendix C (Continued)

### Determination of Relative Sampling Errors for Percentages Based Upon Household Counts

Step 4: Multiply CCRSE by the control complement divided by the household count.  
(RSE =  $8.11 \times 5.8/15.4 = 3.05$  percent.)

The standard error corresponding to this relative standard error applies to both the control complement and the original household count.

Let X be an estimate of the number of households that have characteristics  $C_1$  and  $C_2$ . Let Z be an estimate of the number of households that have characteristic  $C_1$  but do not have characteristic  $C_2$ . Set  $Y = X + Z$ . Then Y is an estimate of the number of households that have characteristic  $C_1$ . Set  $p = 100 X/Y$ . Then p is an estimate of the percentage of households that have characteristic  $C_2$  among all households that have characteristic  $C_1$ . The RSE of p can be approximated using

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

This approximation works best when RSE(X) and RSE(Y) are estimated 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 format.

### Determination of Relative Standard Errors for Fuel Consumption and Expenditure Statistics

The RSE's of statistics that give the aggregate total or average per household fuel consumption or expenditures can be approximated by using Tables C4 through C8. The RSE's listed in Tables C4 through C8 can be obtained using the equations listed in Table C9.

The tables give the RSE of a statistic as a function of the number of households involved in calculating the statistic. For total consumption or expenditures, the number of households is the number over which the total applies. For consumption or expenditures by fuel, the number of households is the number that use the fuel in question and whose consumption or expenditures are used in calculating the statistic for which one desires an RSE. For example, consider the Northeast Census region. The weights for the observations used in the RECS were adjusted so that the number of households in the Northeast Census region equals 17.9 million. This is the number used when computing the RSE for the total residential energy consumption in the Northeast. For electricity consumption, again use 17.9 million. But for natural gas consumption, the number of households equals 11.3 million. This is the number of households that live in the Northeast and use natural gas. The counts of households are provided for the "all fuels" category in Tables 1 through 3 in the report. But for specific fuels such as natural gas, the reader should turn to the table that covers that fuel for the appropriate household counts to be used in computing an RSE.

The tables for aggregate total consumption, total expenditures, electricity consumption, and electricity expenditures contain an indicator variable. This variable equals 1 when the household count is a control total from Table C3. It equals zero otherwise. Consider the following examples of the use of these tables.



## Appendix C (Continued)

**Table C4. Relative Standard Errors for Aggregate Statistics of Total Consumption and Expenditures (Natural Gas, Electricity, Fuel Oil or Kerosene, and LPG — Combined)**

Million Households	Relative Standard Error (Percent)			
	Consumption (Btu) Indicator Variable		Expenditures (Dollars) Indicator Variable	
	One	Zero	One	Zero
0.1	36.0	43.8	27.5	43.2
0.2	26.6	32.4	20.1	31.6
0.3	22.3	27.2	16.8	26.4
0.4	19.7	24.0	14.8	23.2
0.5	17.9	21.8	13.4	21.0
0.6	16.5	20.1	12.3	19.3
0.7	15.5	18.8	11.5	18.0
0.8	14.6	17.7	10.8	17.0
0.9	13.9	16.9	10.3	16.1
1.0	13.2	16.1	9.8	15.4
1.5	11.1	13.5	8.2	12.8
2.0	9.8	11.9	7.2	11.3
3.0	8.2	10.0	6.0	9.4
4.0	7.3	8.8	5.3	8.3
5.0	6.6	8.0	4.8	7.5
10.0	4.9	5.9	3.5	5.5
20.0	3.6	4.4	2.6	4.0
40.0	2.7	3.2	1.9	2.9
80.0	2.0	2.4	1.4	2.2

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

There are 1.5 million households that heat with electricity in the Northeast region. Reading from Table C5, column 3 yields an RSE of 14.6 for total electricity consumption for households in the Northeast that heat with electricity. An indicator value of zero was used because 1.5 is not a control total listed in Table C3.

As another example, there are 27.7 million households that consume electricity in the South region. The control totals in Table C3 indicate that 27.7 million households live in the South. In this case, choose an indicator value of 1, since the household count is identical to the control total. Extrapolating from Table C5, column 2 yields an RSE of 3.4 percent for total electricity consumption for the 27.7 million households.

Relative Standard Errors for  
Average Price

The relative standard errors of statistics giving average price were not generalized. The magnitude of the RSE's can be obtained by examining Tables C5, C7, C10, and C11 in the report, Residential Energy Consumption Survey: Consumption and Expenditures-- April 1980 Through March 1981, Part 1: National Data (DOE/EIA-0321/1, Washington, D.C., September 1982). An inspection of these tables reveals that there is not a linear relationship between the logarithms of the RSE's and the corresponding household counts. As a result, the RSE's were not generalized.





## Appendix C (Continued)

**Table C5. Relative Standard Errors for Aggregate Statistics of Electricity Consumption and Expenditures**

Million Households	Relative Standard Error (Percent)			
	Consumption (Btu or kWh) Indicator Variable		Expenditures (Dollars) Indicator Variable	
	One	Zero	One	Zero
0.1	41.1	49.0	32.7	48.8
0.2	30.2	35.9	23.8	35.6
0.3	25.2	30.0	19.8	29.6
0.4	22.1	26.4	17.4	26.0
0.5	20.0	23.9	15.7	23.5
0.6	18.5	22.0	14.5	21.6
0.7	17.2	20.5	13.5	20.2
0.8	16.2	19.3	12.7	19.0
0.9	15.4	18.3	12.0	18.0
1.0	14.7	17.5	11.5	17.1
1.5	12.3	14.6	9.6	14.3
2.0	10.8	12.8	8.4	12.5
3.0	9.0	10.7	7.0	10.4
4.0	7.9	9.4	6.1	9.1
5.0	7.2	8.5	5.5	8.3
10.0	5.2	6.2	4.0	6.0
20.0	3.8	4.6	2.9	4.4
40.0	2.8	3.4	2.2	3.2
80.0	2.1	2.5	1.6	2.3

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



## Appendix C (Continued)

**Table C6. Relative Standard Errors for Aggregate Statistics of Natural Gas, Fuel Oil or Kerosene, and LPG Consumption and Expenditures**

Million Households	Relative Standard Error (Percent)					
	Natural Gas		Fuel Oil or Kerosene		LPG	
	Consumption (Btu or Cubic Ft.)	Expendi- itures (Dollars)	Consumption (Btu or Gallons)	Expendi- itures (Dollars)	Consumption (Btu or Gallons)	Expendi- itures (Dollars)
0.1	46.5	45.9	48.6	48.4	52.5	50.0
0.2	35.2	34.5	35.8	35.7	40.7	39.3
0.3	29.9	29.2	29.9	29.8	35.1	34.2
0.4	26.7	25.9	26.4	26.3	31.6	31.0
0.5	24.4	23.7	23.9	23.8	29.1	28.7
0.6	22.7	21.9	22.0	22.0	27.2	26.9
0.7	21.3	20.6	20.6	20.5	25.7	25.5
0.8	20.2	19.5	19.4	19.4	24.5	24.4
0.9	19.3	18.6	18.4	18.4	23.4	23.4
1.0	18.5	17.8	17.6	17.5	22.5	22.5
1.5	15.7	15.0	14.7	14.7	19.4	19.6
2.0	14.0	13.4	12.9	12.9	17.5	17.7
3.0	11.9	11.3	10.8	10.8	15.1	15.4
4.0	10.6	10.0	9.5	9.5	13.6	14.0
5.0	9.7	9.2	8.6	8.6	12.5	12.9
10.0	7.3	6.9	6.3	6.3	9.6	10.1
20.0	5.6	5.2	4.7	4.7	7.5	8.0
40.0	4.2	3.9	3.4	3.4	5.8	6.3
80.0	3.2	2.9	2.5	2.5	4.5	4.9

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



## Appendix C (Continued)

**Table C7. Relative Standard Errors for Total Consumption and Expenditures per Household (Natural Gas, Electricity, Fuel Oil or Kerosene, and LPG — Combined)**

Million Households	Relative Standard Error (Percent)	
	Consumption per Household (Btu)	Expenditures per Household (Dollars)
0.1	17.3	15.6
0.2	13.7	12.1
0.3	12.0	10.5
0.4	10.9	9.4
0.5	10.1	8.7
0.6	9.5	8.1
0.7	9.0	7.7
0.8	8.6	7.3
0.9	8.3	7.0
1.0	8.0	6.8
1.5	7.0	5.8
2.0	6.4	5.3
3.0	5.5	4.5
4.0	5.0	4.1
5.0	4.7	3.8
10.0	3.7	2.9
20.0	2.9	2.3
40.0	2.3	1.8
80.0	1.8	1.4

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



## Appendix C (Continued)

**Table C8. Relative Standard Errors for Natural Gas, Electricity, Fuel Oil or Kerosene, and LPG Consumption and Expenditures per Household**

Million Households	Relative Standard Error (Percent)							
	Natural Gas		Electricity		Fuel Oil or Kerosene		LPG	
	Consumption per Household (Btu or Cubic Feet)	Expenditures per Household (Dollars)	Consumption per Household (Btu or kWh)	Expenditures per Household (Dollars)	Consumption per Household (Btu or Gallons)	Expenditures per Household (Dollars)	Consumption per Household (Btu or Gallons)	Expenditures per Household (Dollars)
0.1	20.7	21.2	25.7	22.9	27.5	27.4	37.4	32.4
0.2	16.2	16.1	19.6	17.3	19.6	19.5	28.4	25.0
0.3	14.0	13.7	16.7	14.7	16.1	16.0	24.2	21.4
0.4	12.6	12.2	14.9	13.1	14.0	13.9	21.6	19.2
0.5	11.6	11.2	13.7	11.9	12.5	12.5	19.8	17.7
0.6	10.9	10.4	12.7	11.1	11.4	11.4	18.4	16.5
0.7	10.3	9.7	12.0	10.4	10.6	10.6	17.3	15.5
0.8	9.8	9.2	11.4	9.9	9.9	9.9	16.4	14.8
0.9	9.4	8.8	10.8	9.4	9.4	9.4	15.7	14.1
1.0	9.1	8.5	10.4	9.0	8.9	8.9	15.0	13.6
1.5	7.9	7.2	8.9	7.7	7.3	7.3	12.8	11.7
2.0	7.1	6.4	7.9	6.8	6.4	6.3	11.4	10.5
3.0	6.1	5.4	6.8	5.8	5.2	5.2	9.7	9.0
4.0	5.5	4.9	6.0	5.1	4.5	4.5	8.7	8.0
5.0	5.1	4.4	5.5	4.7	4.1	4.1	7.9	7.4
10.0	4.0	3.4	4.2	3.5	2.9	2.9	6.0	5.7
20.0	3.1	2.6	3.2	2.7	2.1	2.1	4.6	4.4
40.0	2.4	1.9	2.4	2.0	1.5	1.5	3.5	3.4
80.0	1.9	1.5	1.9	1.5	1.0	1.0	2.7	2.4

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



## Appendix C (Continued)

**Table C9. Relative Standard Error Equations**

Type of Statistic	Generalized Variance Equation
Household Counts .....	$\text{Log(RSE)} = 1.240 - 0.444 \times \text{Log(NHSLD)} - 0.037 \times [(\text{Log(NHSLD)})^2]$ .
Total Consumption .....	$\text{Log(RSE)} = 1.207 - 0.434 \times \text{Log(NHSLD)} - 0.085 \times (\text{CONTOT})$ .
Total Expenditures .....	$\text{Log(RSE)} = 1.187 - 0.448 \times \text{Log(NHSLD)} - 0.196 \times (\text{CONTOT})$ .
Electricity Consumption ....	$\text{Log(RSE)} = 1.243 - 0.447 \times \text{Log(NHSLD)} - 0.076 \times (\text{CONTOT})$ .
Electricity Expenditures ...	$\text{Log(RSE)} = 1.234 - 0.454 \times \text{Log(NHSLD)} - 0.174 \times (\text{CONTOT})$ .
Natural Gas Consumption ....	$\text{Log(RSE)} = 1.267 - 0.400 \times \text{Log(NHSLD)}$ .
Natural Gas Expenditures ...	$\text{Log(RSE)} = 1.250 - 0.412 \times \text{Log(NHSLD)}$ .
Fuel Oil or Kerosene Consumption .....	$\text{Log(RSE)} = 1.245 - 0.442 \times \text{Log(NHSLD)}$ .
Fuel Oil or Kerosene Expenditures .....	$\text{Log(RSE)} = 1.244 - 0.441 \times \text{Log(NHSLD)}$ .
LPG Consumption .....	$\text{Log(RSE)} = 1.353 - 0.367 \times \text{Log(NHSLD)}$ .
LPG Expenditures .....	$\text{Log(RSE)} = 1.353 - 0.346 \times \text{Log(NHSLD)}$ .
Average Total Energy Consumption .....	$\text{Log(RSE)} = 0.904 - 0.335 \times \text{Log(NHSLD)}$ .
Average Total Energy Expenditures .....	$\text{Log(RSE)} = 0.830 - 0.362 \times \text{Log(NHSLD)}$ .
Average Electricity Consumption .....	$\text{Log(RSE)} = 1.017 - 0.393 \times \text{Log(NHSLD)}$ .
Average Electricity Expenditures .....	$\text{Log(RSE)} = 0.955 - 0.405 \times \text{Log(NHSLD)}$ .
Average Natural Gas Consumption .....	$\text{Log(RSE)} = 0.958 - 0.358 \times \text{Log(NHSLD)}$ .
Average Natural Gas Expenditures .....	$\text{Log(RSE)} = 0.927 - 0.400 \times \text{Log(NHSLD)}$ .
Average Fuel Oil or Kerosene Consumption .....	$\text{Log(RSE)} = 0.950 - 0.489 \times \text{Log(NHSLD)}$ .
Average Fuel Oil or Kerosene Expenditures .....	$\text{Log(RSE)} = 0.949 - 0.488 \times \text{Log(NHSLD)}$ .
Average LPG Consumption ....	$\text{Log(RSE)} = 1.177 - 0.396 \times \text{Log(NHSLD)}$ .
Average LPG Expenditures ...	$\text{Log(RSE)} = 1.133 - 0.378 \times \text{Log(NHSLD)}$ .

Note: NHSLD is the number of households in millions. Logarithms are calculated to the base 10. CONTOT is an indicator variable.

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



## Appendix C (Continued)

Relative Standard  
Errors for Expenditures  
as a Percentage of  
Income

The relative standard errors for selected median statistics giving the percentage of income that is spent on energy are found in Table C10. The RSE's for these statistics were not generalized as were most other statistics.

**Table C10. Relative Standard Errors for Expenditures as a Percentage of Income Displayed in Table 6 (Percent)**

Household Characteristics	Total Households	One Relative Standard Error				
		Natural Gas as Main Heating Fuel	Households Using Electricity as Main Heating Fuel		Fuel Oil or Kerosene as Main Heating Fuel	LPG as Main Heating Fuel
			With Air Conditioning	Without Air Conditioning		
Total Households .....	2.2	2.0	5.3	6.0	4.1	8.9
1980 Family Income						
Less than \$5,000 .....	3.8	5.3	17.4	21.0	8.9	53.6
\$5,000 to \$9,999 .....	2.4	3.8	7.9	53.7	6.4	36.7
\$10,000 to \$14,999 .....	3.0	2.7	9.4	39.7	3.5	86.6
\$15,000 to \$19,999 .....	2.7	3.0	4.8	70.9	5.9	98.4
\$20,000 to \$24,999 .....	2.4	2.9	5.2	95.3	5.6	95.2
\$25,000 to \$34,999 .....	2.1	2.3	5.3	85.1	3.5	100.0
\$35,000 or more .....	3.0	3.8	6.4	100.0	8.1	98.4

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

Discussion of the Generalized  
Variance Equations

The generalized variance equations shown in Table C9 were obtained using a least squares regression. They can be used to approximate the RSE's of statistics that give household counts, fuel consumption, or expenditures. The RSE's used as input data in the regression procedure were obtained using a half-sample variance estimating procedure. The details of this procedure follow this discussion. The generalized variance equations were developed to provide users of the 1981 RECS data with a procedure for obtaining RSE's.



## Appendix C (Continued)

The regression equations will not exactly reproduce the RSE's for some published statistics from the 1981 RECS reports. These are half-sample estimates. Half-sample estimates were used to determine the generalized variance equations. Generally, a regression line will not pass through all points used in estimating the parameters of the regression line.

The generalized variance equations listed in this report apply only to data for the 1981 RECS. These equations will have to be changed if they are to be applied to data from other RECS surveys. They cannot be used with any other data sets, since they reflect the sample design of the 1981 Residential Energy Consumption Survey.

In calculating sampling errors for household count statistics, the appropriate control total depends upon the geographic division to which the household count is restricted. Table C3 lists control totals for the country as a whole, the four Census regions, SMSA status, and Census region by SMSA status. Control totals can also be sums of the control totals listed in Table C3. For example, if one is considering the number of households in the country whose main heating fuel is fuel oil, then from Table C3, the control total is the estimated number of households in the country (83.1 million). If one wants the number of households that heat with fuel oil in central cities in New England, the appropriate control total is the number of households in the Northeast located in SMSA-central cities (6.0 million), from Table C3. The New England Census division is contained in the Northeast Census region, but Census division was not used as a control total. If the appropriate control total is not obvious, use the larger of the ones that may be appropriate. This will be a conservative choice.

A household count statistic is an estimate of the number of households that belong to a certain subset of all households in the country. The subset is defined by restrictions on certain characteristics. The value of  $10^B$  from Table C2, the cell definition factor, depends partly on the amount of clustering of the characteristics used in defining the cell. In particular, the value of  $10^B$  depends on the strength of the tendency of households with similar characteristics to live in groups within each replicate pair. (See "Half-Sample Estimation Procedures for Sampling Errors" heading for a discussion of replication.) If the characteristic is highly clustered, the value of  $10^B$  is greater than one. If the characteristic is widely spread out, the value of  $10^B$  is less than one. For example, one possible characteristic is heating and cooling degree-days. People who live close to each other experience the same weather conditions; consequently, the value of  $10^B$  for heating and cooling degree-days is greater than one. 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  $10^B$  for age of household head is less than one. As a final example, consider the Census region 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  $10^B$  for Census regions is 1.0.



## Appendix C (Continued)

The generalized variance equations for RSE's for consumption, expenditures, average consumption, and average expenditures are conservative. If restrictions are placed on the subset over which statistics are calculated that restrict the possible consumption, the RSE's may be lower than the equations predict. An example of where this could happen would be the total energy consumption of all households using between 15 million and 20 million Btu per year. In this case, the RSE approaches the RSE of the number of households as the range narrows. For averages, the RSE approaches zero as the range narrows. The generalized variance equations were estimated using RSE's for statistics where only broad restrictions were used in defining the subsets. The indicator variable (CONTOT) used in some of the generalized variance equations takes on only values of 0 and 1. A variable that has a range of possible values may yield better results.

The generalized variance equations for aggregate fuel consumption and expenditures express the logarithm of the RSE as a linear function of the logarithm of the number of households using the fuel or fuels in question. In addition, in four equations, an indicator variable that equals one when the household count is a control total is also part of the equation. The logarithms were all computed using base 10. The value of the RSE is given as a percentage. The value of the number of households is given in millions. The units used for consumption or expenditures do not matter. In the total consumption statistics, the Btu amounts for electricity are added to the Btu amounts for the other fuels without any adjustments.

In these equations, the number of households refers to the estimated number of households that use the fuel or one of the fuels in question and whose consumption or expenditures is counted in the statistic. For example, if one wants the RSE of the consumption of LPG in the Northeast Census region, one uses the number of households that use LPG in the Northeast (1.2 million). For this case, it would be incorrect to use the total number of households in the Northeast.

For electricity consumption, electricity expenditures, total consumption, or total expenditures, the number of households can be set equal to the estimated number of households in the subset over which the consumption or expenditure estimate applies. Only six households in the RECS sample did not use electricity. These six households represented somewhere in the order of 36,000 households nationally. Treating these households as if they are electricity consumers with zero consumption will have only a small effect on the RSE estimates. Note the difference between this case and the case in which the consumption of LPG in the Northeast was being estimated.





## Appendix C (Continued)

### Half-Sample Estimation Procedures for Sampling Errors

The complex multistage, multiframe design of the survey makes it almost impossible to construct an exact algebraic variance estimator. The method used to produce variances for the RECS is balanced half-sample replication (see References 1 and 2). The generalized variance equations described were based on sampling errors produced by this half-sample technique. To apply the half-sample technique to this survey, the 131 Primary Sampling Units (PSU's) were grouped into 81 strata. Thirty-one of the strata were treated as self-representing; either they consisted of large metropolitan areas that came into the sample with certainty or they were PSU's in a stratum that could not be paired with another stratum 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 the same Census division. 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 88 half-samples. By balancing only within Census regions, a balanced design could be constructed 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 was done within each Census region. The ratio estimation was also done within each Census region. Consequently, the national totals can be considered to be the sum of four independent totals for the four Census regions. Therefore, the variance of a national total is the sum of the variances 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  $32 \times 81$  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 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  $32 \times 81$  design matrix was constructed using a  $32 \times 32$  orthogonal matrix adapted from an article by Plackett and Burman (Reference 3). The rows of this  $32 \times 32$  matrix were randomly sorted. The sorting preserves orthogonality. For each Census region,  $K$  columns were randomly selected from the sort 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, any two of the columns would either be orthogonal or identical. For any column, at most three other columns could 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.



## Appendix C (Continued)

Variance estimates for selected survey statistics were created by computing 32 half-sample estimates for each statistic. If a +1 falls in the  $i^{\text{th}}$  row and  $j^{\text{th}}$  column of the design matrix, the replication group corresponding to the +1 in the  $j^{\text{th}}$  pair was used in the  $i^{\text{th}}$  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.

As a result of using control totals, 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 characteristic  $Y$  is given by

$$s_{Y'}^2 = \frac{1}{32} \sum (Y'_i - Y')^2,$$

where  $Y'_i$  is the  $i^{\text{th}}$  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.

### 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. 1000--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 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. 038-R0459  
EIA 457A  
F3005

## 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.

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

### CONTINUE WITH INTERVIEW

#### 1 INTERVIEWER OBSERVATION OF TYPE OF LIVING QUARTERS

##### MARK BOX BELOW:

11  MOBILE HOME OR TRAILER

21  ONE-FAMILY HOUSE--DETACHED

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

23  ONE-FAMILY HOUSE--ATTACHED ON TWO SIDES

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

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

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

41  BUILDING WITH 5 OR MORE HOUSING UNITS

##### MARK ANSWERS:

NUMBER OF HOUSING UNITS: \_\_\_\_\_

NUMBER OF FLOORS (STORIES): \_\_\_\_\_

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

\_\_\_\_\_  
\_\_\_\_\_

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



## 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 882-000





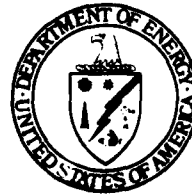
## Appendix D (Continued)

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 # \_\_\_\_\_

111-116

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
  - 10  1982
- ASK Q. 2

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 125-126
- 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                                | 127 |
| <input type="checkbox"/> WOOD                                 | 128 |
| <input type="checkbox"/> CONCRETE                             | 129 |
| <input type="checkbox"/> STUCCO                               | 130 |
| <input type="checkbox"/> STONE                                | 131 |
| <input type="checkbox"/> ALUMINUM SIDING                      | 132 |
| <input type="checkbox"/> COMPOSITION (ASBESTOS SHINGLE, ETC.) | 133 |
| <input type="checkbox"/> GLASS                                | 134 |
| <input type="checkbox"/> OTHER (SPECIFY): _____               | 135 |

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:  136-137

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:  138  
 NONE
- NUMBER OF HALF BATHROOMS:  139  
 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)
- 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

140-141

IF "CENTRAL WARM AIR," ASK:

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

142

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

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

143

## 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?
- 1[] CENTRAL SYSTEM FOR BUILDING(S)
  - 2[] MAIN HEATING EQUIPMENT FOR THESE LIVING QUARTERS ONLY
  - 6[] DON'T KNOW

144



## 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 145-146
- 06[] COAL OR COKE
- 07[] WOOD
- 08[] SOLAR COLLECTORS
- 21[] OTHER (SPECIFY): \_\_\_\_\_
- 96[] DON'T KNOW

### 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. 14 147
- 0[] NO FUEL USED -- SKIP TO Q. 14

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 148-149
- 05[] ELECTRICITY
- 06[] COAL OR COKE
- 07[] WOOD
- 08[] SOLAR COLLECTORS
- 21[] OTHER (SPECIFY): \_\_\_\_\_
- 00[] NO FUEL USED
- 96[] DON'T KNOW

### TAKE BACK EXHIBIT 11/13



## 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

151-152

95  HEAT TURNED  
OFF

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

153-154

95  HEAT TURNED  
OFF

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

DEGREES  
FAHRENHEIT

155-156

95  HEAT TURNED  
OFF

### 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? 157
- 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 158-159
- 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? 160
- 1[] YES  
0[] NO  
6[] DON'T KNOW

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

21. Is the stove airtight? 161
- 1[] YES  
0[] NO  
6[] DON'T KNOW

## TURN TO EXHIBIT 22

22. What fuel is used by this additional equipment? 162-163
- 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
- 0[] NO -- SKIP TO Q. 29

164

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
- 0[] NO -- TAKE BACK EXHIBIT 24; SKIP TO Q. 29

169

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 174-175
  - 08[] SOLAR COLLECTORS
  - 21[] OTHER (SPECIFY): \_\_\_\_\_
- 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 176
- 0[] NO -- TAKE BACK EXHIBIT 29/31;  
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 177-178
  - 05[] ELECTRICITY
  - 06[] COAL OR COKE
  - 07[] WOOD
  - 08[] SOLAR COLLECTORS
  - 21[] OTHER (SPECIFY): \_\_\_\_\_
- 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.)
- YES, CENTRAL SYSTEM 209-210:08  
211
  - YES, INDIVIDUAL (WINDOW/WALL) UNITS -- SKIP TO Q. 36 212
  - 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) 213
  - 3  ELECTRICITY
  - 6  DON'T KNOW

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 214
  - 6  DON'T KNOW

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:  215-216
- 95  ENTIRE HOUSE OR APARTMENT

### 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 217
  - 3  TURNED ON JUST ABOUT ALL SUMMER
  - 5  OTHER (SPECIFY): \_\_\_\_\_

### 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:  218-219  
 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	223-228 MONTH: _____ YEAR: 198__ <input type="checkbox"/> IN PROCESS	227-230 APPROXIMATE COST: \$ _____ .00 <input type="checkbox"/> DON'T KNOW	1 <input type="checkbox"/> DOORS AND HAVING THEM PUT IN 231 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: \$ _____ .00 <input type="checkbox"/> DON'T KNOW	1 <input type="checkbox"/> DOORS AND HAVING THEM PUT IN 243 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	1 <input type="checkbox"/> WINDOWS AND HAVING THEM PUT IN 2 <input type="checkbox"/> WINDOWS ONLY 3 <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? 269
- 1  ALL  
 2  SOME  
 0  NONE  
 6  DON'T KNOW
52. Do you have roof or ceiling insulation? 260
- 1  YES  
 0  NO -- SKIP TO Q. 56  
 6  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? 261
- 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 <input type="checkbox"/> YES 0 <input type="checkbox"/> NO 6 <input type="checkbox"/> DON'T KNOW	_____ INCHES <input type="checkbox"/> DON'T KNOW	262-264
b. LOOSE PARTICLES/ LOOSE FILL	1 <input type="checkbox"/> YES 0 <input type="checkbox"/> NO 6 <input type="checkbox"/> DON'T KNOW	_____ INCHES <input type="checkbox"/> DON'T KNOW	265-267
c. FIRM FOAM/ FIRM PLASTIC	1 <input type="checkbox"/> YES 0 <input type="checkbox"/> NO 6 <input type="checkbox"/> DON'T KNOW	_____ INCHES <input type="checkbox"/> DON'T KNOW	268-270
d. SPRAYED-IN URETHANE FOAM	1 <input type="checkbox"/> YES 0 <input type="checkbox"/> NO 6 <input type="checkbox"/> DON'T KNOW	_____ INCHES <input type="checkbox"/> DON'T KNOW	271-273
e. OTHER (SPECIFY): _____ _____	1 <input type="checkbox"/> YES 0 <input type="checkbox"/> NO 6 <input type="checkbox"/> DON'T KNOW	_____ INCHES <input type="checkbox"/> DON'T KNOW	274-276

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 316
  - 2  PART
  - 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
<p>a. Roof or ceiling insulation</p> <p>1 <input type="checkbox"/> YES 328</p> <p>0 <input type="checkbox"/> NO</p> <p>2 <input type="checkbox"/> IN PROCESS</p>	<p>MONTH: _____</p> <p>YEAR: 198 _____</p> <p><input type="checkbox"/> IN PROCESS</p> <p>319-322</p>	<p>1 <input type="checkbox"/> BATT/BLANKET 323</p> <p>2 <input type="checkbox"/> LOOSE PARTICLES/LOOSE FILL</p> <p>3 <input type="checkbox"/> FIRM FOAM/FIRM PLASTIC</p> <p>4 <input type="checkbox"/> SPRAYED-IN URETHANE FOAM</p> <p>5 <input type="checkbox"/> OTHER OR COMBINATION (SPECIFY): _____</p> <p>6 <input type="checkbox"/> DON'T KNOW</p>	<p>APPROXIMATE COST:</p> <p>\$ _____ .00</p> <p><input type="checkbox"/> DON'T KNOW 324-327</p>	<p>1 <input type="checkbox"/> LABOR AND MATERIALS</p> <p>2 <input type="checkbox"/> MATERIALS ONLY 328</p> <p>5 <input type="checkbox"/> OTHER (SPECIFY): _____</p>
<p>b. Insulation in the outside walls</p> <p>1 <input type="checkbox"/> YES 329</p> <p>0 <input type="checkbox"/> NO</p> <p>2 <input type="checkbox"/> IN PROCESS</p>	<p>MONTH: _____</p> <p>YEAR: 198 _____</p> <p><input type="checkbox"/> IN PROCESS</p> <p>330-333</p>	<p>1 <input type="checkbox"/> BATT/BLANKET 334</p> <p>2 <input type="checkbox"/> LOOSE PARTICLES/LOOSE FILL</p> <p>3 <input type="checkbox"/> FIRM FOAM/FIRM PLASTIC</p> <p>4 <input type="checkbox"/> SPRAYED-IN URETHANE FOAM</p> <p>5 <input type="checkbox"/> OTHER OR COMBINATION (SPECIFY): _____</p> <p>6 <input type="checkbox"/> DON'T KNOW</p>	<p>APPROXIMATE COST:</p> <p>\$ _____ .00</p> <p><input type="checkbox"/> DON'T KNOW 335-338</p>	<p>1 <input type="checkbox"/> LABOR AND MATERIALS</p> <p>2 <input type="checkbox"/> MATERIALS ONLY 339</p> <p>5 <input type="checkbox"/> OTHER (SPECIFY): _____</p>
<p>c. Insulation in the basement or crawl space below floor of house</p> <p>1 <input type="checkbox"/> YES 340</p> <p>0 <input type="checkbox"/> NO</p> <p>2 <input type="checkbox"/> IN PROCESS</p>	<p>MONTH: _____</p> <p>YEAR: 198 _____</p> <p><input type="checkbox"/> IN PROCESS</p> <p>341-344</p>	<p>1 <input type="checkbox"/> BATT/BLANKET 345</p> <p>2 <input type="checkbox"/> LOOSE PARTICLES/LOOSE FILL</p> <p>3 <input type="checkbox"/> FIRM FOAM/FIRM PLASTIC</p> <p>4 <input type="checkbox"/> SPRAYED-IN URETHANE FOAM</p> <p>5 <input type="checkbox"/> OTHER OR COMBINATION (SPECIFY): _____</p> <p>6 <input type="checkbox"/> DON'T KNOW</p>	<p>APPROXIMATE COST:</p> <p>\$ _____ .00</p> <p><input type="checkbox"/> DON'T KNOW 346-349</p>	<p>1 <input type="checkbox"/> LABOR AND MATERIALS</p> <p>2 <input type="checkbox"/> MATERIALS ONLY 350</p> <p>5 <input type="checkbox"/> OTHER (SPECIFY): _____</p>

**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		IN PROCESS
a. An automatic or clock thermostat	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	361-365
b. Adjustments to thermostat control (recalibration)	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	366-369
c. An additional thermostat (zoned your home)	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	361-365
d. Smaller nozzle or burner or smaller line on furnace	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	366-370
e. Flame retention head burner for furnace (fuel oil)	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	371-375
f. Automatic flue door (vent damper)	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	376-380
g. Electrical or mechanical furnace ignition system (spark ignition)	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	409-410:04 411-415
h. Insulation around heating ducts	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	416-420
i. Insulation around the hot water pipes	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	421-425
j. Insulation around the hot water heater	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	426-430
k. Meter that displays the cost of energy	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	431-435
l. Closeable shutters, plastic sheets, insulating drapes, reflective film	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	436-440
m. Caulking around any windows or doors to the outside	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	441-445
n. Weather stripping around any windows or doors to the outside	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	446-450
o. Heat pump	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	451-455
p. Wood-burning stove	1 [ ]	0 [ ]	2 [ ]	_____	198	[ ]	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

461

IF "YES," ASK:

67. Do you use a heater to heat the water?

1[] YES

0[] NO -- SKIP TO Q. 69

462

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

463-464

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 2[] GAS <span style="float: right;">467</span>	1[] ELECTRIC 2[] GAS <span style="float: right;">468</span>
1[] <span style="float: right;">468</span>	1[] <span style="float: right;">470</span>
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 2[] GAS <span style="float: right;">473</span>	1[] ELECTRIC 2[] GAS <span style="float: right;">475</span>
1[] FROST-FREE <span style="float: right;">474</span>	1[] FROST-FREE <span style="float: right;">476</span>
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

508-510:05

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 511-512
- 06[] COAL OR COKE
- 07[] WOOD
- 21[] OTHER (SPECIFY): \_\_\_\_\_
- 00[] NO COOKING DONE -- SKIP TO Q. 82

### 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 513
- 0[] NO -- SKIP TO Q. 82

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 514
- 3[] THREE OR MORE

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

80. Is your oven electric or gas?

OVEN #1		OVEN #2	
1[] ELECTRIC		1[] ELECTRIC	
2[] GAS	525	2[] GAS	517
1[] YES	526	1[] YES	518
0[] NO		0[] NO	

IF "ELECTRIC," ASK:

81. Is it a microwave oven?

### 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:  533-534  
[ ] 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. 91 535

IF "YES," ASK:

87. How many do you have? NUMBER OF VEHICLES:  536-537

ASK ABOUT EACH VEHICLE.

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

	VEHICLE NUMBER			
	1	2	3	4
STATION WAGON	01 [ ] 538-	02 [ ] 546-	03 [ ] 554-	04 [ ] 562-
AUTOMOBILE	02 [ ] 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 [ ]	22 [ ]	22 [ ]	22 [ ]
	540-541	548-549	556-557	564-565
MAKE	542-543	550-551	558-559	566-567
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	<input type="checkbox"/>	<input type="checkbox"/>	
2			<input type="checkbox"/>	<input type="checkbox"/>	
3			<input type="checkbox"/>	<input type="checkbox"/>	
4			<input type="checkbox"/>	<input type="checkbox"/>	
5			<input type="checkbox"/>	<input type="checkbox"/>	
6			<input type="checkbox"/>	<input type="checkbox"/>	
7			<input type="checkbox"/>	<input type="checkbox"/>	
8			<input type="checkbox"/>	<input type="checkbox"/>	
9			<input type="checkbox"/>	<input type="checkbox"/>	
10			<input type="checkbox"/>	<input type="checkbox"/>	
11			<input type="checkbox"/>	<input type="checkbox"/>	
12			<input type="checkbox"/>	<input type="checkbox"/>	

609-610:06

611-616

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:

... 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

757-758

### 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

759

### 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): \_\_\_\_\_

760

### TAKE BACK EXHIBIT 98

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

- 1  YES
- 0  NO

761



# 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  |

COLLEGE (ACADEMIC YEARS)

- |         |                 |
|---------|-----------------|
| 13[] C1 | 16[] C4         |
| 14[] C2 | 17[] C5         |
| 15[] C3 | 18[] C6 OR MORE |

762-763

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?
- |  |         |
|--|---------|
| 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                    | 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.

- 809-810:08
105. What is the highest grade (or year) that (SPOUSE/PARTNER) attended in school? (SEE INSTRUCTION BELOW.)
- |  |                 |
|--|-----------------|
| 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    |
| COLLEGE (ACADEMIC YEARS)                     |                 |
| 13[] C1                                      | 16[] C4         |
| 14[] C2                                      | 17[] C5         |
| 15[] C3                                      | 18[] C6 OR MORE |
- 811-812
106. Did (SPOUSE/PARTNER) finish that grade (or year)?
- |         |     |
|---------|-----|
| 1[] YES | 813 |
| 0[] NO  |     |
107. At any time in 1980, did (SPOUSE/PARTNER) work for pay at a job or business?
- |                          |     |
|--------------------------|-----|
| 1[] YES                  |     |
| 0[] NO -- SKIP TO Q. 109 | 814 |

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.
- NUMBER OF WEEKS:
- 815-816

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?
- |   |         |
|---|---------|
| 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                    | 817-818 |
| 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 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.)

841-842

### 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

843

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

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

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

844

### IF "RENT," ASK:

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

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

845-848

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? 1  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:  950-951
- 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 952  
2[] MORE THAN ONE COMPANY
- IF "MORE THAN ONE COMPANY," ASK:
122. How many different companies? 2[] TWO 953  
3[] THREE  
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:  954-955
- 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 956  
2[] MORE THAN ONE COMPANY
- IF "MORE THAN ONE," ASK:
125. How many different companies? 2[] TWO 957  
3[] THREE  
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.

#### 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%)  
 2 [ ] 1/2 (34 - 66%) 963  
 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:

967

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

968

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

969

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

NOT AVAILABLE/REFUSED

970







# 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	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: \_\_\_\_\_

071

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.)

1008-1010:10

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	LOT
1011	1012	1013	1014	1016	1018-1018



# Appendix D (Continued)

RECORD MEASUREMENTS ON DIAGRAM TO NEAREST FOOT

RECTANGULAR SHAPE

OR

DIAGRAM OTHER SHAPES

Basement	
1 [ ] Full	2 [ ] Half Basement

First story	
1 [ ] Full story	2 [ ] 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	66



# Appendix D (Continued)

RECORD MEASUREMENTS ON DIAGRAM TO NEAREST FOOT

RECTANGULAR SHAPE

OR

DIAGRAM OTHER SHAPES

Second story  
 1  Full story    2  Half story

Third story  
 1  Full story    2  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	1135	36	37	38	39-40	41-42	43	44-45	46-47	48	49-50	51-52	53	54-55	56-57	58					

1209-1210:12

TOTAL

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



## 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- 1231
INTERVIEWER'S SIGNATURE: _____	DATE: _____		1232- 1235
INTERVIEWER'S I.D. #: _____			1236- 1240



# 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  
 ETA-457E F3153

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* 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 Raem 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-EI10085. 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 DATA

HOUSEHOLD:

If you have any questions, please call collect to Luci Raam 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 X 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-EI10085. 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

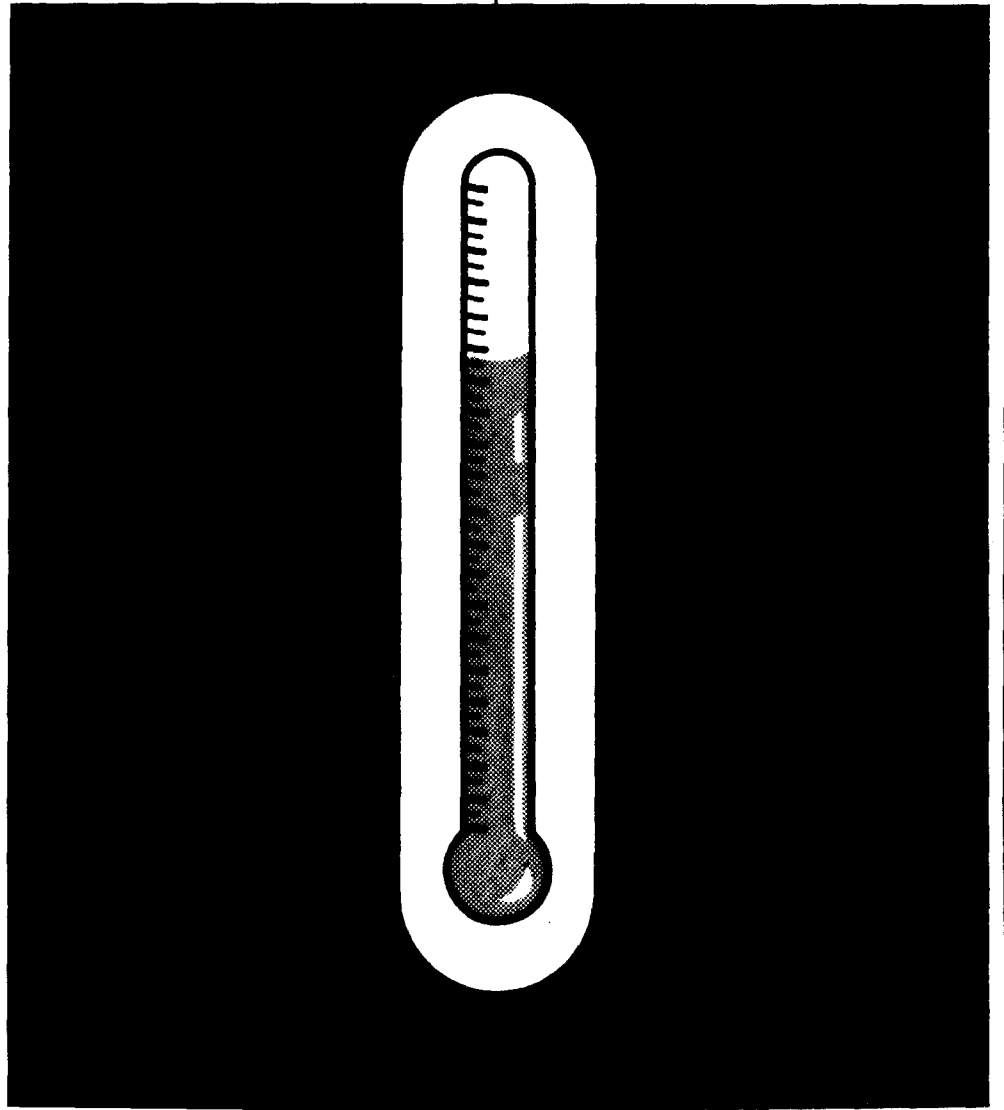
\*Please include state and local sales taxes, where applicable. Exclude merchandise, repairs, or service charges.

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

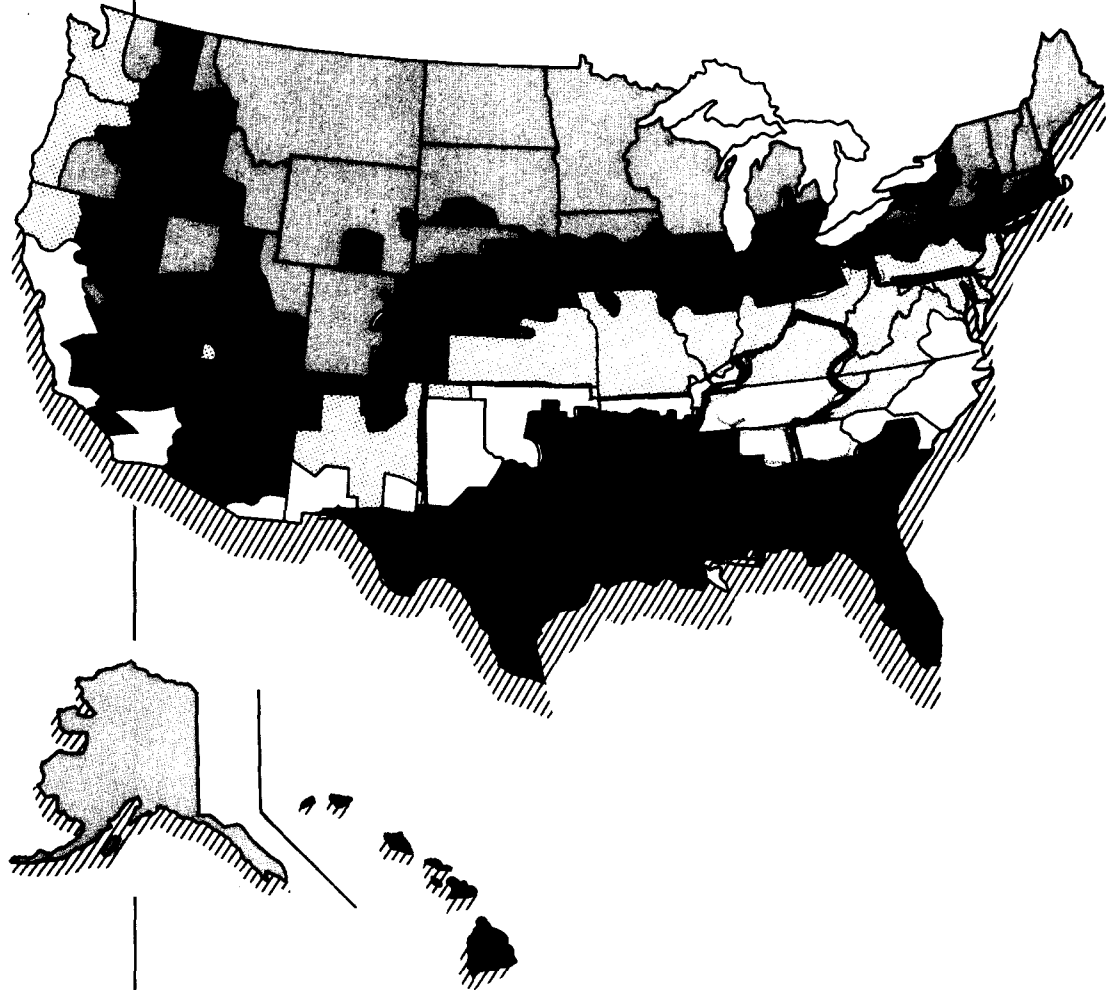











# Appendix E

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



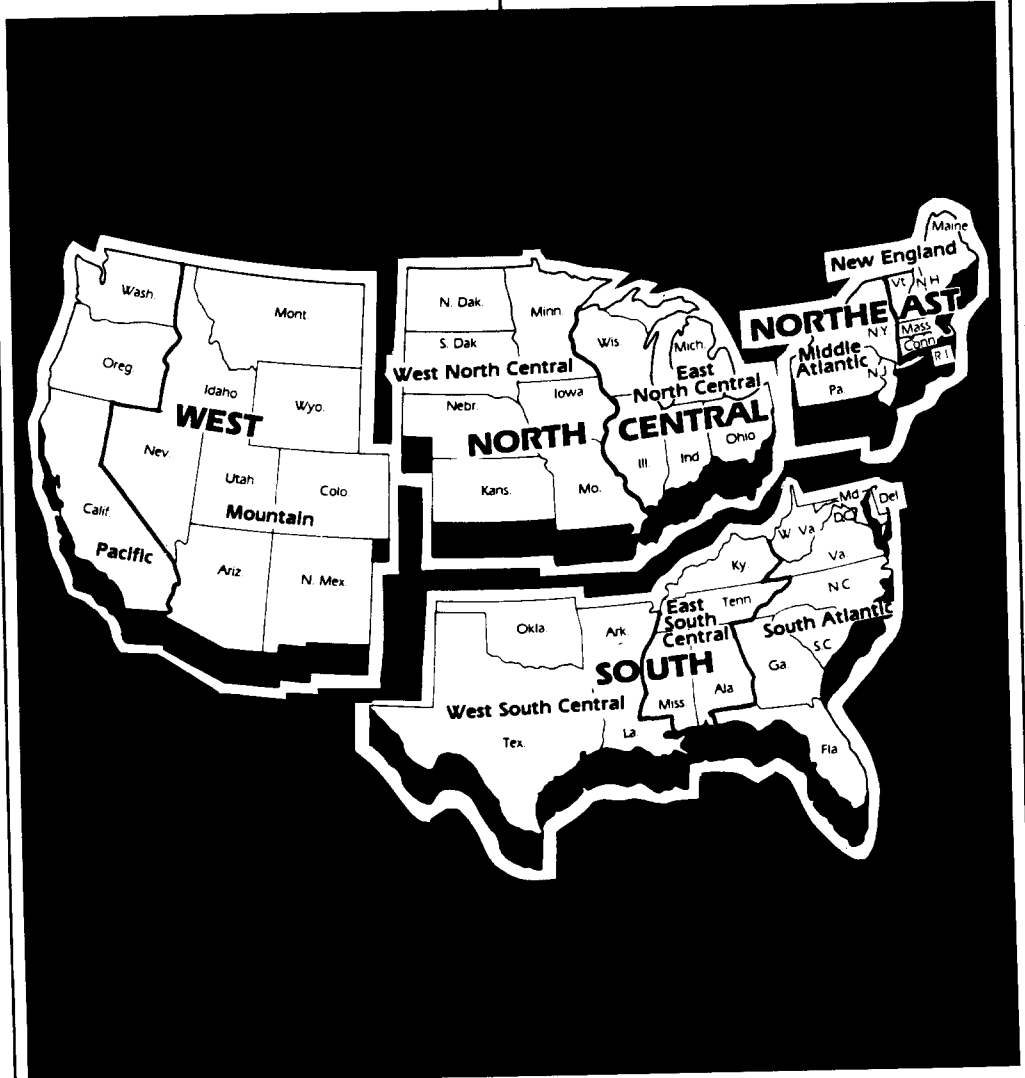
**Weather Zones**

-  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



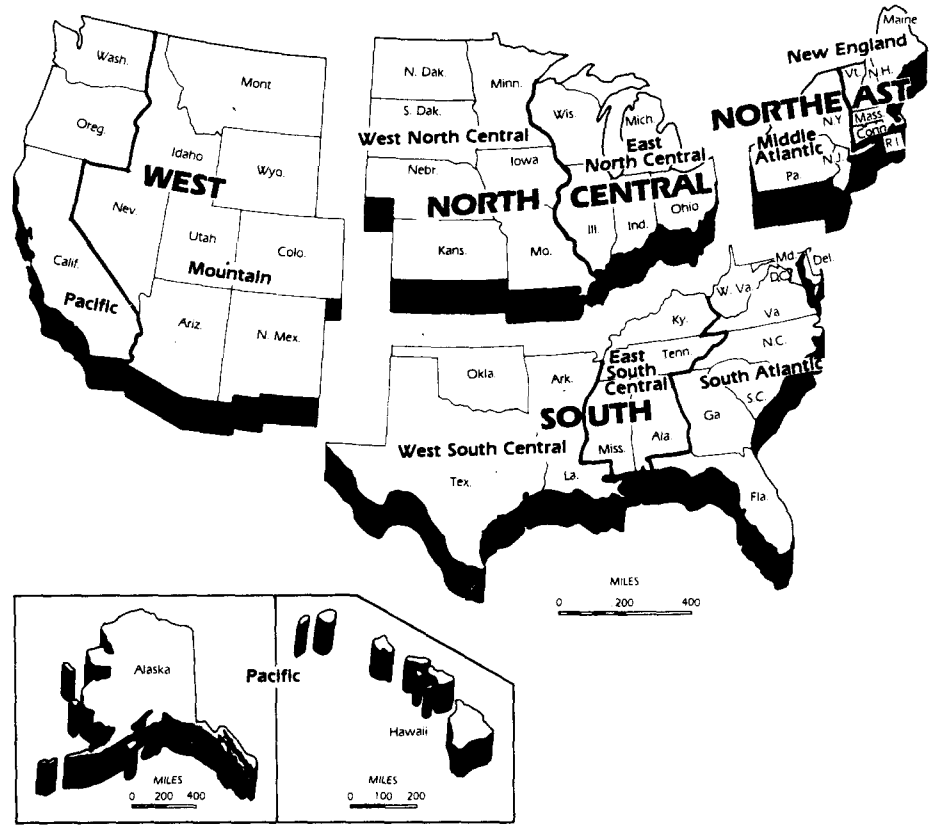




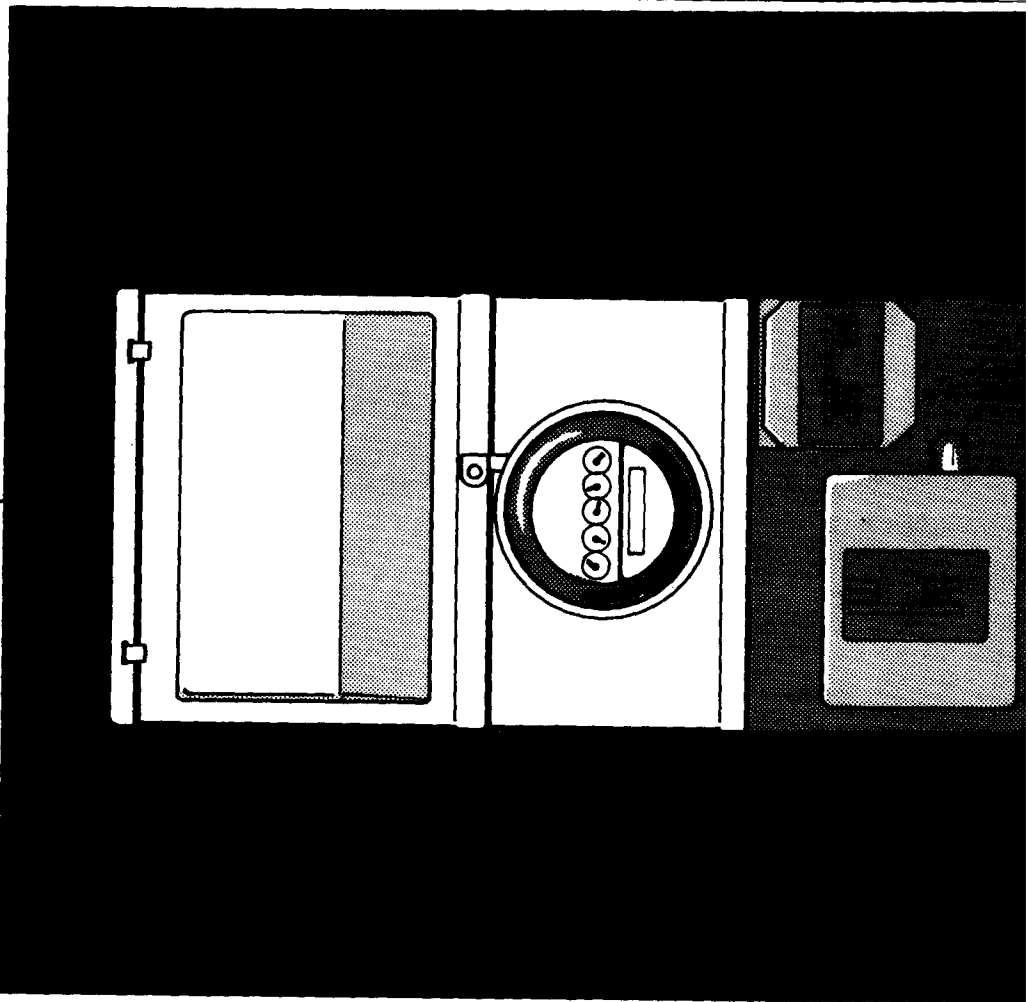


# Appendix F

## U.S. Census Regions and Divisions











# Glossary

**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 fewer 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 as 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.)

**April 1981 through March 1982:** The annual consumption period is a 365-day period beginning as close as possible to April 1, 1981. For natural gas and electricity, the actual beginning date for a household may vary from April 1 in either direction by several weeks depending on that household's billing cycle. For fuel oil or kerosene and LPG, the beginning date is always April 1, but the amounts represent deliveries received by the household during the 365-day period, not gallons consumed. (See Consumed.)

**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



## Glossary (Continued)

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.

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 or 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.

BLOCK RATE

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 million 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.



## Glossary (Continued)

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 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 base, 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.

Constant 1981 Dollar: Expenditures expressed in constant 1981 dollars have the effects of inflation removed. This allows one to compare changes in expenditures without the confounding influence of inflation. To get a constant 1981 dollar figure, the 1978 figures are multiplied by 1.2998, the 1979 figures by 1.1964, and the 1980 figures by 1.0944. The gross national product implicit price deflator (GNP ID) is the basis of constant dollars in this report.

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 company 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.

**END USE**

Refers to the amount of energy used for

space heating, space cooling, water heating

miscellaneous use





## Glossary (Continued)

**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). For households that do not pay directly to their fuel supplier, the expenditures for fuels are estimated and included in the tables.

**Expenditures as a Percentage of Income:** Is determined by taking each household's energy expenditures and dividing it by the family's income. The median value of this statistic over the sample households, weighted to represent the universe, is reported in Table 6. The median percentage is the percentage of income that is spent on energy for the middle household when households are listed according to the percentage they spend on energy. That is, 50 percent of the weighted households in the cell spend a lower percentage on energy than the median value.

The percentage of income spent on energy is overestimated because the calculation uses family income for the year 1980 but the energy expenditure data are for a later year, April 1981 through March 1982. For further discussion of this overestimate, see Appendix C, "Limitations of the Data."

The reader should also be aware that the consumption and expenditures data include households that do not pay directly for the energy used. For 16 percent of the households in 1981, the cost of energy is included in a tenant's rent or paid by someone outside of the household.

**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. 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.



## Glossary (Continued)

Federal Regions: The States are divided into <sup>4</sup>~~10~~ groups as follows:

Region	States
1 <u>NORTHEAST</u>	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut
2	New York, New Jersey, <del>Pennsylvania</del>
3	Delaware, <del>Pennsylvania</del> , Maryland, Virginia, West Virginia, District of Columbia
3 <u>SOUTH</u>	Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida, <del>ARKANSAS, LOUISIANA, TEXAS, OREGON</del>
4	
5 <u>Northcentral</u>	Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, <del>Iowa, Missouri, NORTH DAKOTA, SOUTH DAKOTA, OREGON, KANSAS</del>
6	<del>Louisiana, Arkansas, Texas, Oklahoma, New Mexico</del>
7	<del>Missouri, Iowa, Nebraska, Kansas</del>
4 <u>WEST</u>	Colorado, Utah, <del>North Dakota, South Dakota</del> , Wyoming, Montana, <del>Idaho, New Mexico</del>
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 company 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



## Glossary (Continued)

and 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 12: "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.

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.

Nominal Dollars: is the value of dollars for the year specified. Sometimes called "current dollars," nominal dollars have not been modified to remove the effects of inflation. (See also Constant 1981 Dollars.)

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, Alaskan 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 is paid or contracted for rent. Such units are usually provided in exchange for services rendered or as an allowance or favor from a relative or friend not living in the unit. "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, Table A2, 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 or  $10^{15}$ .

Race: See Origin.

Receive Assistance in Energy Payments: Indicates the household received assistance from the Low-Income Energy Assistance Program (LIEAP) during the Fiscal Year 1981 that began in October 1980 and ended September 1981. The purpose of the program was to provide assistance to low-income households to offset the rising costs of home energy that are excessive in relation to household income. Further information on the program is found in U.S. Department of Health and Human Services, Low-Income Energy Assistance Program: Report to Congress for Fiscal Year 1981, August 31, 1982. Copies are available from

Office of Family Assistance  
Welfare Management Institute  
Transpoint Building  
2100 Second Street, S.W.  
Washington, D.C. 20201





## Glossary (Continued)

Note: There is a basic incongruity of time periods that the readers should note. Recipients of LIEAP were identified in this survey for the period October 1980 up to the time of the interview, which generally was November 1981. The fuel bills for these households, however, were for a somewhat later period--April 1981 through March 1982. Family income, on the other hand, covers the calendar year 1980. For an estimate of how these different time periods affect the figures on percentage of income spent on home energy, see Appendix C, "Limitations of the Data."

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.)

Refrigerators: With no freezer sections are included in the non-frost-free category. "Frost-free" 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.

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. For details on how the measurement was made and how the data were treated, see Appendix B.



## Glossary (Continued)

"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 Convector: 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.

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 company 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 in an enclosed porch, provided the respondent's household had access to it.



## Glossary (Continued)

**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 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.

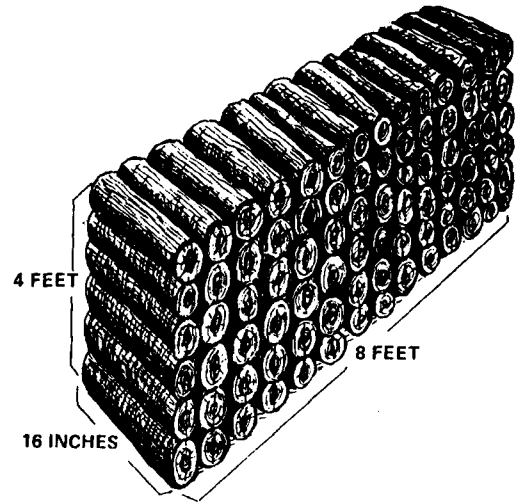
Other factors that make it difficult to estimate the Btu value of the wood burned is that the amount of empty space between the stacked logs may vary from 12 to 40 percent of the volume. The moisture content may vary from 20 percent in dried wood to 50 percent in green wood. Moisture reduces the useful 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.



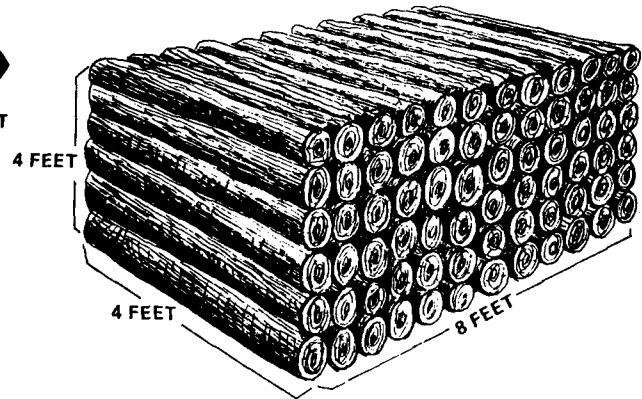
## Glossary (Continued)

### Size and Volume Contained In a Rack and a Cord of Firewood

**RACK** →  
CONTAINS  
43 CUBIC FEET



**CORD** →  
CONTAINS  
128 CUBIC FEET





Materials on the Residential Energy Consumption Survey

1. Residential Energy Consumption Survey: Characteristics of the Housing Stock and Households, 1978; February 1980, DOE/EIA-0207/2, GPO Stock No. 061-003-00093-2, \$4.25.
2. Residential Energy Consumption Survey: Conservation; February 1980, DOE/EIA-0207/3, GPO Stock No. 061-003-00087-8, \$6.00.
3. Residential Energy Consumption Survey: Consumption and Expenditures, April 1978 to March 1979; July 1980, DOE/EIA-0207/5, GPO Stock No. 061-003-00131-9, \$6.50.
4. Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures (Part 1: National Data Including Conservation); April 1981, DOE/EIA-0262/1, GPO Stock No. 061-003-00191-2, \$5.50.
5. Residential Energy Consumption Survey: 1978-1980 Consumption and Expenditures (Part 2: Regional Data); June 1981, DOE/EIA-0262/2, \$8.50.
6. National Interim Energy Consumption Survey: Exploring the Variability in Energy Consumption; July 1981, DOE/EIA-0272, GPO Stock No. 061-003-00205-6, \$4.25.
7. Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, Part 2: Regional Data; June 1983, DOE/EIA-0321/2, GPO Stock No. 061-003-00319-2, \$7.00.
8. Residential Energy Consumption Survey: Housing Characteristics, 1980; June 1982, DOE/EIA-0314, GPO Stock No. 061-003-00256-1, \$11.00.
9. Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, Part 1: National Data; September 1982, DOE/EIA-0321/1, GPO Stock No. 061-003-00278-1, \$7.50.
10. Residential Energy Consumption Survey: Housing Characteristics, 1981; August 1983, DOE/EIA-0314(81), GPO Stock No. 061-003-00330-3, \$6.50.

Copies of the above reports are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, June 1979 to December 1980; April 1982; DOE/EIA-0319. Copies are available free of charge from the National Energy Information Center, 1F-048, Forrestal Building, U.S. Department of Energy, Washington, DC 20585.

Copies of the household data files on magnetic tape with name, address, and other potentially identifying data removed, are available from the National Technical Information Service, Computer Products Division, 5285 Port Royal Road, Springfield, VA 22161. Telephone: 703-487-4808.



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