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Residential Energy Consumption Survey:

Consumption and Expenditures, April 1984 Through March 1985

Part 1:
National Data

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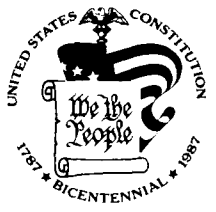

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Residential Energy Consumption Survey:

Consumption and Expenditures, April 1984 Through March 1985

Part 1: National Data

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

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Executive Summary

This report presents data collected in the 1984 Residential Energy Consumption Survey (RECS) conducted by the Energy Information Administration (EIA). The 1984 RECS was the sixth national survey of U.S. households and their energy suppliers. The purpose of these surveys is to provide baseline information on how households use energy. Households in all types of housing units--single family homes (including townhouses), apartments, and mobile homes--were chosen to participate. Data from the surveys are available to the public in published reports such as this one and on public-use data tapes. [1]

The report presents data on the U.S. consumption and expenditures for residential use of these "major fuels"--natural gas, electricity, fuel oil, kerosene, and liquefied petroleum gas (LPG)--from April 1984 through March 1985. These data are presented in tables in the Detailed Statistics section of this report. Except for kerosene and wood fuel, the consumption and expenditures data (Tables 10 to 26) are based on actual household bills obtained, with the permission of the household, from the companies supplying energy to the household. Purchases of kerosene are based on respondent reports because records of "cash and carry" purchases of kerosene for individual households are usually unavailable. Data on the consumption of wood fuel (Table 27) covers the 12-month period ending November 1984 and are based on respondent recall of the amount of wood burned during the 12-month period. Both the kerosene and wood consumption data are subject to memory errors and other reporting errors.

This report does not cover household use of motor fuel, which is reported separately.[2]

The information in this report should be of use to public and private planners, housing construction concerns, suppliers of energy, and manufacturers and suppliers of home appliances. The sections describing RECS findings and the detailed statistics can also provide officials, businesses, and consumers with an overview of current patterns in the use of energy in U.S. homes.

Following are highlights from the 1984 RECS data analysis. These topics are detailed in subsequent sections.

- **Consumption of Fuels**: The average consumption per household of major fuels by U.S. households was 105 million Btu for the 12-month period from April 1984 through March 1985. This level of consumption was not statistically significantly different from the 103 million Btu for the period April 1982 through March 1983.
- **Use of Wood Fuel**: In 1984, 49.0 million cords of wood fuel were burned in U.S. households, which represent one quadrillion Btu of energy. Among the 24.0 million households that used wood fuel, a large majority (64.5 percent) did not receive a significant input of heat from the wood fuel they burn. Significant input is defined in this report as "contributing more than one-third of the home heat."
- **Use of Electricity**: For every year since 1978, when RECS was first conducted, the RECS estimate of per-household use of electricity has declined. In most years, the decrease has not been statistically significant but the overall trend has been unmistakable and potentially of great significance.
- **Use of Kerosene**: Most kerosene is purchased in the South and Northeast Census Regions. Average annual kerosene purchases per household are larger among lower income households who are more likely to use it as their main source of heat than are higher income groups.

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

[2]The most recent report on motor fuel using sample households from the 1982 RECS survey is *Residential Transportation Energy Consumption Survey: Consumption Patterns of Household Vehicles, 1983*, DOE/EIA-0464(83). A report is in preparation for 1985 (for release in Spring 1987) based on data collected from a sample of 1984 RECS households.

Readers may refer to the appendices that contain information on how the survey was conducted, how the floorspace of homes is measured, the quality of the data, the 1984 survey forms, maps of U.S. weather zones and Census regions, a bibliography of relevant published works, and a methodological study of the savings of conventional heating fuels through the use of wood fuel. A glossary of terms used in this report is also provided.

Major Fuels

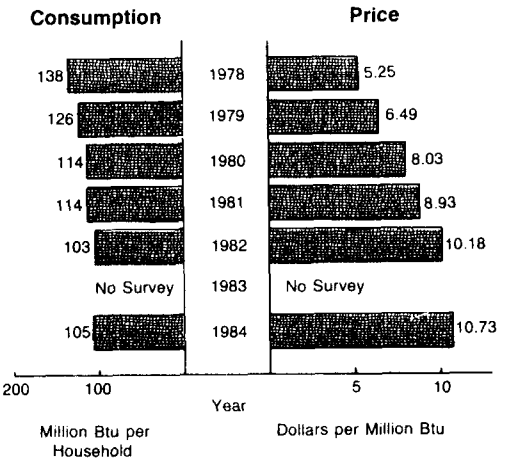
Consumption Per Household in 1984 Remains Close to Low Level of 1982

U.S. households used an average of 104.7 (±3.0)[3] million Btu of major fuels from April 1984 through March 1985[4] for such purposes as heating and cooling the home, heating water for washing, refrigerating foods, cooking foods, and operating other household appliances. The major fuels include natural gas, electricity, fuel oil, kerosene, and LPG. The average level of consumption of major fuels is not significantly different statistically from the 1982 level of 102.9 (±3.5) which represented the lowest average consumption level measured by RECS from 1978 to 1982 (Figure 1).[5]

The average price of major fuels rose from $10.18 (±0.26) per million Btu in 1982 to $10.73 (±0.26) in 1984 leading to an increase in per household expenditures for the major fuels. U.S. households paid an average of $1,123 (±27) in 1984 for the fuels used in the home (Table 15), an increase of $75 (±44) over the amount they paid in 1982--$1,048 (±36).

The total consumption of major fuels for 1984 was 9.0 (±0.3) quadrillion Btu (Table 10). For 1982, the figure was 8.6 (±0.4) quadrillion Btu. Total expenditures for these fuels in 1984 was 97.0 (±2.3) billion dollars, which compares to the 1982 figure of 87.8 (±4.2) billion dollars.

Figure 1. Average Consumption and Average Price of Major Fuels for U.S. Households, 1978-1982, 1984



Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457. The 1978 to 1982 and 1984 Residential Energy Consumption Surveys.

[3]The ± value 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. A 95-percent confidence interval can be approximated by taking two standard errors and subtracting this value from the statistic to obtain the lower end of the interval. Adding two standard errors to the statistic gives the upper end interval. A 95-percent confidence interval means that if the survey were repeated under the same conditions using all possible samples, 95 percent of the surveys would yield intervals that contained the true value of the statistic.

[4]The 12-month period from April 1984 through March 1985 will be referred to as 1984 hereafter in the report. Similarly, 1978 refers to April 1978 through March 1979 and likewise for 1979, 1980, 1981, and 1982.

[5]A detailed analysis of trends covering the years from 1978 through 1984 is contained in a forthcoming publication entitled i *Trends in Consumption and Expenditures, 1978-1984.*

Wood Fuel--Consumption of a Renewable Fuel

Statistics on consumption of renewable energy sources are difficult to find--renewable energy is often obtained through a variety of sources and, hence, cannot be measured by sales transactions. The RECS contains information about consumption of one important renewable energy source used in U.S. homes--wood fuel. Data on the number of cords of wood burned in U.S. homes have been published in the last several reports on RECS surveys.[6] The amount of wood fuel burned has not changed significantly from the amount burned in 1982. In 1984, 49.0 ($\pm$7.0) million cords of wood were consumed. (Table 27). Based on a conversion factor of 20 million Btu per cord, this represents one quadrillion Btu, a significant amount of energy when compared to the 9 quadrillion Btu consumed by the residential sector in 1984 (Table 10).

The one quadrillion Btu of wood fuel represents "site energy"--the energy potential in the wood fuel that, for wood fuel, is likely to be considerably greater than the "useful energy" that results from the typical inefficient combustion of wood fuel in the home.[7] In some cases, burning wood in a fireplace may actually increase the amount of nonwood fuel used to heat the home as the draft in the chimney removes heated room air as well as the smoke and combustion by-products from the burning wood. A more realistic estimate of the number of households that get useful energy from using wood fuel is the subject of the following analysis.

Wood Fuel Provides Marginal Heating Value to Most Homes

A large majority of U.S. households do not receive a significant input of useful heat from the wood fuel they burn (Table 1). According to their own reports, the 64.5 ($\pm$3.3) percent of the wood-using households say that less than one-third of their home heat comes from the wood fuel they burn. Because most of these households burn wood in a fireplace, it is not unreasonable to assume that this use of wood fuel may be primarily for aesthetic purposes, not intended to reduce the use of nonwood heating fuels as much as to create a desirable atmosphere.[8] However, ignoring the benefits that these 15.5 ($\pm$1.3) million households received from their use of wood fuel may not accurately reflect the real conversion of wood into useful heat, especially for those homes in this group that use more efficient fireplaces--those with glass doors, outside air intake, and a venting system to circulate room air behind the fireplace where it is heated and then returned to the room. RECS does not collect data on these fireplace features, so the households using more efficient fireplaces cannot be identified.

The "significant users" of wood fuel are principally the 6.5 ($\pm$0.9) million households that use wood as their main heating fuel, together with the 1.8 ($\pm$0.5) million who use it as a secondary heating fuel and report that wood fuel supplies more than one-third of their home heat (Figure 2).

[6]See *Residential Energy Consumption Survey: Housing Characteristics*, DOE/EIA-0314 for the years 1980, 1981, 1982, and 1984.

[7]The difference between "site energy" and "useful energy" is the loss of energy in the combustion process. "Useful energy" for wood fuel represents the heat that remains in the home, while the loss of energy represents heat and unburned gases that go up the chimney.

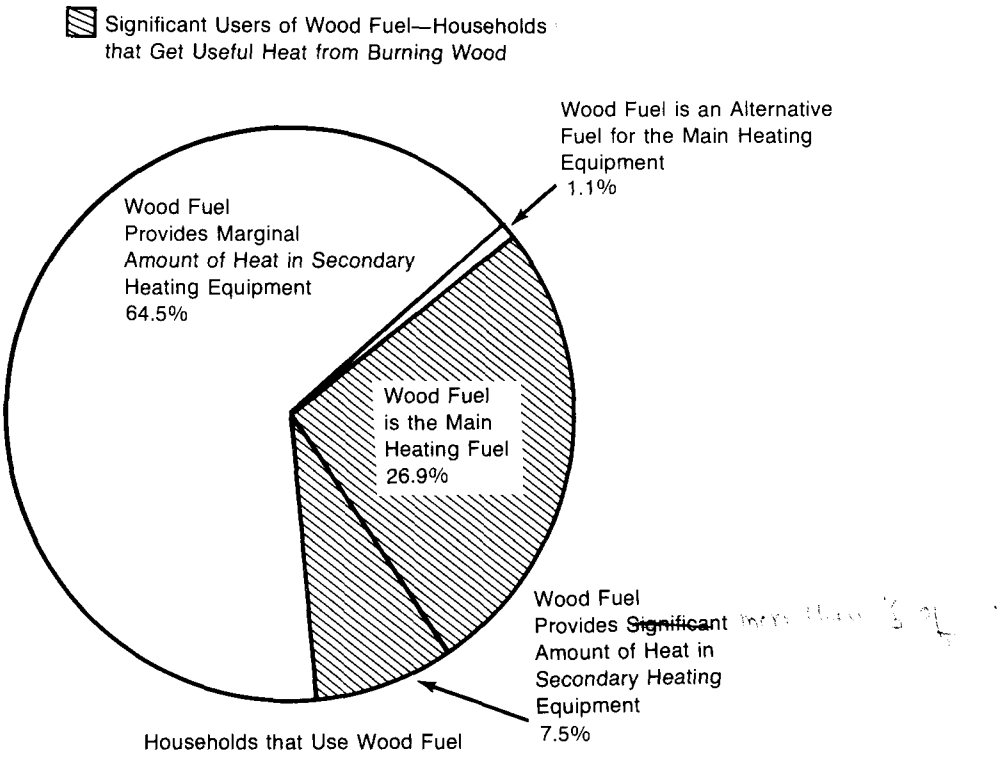
[8]Fireplaces are poor heaters for several reasons. The draft created by the fire draws warm air from the room and up the chimney. Gases released from the wood are not completely burned before they are released up the chimney. Additional room heat is lost if the damper is left open after the fire dies out.

Table 1. U.S. Households Using Wood Fuel

Wood Fuel Is Used:	Number of Households	
	Million	Percent
As the Main Heating Fuel	6.5	26.9
In Secondary Heating Equipment and Wood Provides More than One-third of All Heat	1.8	7.5
Less than One-third of All Heat	15.5	64.5
As an Alternative Heating Fuel in the Main Heating Equipment	.3	1.1
Total	**24.0**	**100.0**

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Figure 2. Uses of Wood Fuel in Home Heating



Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

A large majority of significant users of wood fuel use another heating fuel in conjunction with wood (Table 2). Among this group, 2.3 (±0.5) million use electricity in conjunction with wood; 1.5 (±0.4) million use natural gas; 1.1 (±0.4) million, fuel oil; and 0.9 (±0.3) million, LPG. These households are the easiest to identify as most likely to be saving electricity, natural gas, fuel oil or LPG by their use of wood fuel as a heating fuel.[9] The one fuel with the largest aggregate savings is likely to be electricity in view of the relatively large number of households heating with both wood fuel and electricity.

Table 2. Other Heating Fuels Used by Significant Wood Users
(Million Households)

Other Heating Fuel	Wood Is Main Heating Fuel	Wood Is Significant Secondary Heating Fuel	Total
Electricity	1.8	0.5	2.3
Natural Gas	.8	.7	1.5
Fuel Oil	.8	.3	1.1
LPG	.7	.2	.9
Kerosene/Other	.5	.1	.6
None	1.7	--	1.7
Total	**6.5**	**1.8**	**8.3**

-- Data not applicable.
Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

The 1.7 (±0.5) million households that have no backup energy source for wood may be termed the dedicated wood-using household. Since no other fuels are used for heating, there is scant information available in the RECS for determining what other fuels might be used for heating in the absence of wood fuel.

Backup Equipment for Wood Is Often a Central Heating System

Only a few generalizations apply to all the 5.8 (±0.9) million households that use wood fuel as one of their heating fuels (Table 3). Most live in single-family housing units and most own their homes. This is the group of households that may be the most likely to reduce their use of wood fuel in the face of events that would make use of wood fuel less attractive, since they have an alternative heating system that is in place and being used.

Other characteristics apply to a particular group of these households as defined by their main and secondary heating fuels. One of the more interesting characteristics applies to households using a conventional fuel for backup heating. A large majority of these households have a central heating system for backup heating equipment. For example, of the 0.8 (±0.3) million households using natural gas as a secondary heating fuel, 90 (±11) percent report that the natural gas is burned in a central warm air furnace or other central system. Because the backup equipment is a central system, it is reasonable to assume that the wood heating equipment--most often a heating stove--has usurped the role of the central heating system and now provides the main source of heat for the home.

[9]Estimated savings of electricity, natural gas, fuel oil and LPG by the 5.8 million households are presented in Appendix H, "Estimated Savings in Conventional Fuels from Use of Wood Fuel."

Table 3. Characteristics of Significant Wood-Using Households that also Heat with Electricity, Natural Gas, Fuel Oil, or LPG

Heating Fuel Is Main: / Secondary: Characteristics	Wood / Electricity	Electricity / Wood[a]	Wood / Natural Gas	Natural Gas / Wood[a]	Wood / Fuel Oil	Fuel Oil / Wood[a]	Wood / LPG	LPG / Wood[a]
Number of Households (million)	1.8	0.5	0.8	0.7	0.8	0.3	0.7	0.2
Measured Size of Residence (square feet)	1,586	1,739	1,559	1,975	1,781	2,483	1,384	1,346
Heating-Degree Days, April 1984-March 1985	5,104	3,964	5,046	4,797	6,046	6,276	5,270	5,318
Percent with Central System[b] for								
Main Heating Fuel	8.8	91.1	Q	94.5	1.2	100.0	1.0	70.8
Secondary Heating Fuel	66.5	4.8	90.2	1.6	97.3	5.6	66.3	Q
Percent with 1984 Income of $35,000 or More	20.3	35.8	21.9	44.0	17.0	40.5	11.1	12.0
Percent Metropoliton	45.0	67.6	67.9	75.4	55.5	56.5	30.4	40.6
Percent Owners	83.3	87.3	86.6	89.0	88.5	92.0	84.8	63.1
Housing Structure (percent)								
Single-Family	91.4	99.0	86.2	99.2	98.9	93.1	85.0	95.2
Apartment	2.0	1.0	8.9	NC	NC	6.9	1.0	NC
Mobile Home	6.6	NC	5.0	.8	1.1	NC	14.0	4.8
Census Region (percent)								
Northeast	12.4	11.8	13.6	13.0	51.4	69.2	3.3	Q
North Central	10.5	17.8	22.1	15.1	19.3	Q	44.2	55.2
South	50.7	50.6	32.0	26.0	22.5	22.3	42.7	35.1
West	26.4	19.9	32.3	45.9	6.9	8.4	9.9	9.8

Q = Data withheld because of large variance.
NC = No cases in sample.
[a] Wood provides one-third or more of the home heat, as reported by respondents.
[b] Central system is hot water pipes in floor, steam or hot water system, central warm air furnace, heat pump, built-in electric units or a floor, wall, or pipeless furnace.
Note: Data may not sum to totals due to rounding.
Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Electricity

Consumption of Electricity Per Household Declines

One of the most important findings to emerge from the six RECS surveys is evidence that households were using less electricity per household in 1984 than they were in 1978 or even in 1980 (Table 4).[10] This finding is important because growth in demand for electricity has assumed that per-household consumption of electricity is growing, albeit at a slower rate than at times in the past.[11] The challenge to the assumption that per-household consumption of electricity was growing over the period of 1980 through 1984 and the implied challenge to electricity demand projections based, in part, on this assumption has implications for energy planners.

Table 4. Declining Consumption of Electricity per Household, 1978-1984

Year	Kilowatthour	Two Standard Errors	Million Btu	Two Standard Errors
1978	9,450	660	32.2	2.3
1979	9,150	550	31.2	1.9
1980	8,840	340	30.1	1.1
1981	8,750	320	29.8	1.1
1982	8,480	410	28.9	1.4
1984	8,440	320	28.8	1.1

Note: No survey was done in 1983.
Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1978 to 1982, 1984 Residential Energy Consumption Survey.

The conclusion that electricity use per household has declined is all the more noteworthy because the RECS data also indicate more widespread use of some major electric appliances in the home (Table 5). The microwave oven has gained rapid acceptance in a short period of time as its use jumped from 8 (±1) percent of all U.S. households in 1978 to 34 (±2) percent in 1984, a gain of 26 (±2) percentage points within the total potential household market. The microwave oven, however, uses a small amount of electricity over the year. Color television receivers also use a relatively small amount of electricity and showed gains of 6 (±3) percentage points from 1978 to 1984; but unlike the microwave oven or color television receiver, the central air conditioner uses a considerable amount of electricity, out-distanced only by an electric furnace and electric water heater (Table 5). Most of the other major appliances show no increased use, at least within the statistical limitations of the size of the RECS sample.

By itself, an increase in the number of appliances used would tend to increase electricity consumption even if the appliances added were small energy users. However, a number of improvements have been made in recent years in the efficiency of many major appliances. One type of efficiency improvement is the introduction of a new technology such as the microwave oven. The heat pump is another relatively new technology that is becoming more prevalent as a central air-conditioning system. The use of heat pumps gained 6 (±3) percentage points among homes with central air conditioning from 1978 to 1984.[12] Other types of efficiency improvements have been made to existing types of equipment.[13] All these improvements would counterbalance whatever increase in electricity demand may occur from an increase in the number of appliances in the home.

[10]A table showing the data for all possible comparisons among the six survey estimates is presented in Appendix C, "Quality of the Data," in the section entitled, "Multiple Comparisons of RECS Estimates of Electricity Consumption." See Table C10. See "Comparison of RECS and Edison Electric Institute Data on Electricity Consumption" in Appendix C of this report, which states that both data series indicate that per-unit consumption has not increased, but indicates disagreement as to whether per-unit consumption remained steady or declined from 1978 to 1984.

[11]See Energy Information Administration, *Analysis of Growth in Electricity Demand, 1980-1984* (DOE/EIA-0476), p.14.

[12]See Energy Information Administration, *Residential Energy Consumption Survey: Housing Characteristics 1984* (DOE/EIA-0314(84)) October 1986, p.7.

[13]See American Council for an Energy-Efficient Economy, *Energy Efficiency in Buildings: Progress and Promise* (1986, Washington, D.C.) which presents statistics on recent improvements in the energy efficiency for major uses of electricity in the home.

Table 5. Major Uses of Electricity in U.S. Homes, 1978 and 1984

Use of Electricity	1978	1984	Change from 1978 to 1984	Estimated Annual Consumption of Electricity per Unit (kWh)[a]
	(percent of households)			
Microwave Oven	8	34	[b] + 26	100
Color Television	[c] 82	88	[b] + 6	320
Central Air Conditioning	23	29	[b] + 6	3,000
Dishwasher	35	38	+ 3	165
Freezer	35	37	+ 2	1,050
Main Water Heating Fuel	33	34	+ 1	5,400
Main Space Heating Fuel	16	17	+ 1	23,000
Clothes Dryer	45	46	+ 1	993
Second Refrigerator	14	12	-2	1,500

[a] Annual consumption figures are from the Edison Electric Institute except for central air conditioner, water heater and electric furnace. Figures for high efficiency models of these kinds of equipment were prepared by the Test and Evaluation Branch, Office of Conservation and Renewable Energy, U.S. Department of Energy.

[b] Statistically significant change at the 95 percent confidence level.

[c] Data are for 1980. Data were not collected for color television usage in 1978.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1978 and 1984 Residential Energy Consumption Surveys.

Kerosene

Households Spent Nearly a Billion Dollars on Kerosene in 1984

U.S. households paid out 921 (±239) million dollars for kerosene in 1984 (Table 6). Half (54.7 [±11.9] percent) of these expenditures were made by households earning less than $15,000 in 1984 although only 36.3 (±5.9) percent of all kerosene users fall below this income level. The reason for this disproportionate share of expenditures for lower-income groups is discussed below. The average price paid for kerosene in 1984 was $1.21 (±0.02) per gallon.

Table 6. U.S. Residential Purchases of and Expenditures for Kerosene--April 1984 Through March 1985

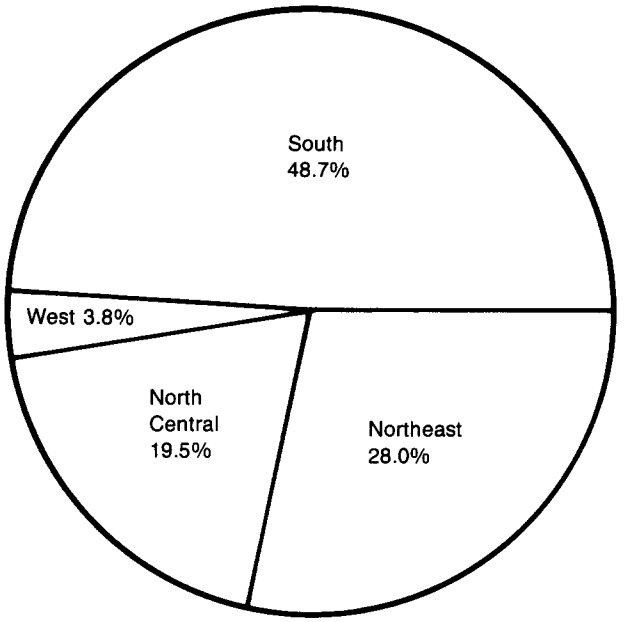
Household Characteristics	Number of Households (million)	Total Amount Purchased		Average Consumption (gallons per household)	Expenditures (million dollars)	Price (dollars per gallon)
		(trillion Btu)	(million gallons)			
Total Households	6.4	102	759	119	921	1.21
Census Region						
Northeast	1.8	37	271	152	328	1.21
North Central	1.2	10	71	57	90	1.27
South	3.1	55	406	130	489	1.21
West	.2	1	11	44	14	1.28
Family Income						
Less than $5,000	.5	18	130	246	155	1.19
$5,000 to $9,999	1.0	27	198	207	234	1.18
$10,000 to $14,999	.8	13	95	113	117	1.23
$15,000 to $19,999	.7	16	120	169	144	1.21
$20,000 to $24,999	.7	7	53	71	66	1.25
$25,000 to $34,999	1.1	10	73	68	91	1.25
$35,000 or More	1.5	12	90	59	114	1.26

Note: Data may not sum to totals due to rounding.
Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

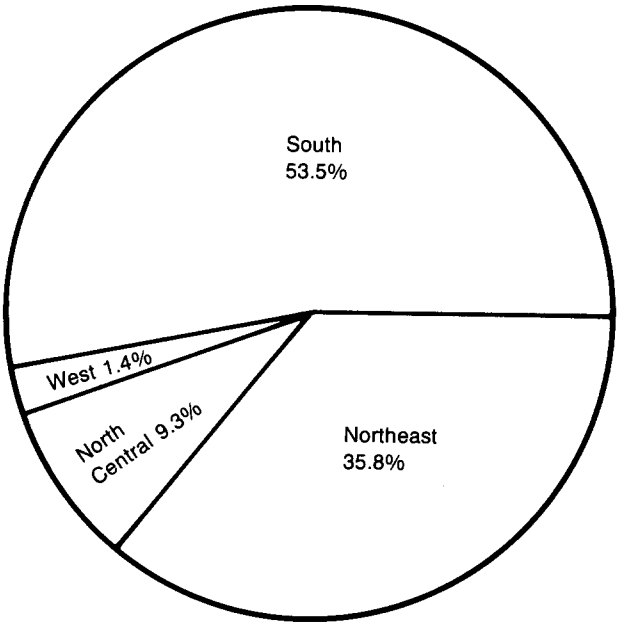
Most Kerosene Is Purchased in the South and Northeast Census Regions

Most residential kerosene (89.3 [±10.7] percent) was purchased in the South and Northeast Census Regions (Table 6, Figure 3). Of a total 759 (±197) *million gallons purchased for home use between April* 1984 *and March* 1985, 406 (±137) million gallons were purchased in the South Region and 271 (±112) million gallons were purchased in the Northeast Region. The remainder, 82 (±36) million gallons, were purchased in the West and North Central Regions. One reason for this greater consumption in the South and Northeast is that these two regions contain the majority of households that use kerosene (76.7 [±6.1] percent), but another reason is that the consumption per household is also greater in these regions (Table 6).

Figure 3. Use of Kerosene in U.S. Households by Census Region



Households Using Kerosene



Gallons of Kerosene Purchased

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Portable Kerosene Heaters Have Increased in Popularity

Portable kerosene heaters have become more common in recent years. The number of households with one or more of these heating units increased from 2.8 (±0.6) million households in 1982 to 5.3 (±0.8) million households in 1984. These heaters can be used to heat a small part of the home to a comfortable temperature while the remainder of the home is cooler. This kind of heating strategy may save total heating costs by heating only part of the home to a desired comfort level.

Among households that have one or more portable kerosene heaters, the average annual purchase of kerosene is among the highest in the South Region--95 (±27) gallons (Table 7). The fact that average kerosene usage in the South Region, where the weather is mild, is not lower than the average usage in the North Regions, suggests that the way these heaters are used may be more important than the weather in determining the purchase of kerosene. For example, some households use their portable kerosene heaters as their main source of heat. Most (80 [±15] percent) of these households are in the South Region, which helps explain why average purchases of kerosene in the South Region are among the highest in the country. Households reporting the use of a portable kerosene heater as the main heating source, purchased an average of 160 (±72) gallons in 1984, while those reporting use of the heater as a secondary heating source averaged 68 (±15) gallons purchased during the year (Table 8).

Table 7. Purchases of Kerosene by Households with Portable Kerosene Heaters--April 1984 Through March 1985

Census Region	Number of Households (million)	Total Consumption (million gallons)	Average Consumption (gallons per household)
United States	5.3	417	79
Northeast	1.3	101	75
North Central	1.2	70	57
South	2.5	239	95
West	.2	7	36

Note: Data may not sum to totals due to rounding.
Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Table 8. Use of Kerosene Among Households Having One or More Portable Kerosene Heaters in November 1984

	Gallons Purchased April 1984 through March 1985		
		Households Using the Heaters as:	
	All Households	Main Source of Heat	Secondary Source of Heat
Number of Households (millions)	5.3	0.6	4.7
Average Gallons Purchased	79	160	68
Percentage of Households Purchasing--			
Fewer than 25 gallons	39	2	44
25 to 49 gallons	17	18	17
50 to 99 gallons	21	24	21
100 to 499 gallons	20	54	16
500 or more gallons	3	3	3
Total	100	100	100

Note: Data may not sum to totals due to rounding.
Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Kerosene Equally Popular Among All Income Levels, But Average Consumption Is Lowest Among Higher Income Levels

The use of kerosene occurred at essentially the same rate among all income levels of the U.S. society from April 1984 through March 1985 (Table 9). Among the lowest income group, 6.7 (±2.8) percent used kerosene and among the highest income group, 8.2 (±2.1) percent used kerosene. Roughly half (52.6 [±7.3] percent) of all kerosene-using households earned $20,000 or more in 1984. These facts indicate that kerosene is equally likely to be used as a heating fuel in the lower- and higher-income groups.

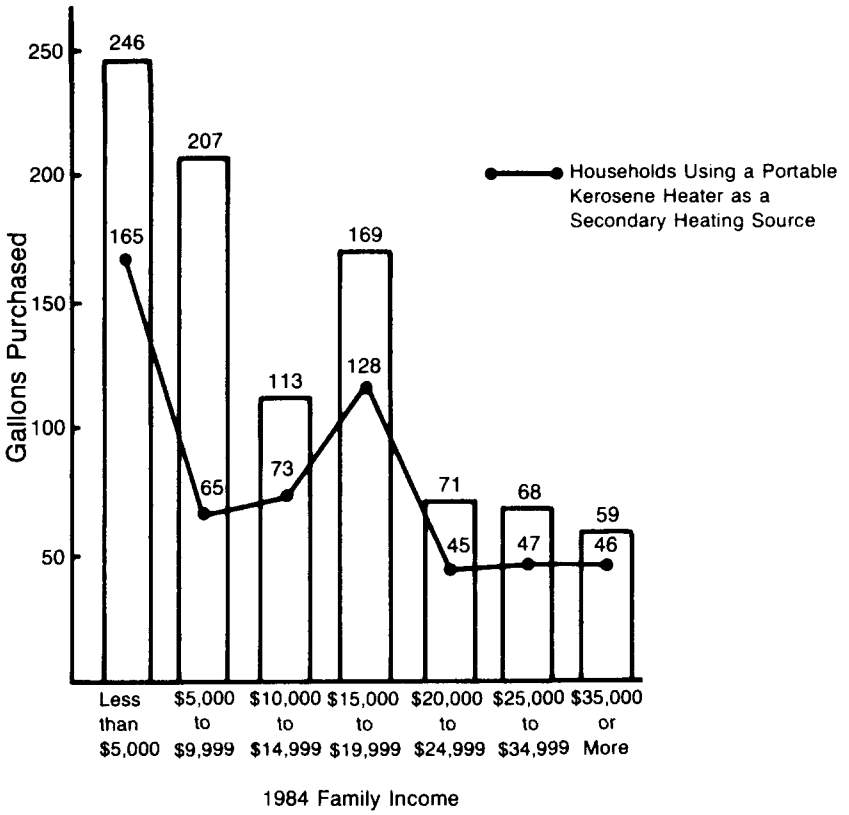
What does distinguish the income groups is the amount of kerosene each purchases. Although households earning $20,000 or more made up about half of all kerosene-using households, as a group they purchased only 28.5 (±10.0) percent of the kerosene during the survey period. The average number of gallons of kerosene purchased decreases from the lower- to higher-income groups (Figure 4). One reason for this is that lower-income groups used kerosene as a main heating fuel more often than the higher-income groups. Lower-income households also purchased more kerosene for use in portable kerosene heaters as a secondary source of heat. Low-income groups purchased an average of 101 (±31) gallons in 1984 versus 46 (±12) gallons for higher-income households ($20,000 and over), indicating a greater reliance on kerosene as a secondary source of heating among the low-income groups.

Table 9. Use of Kerosene by Income Groups, April 1984 Through March 1985

Income Group	Percentage of Income Group Using Kerosene	Percentage of Kerosene Users	Percentage of Total Gallons of Kerosene Purchased
Total	7.4	100.0	100.0
1984 Family Income			
Less than $5,000	6.7	8.2	17.1
$5,000 to $9,999	6.8	14.9	26.1
$10,000 to $14,999	6.4	13.2	12.5
$15,000 to $19,999	7.9	11.1	15.8
$20,000 to $24,999	8.8	11.6	6.9
$25,000 to $34,999	7.0	16.9	9.7
$35,000 or More	8.2	24.1	11.9

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Figure 4. Average Gallons of Kerosene Purchased by Income Groups



Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Detailed Statistics

Table 10. U.S. Residential Energy Consumption and Expenditures-- April 1984 Through March 1985

Household Characteristics	All Major Fuels			Natural Gas		Electricity		Fuel Oil or Kerosene		Liquefied Petroleum Gas		RSE Row Factors
	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)	
RSE Column Factors:	0.54	0.60	0.59	0.92	0.89	0.71	0.69	1.49	1.48	2.50	2.37	
Total Households	86.3	9.04	97.0	4.98	29.8	2.48	54.5	1.26	9.6	0.31	3.1	3.00
Census Region and Division												
Northeast	18.3	2.29	26.4	.93	6.9	.41	12.2	.93	7.0	.03	.4	6.00
New England	4.3	.54	6.3	.16	1.3	.10	2.7	.27	2.1	.01	.2	11.32
Middle Atlantic	14.0	1.75	20.1	.77	5.6	.31	9.5	.65	4.8	.01	.2	7.68
North Central	21.6	2.80	25.1	1.99	11.1	.55	11.8	.13	1.0	.13	1.2	5.12
East North Central	15.2	1.97	17.8	1.43	8.3	.37	8.1	.10	.7	.08	.7	7.16
West North Central	6.4	.82	7.3	.55	2.9	.18	3.7	.03	.2	.06	.5	10.97
South	29.3	2.50	30.9	1.15	6.7	1.06	21.7	.16	1.3	.12	1.2	7.19
South Atlantic	14.8	1.18	15.9	.47	3.2	.50	10.8	.15	1.2	.06	.7	10.54
East South Central	5.8	.48	5.4	.19	1.0	.25	4.1	.01	.1	.02	.2	12.25
West South Central	8.8	.84	9.7	.49	2.5	.31	6.8	Q	Q	.04	.4	15.02
West	17.1	1.45	14.6	.91	5.1	.47	8.8	.04	.3	.03	.4	7.36
Mountain	4.5	.47	4.3	.32	1.6	.12	2.4	Q	Q	.01	.1	16.88
Pacific	12.6	.99	10.3	.59	3.4	.34	6.4	.03	.2	.02	.2	8.64
Metropolitan Status												
Metropolitan	65.7	7.08	75.8	4.09	25.0	1.84	41.7	1.02	7.8	.12	1.3	4.46
Central City	30.6	3.33	32.9	2.15	13.0	.75	16.7	.42	3.0	.01	.1	5.93
Outside Central City	35.1	3.75	42.9	1.94	12.0	1.09	25.0	.61	4.8	.11	1.2	6.54
Nonmetropolitan	20.6	1.96	21.1	.89	4.8	.64	12.7	.23	1.8	.19	1.8	9.24
Weather Zone												
Fewer than 2,000 CDD and--												
More than 7,000 HDD	9.0	1.03	9.6	.56	3.1	.22	4.5	.17	1.3	.07	.7	18.29
5,500 to 7,000 HDD	21.5	2.90	27.6	1.87	11.0	.55	12.8	.42	3.3	.06	.6	8.76
4,000 to 5,499 HDD	22.5	2.50	27.3	1.22	8.0	.63	14.3	.59	4.4	.06	.6	10.63
Fewer than 4,000 HDD	20.0	1.65	18.1	.93	5.3	.59	11.6	.05	.5	.08	.8	13.12
More than 2,000 CDD and Fewer than 4,000 HDD	13.3	.97	14.4	.41	2.4	.50	11.3	Q	Q	.05	.5	15.53
Payment Method for Utilities												
All Paid by Household	70.6	7.64	83.5	4.17	24.7	2.25	48.5	.92	7.3	.29	2.9	3.52
Some Paid, Some in Rent	9.2	.78	7.6	.47	2.9	.12	3.3	.19	1.3	*	.1	11.84
All Included in Rent	4.3	.39	3.4	.22	1.3	.07	1.5	.09	.5	Q	Q	19.01
Other Method	2.2	.23	2.4	.12	.8	.04	1.1	.06	.5	.01	.1	13.94
Housing Structure												
Single-Family Detached	53.5	6.27	67.1	3.46	20.2	1.80	38.5	.77	6.1	.24	2.3	4.01
Owned	45.0	5.39	58.1	2.97	17.5	1.56	33.5	.68	5.4	.18	1.8	4.21
Rented	8.5	.88	9.0	.49	2.8	.24	5.0	.09	.7	.06	.5	9.09
Single-Family Attached	4.1	.45	5.1	.26	1.7	.11	2.7	.07	.6	.01	Q	17.85
Owned	2.8	.34	3.8	.19	1.3	.08	2.0	.07	.5	.01	Q	22.38
Rented	1.2	.11	1.3	.07	.5	.04	.7	Q	Q	Q	Q	29.88
Building of 2 to 4 Units	10.0	.97	9.5	.64	4.1	.17	4.2	.16	1.3	*	*	11.46
Owned	2.0	.26	2.6	.16	1.0	.03	1.1	.06	.5	Q	Q	16.26
Rented	8.0	.71	6.9	.48	3.0	.13	3.1	.10	.8	*	*	12.82
Building of 5 or More Units	13.6	.97	10.3	.51	3.1	.25	5.9	.21	1.3	Q	Q	12.13
Owned	1.4	.11	1.5	.04	.3	.04	1.0	.03	.2	NC	NC	18.14
Rented	12.2	.86	8.9	.47	2.8	.21	4.9	.18	1.2	Q	Q	13.08
Mobile Home	5.1	.37	4.9	.12	.6	.15	3.2	.04	.3	.07	.7	14.57
Owned	4.1	.31	4.0	.10	.6	.13	2.6	.03	.2	.05	.5	16.77
Rented	1.1	.07	.9	.02	.1	.03	.6	.01	.1	.02	.2	26.49

See footnotes at end of table.

Table 10. U.S. Residential Energy Consumption and Expenditures-- April 1984 Through March 1985 (Continued)

Household Characteristics	All Major Fuels			Natural Gas		Electricity		Fuel Oil or Kerosene		Liquefied Petroleum Gas		RSE Row Factors
	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)	
RSE Column Factors:	0.54	0.60	0.59	0.92	0.89	0.71	0.69	1.49	1.48	2.50	2.37	
Number of Rooms												
1	0.6	0.03	0.3	0.02	0.1	0.01	0.1	Q	Q	Q	Q	30.30
2	2.2	.13	1.4	.07	.4	.03	.8	0.02	0.2	0.01	0.1	19.05
3	8.8	.59	6.2	.29	1.8	.14	3.2	.13	.9	.03	.3	10.61
4	18.5	1.53	16.2	.83	4.9	.41	9.0	.21	1.6	.07	.7	6.64
5	20.6	2.08	22.1	1.18	7.0	.59	12.7	.23	1.8	.08	.8	5.91
6	16.5	1.90	21.0	1.07	6.5	.54	12.1	.23	1.8	.06	.6	7.82
7	9.2	1.19	13.1	.61	3.6	.36	7.6	.18	1.4	.04	.4	9.91
8 or More	9.8	1.59	16.7	.91	5.5	.41	9.0	.24	1.9	.03	.3	7.64
Number of Rooms that Can Be Air Conditioned												
All	34.0	3.49	40.5	1.92	11.1	1.27	26.9	.20	1.5	.10	.9	6.65
Some	17.5	1.98	21.0	1.11	6.9	.44	10.5	.39	3.0	.05	.6	6.35
None	34.9	3.57	35.5	1.96	11.7	.78	17.1	.67	5.1	.16	1.6	5.83
Measured Heated Area of Residence (square feet)												
Fewer than 600	8.3	.52	5.9	.25	1.6	.13	3.1	.11	.8	.03	.4	9.96
600 to 999	23.5	1.91	20.2	1.06	6.2	.51	11.2	.26	1.9	.09	.9	5.44
1,000 to 1,599	24.9	2.51	27.5	1.34	7.8	.77	16.3	.29	2.3	.11	1.0	5.91
1,600 to 1,999	11.5	1.38	15.1	.76	4.6	.41	8.7	.19	1.5	.03	.3	8.57
2,000 to 2,399	7.4	1.00	10.6	.58	3.5	.26	5.8	.14	1.1	.02	.1	9.72
2,400 to 2,999	5.8	.83	8.5	.49	3.0	.21	4.5	.12	.9	.01	.1	11.85
3,000 or More	4.9	.88	9.3	.50	3.1	.21	4.8	.15	1.2	.02	.2	12.52
Year of Construction												
1939 or Before	25.2	3.16	30.5	1.88	11.6	.54	13.0	.64	4.9	.11	1.0	6.90
1940 to 1949	7.0	.74	7.7	.42	2.6	.17	3.9	.13	1.0	.02	.2	13.35
1950 to 1959	12.6	1.36	14.1	.80	4.7	.34	7.7	.18	1.4	.03	.3	9.10
1960 to 1964	7.5	.75	8.2	.40	2.3	.23	4.9	.09	.7	.03	.3	12.99
1965 to 1969	8.2	.82	9.3	.45	2.7	.27	5.8	.07	.6	.02	.2	12.07
1970 to 1974	10.7	.96	11.5	.49	2.9	.36	7.7	.05	.4	.06	.6	11.10
1975 to 1979	10.1	.88	11.1	.38	2.1	.41	8.3	.07	.5	.03	.3	10.74
1980 or After	5.0	.37	4.5	.15	.8	.16	3.3	.03	.2	Q	Q	22.93
Status of Unit												
Owned	55.3	6.40	70.0	3.46	20.6	1.84	40.2	.87	6.8	.24	2.4	3.81
Rented	31.0	2.63	27.0	1.53	9.2	.64	14.3	.39	2.8	.08	.7	5.28
1984 Family Income												
Less than $5,000	7.9	.71	7.0	.42	2.4	.16	3.5	.10	.7	.04	.4	10.11
$5,000 to $9,999	14.0	1.32	13.5	.70	4.1	.31	6.8	.23	1.8	.08	.8	7.54
$10,000 to $14,999	13.1	1.21	12.6	.67	3.9	.32	7.0	.17	1.3	.04	.5	6.72
$15,000 to $19,999	9.0	.90	9.4	.49	2.9	.23	5.0	.14	1.0	.04	.4	7.66
$20,000 to $24,999	8.4	.84	9.0	.45	2.7	.24	5.1	.12	.9	.03	.3	8.94
$25,000 to $34,999	15.3	1.65	18.2	.90	5.4	.50	10.7	.21	1.7	.04	.4	6.57
$35,000 or More	18.7	2.41	27.2	1.36	8.3	.73	16.4	.27	2.1	.04	.4	7.86
Below 100% of Poverty	13.7	1.29	13.3	.72	4.2	.33	7.0	.18	1.3	.07	.7	7.69
Below 125% of Poverty	19.6	1.88	19.2	1.05	6.1	.46	10.0	.27	2.0	.11	1.0	6.83
Assistance for Heating in Winter												
Yes	5.3	.57	5.6	.34	2.0	.12	2.7	.06	.5	.04	.4	11.34
No	81.0	8.47	91.4	4.64	27.7	2.36	51.8	1.20	9.1	.28	2.7	2.79

See footnotes at end of table.

Table 10. U.S. Residential Energy Consumption and Expenditures-- April 1984 Through March 1985 (Continued)

Household Characteristics	All Major Fuels			Natural Gas		Electricity		Fuel Oil or Kerosene		Liquefied Petroleum Gas		RSE Row Factors
	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)	
RSE Column Factors:	0.54	0.60	0.59	0.92	0.89	0.71	0.69	1.49	1.48	2.50	2.37	
Assistance for Weatherization of Residence												
Yes	1.2	0.13	1.3	0.08	0.4	0.03	0.6	0.02	0.1	0.01	0.1	19.82
No	85.1	8.91	95.7	4.91	29.3	2.46	53.9	1.24	9.5	.31	3.0	2.50
Household Owns or Has Regular Use of a Vehicle												
Yes	75.3	7.96	86.8	4.33	25.8	2.31	50.3	1.03	8.0	.28	2.8	3.01
No	11.0	1.08	10.2	.65	4.0	.17	4.2	.23	1.6	.03	.3	8.13
Race of Householder												
White	72.7	7.58	82.3	4.06	24.0	2.18	47.3	1.08	8.3	.28	2.7	3.14
Black	10.5	1.19	11.9	.77	4.8	.25	5.8	.14	1.0	.03	.3	12.59
Other	3.1	.27	2.8	.15	1.0	.06	1.4	.04	.3	Q	.1	17.25
Householder of Hispanic Descent												
Yes	4.4	.39	4.3	.23	1.5	.09	2.4	.06	.4	.01	.1	11.68
No	81.9	8.65	92.6	4.76	28.3	2.39	52.1	1.19	9.2	.30	3.0	2.80
Age of Householder												
Under 25 Years	6.8	.56	5.8	.33	1.9	.16	3.3	.06	.4	.01	.1	11.71
25 to 34 Years	20.7	1.92	20.6	1.09	6.5	.56	12.0	.19	1.4	.07	.7	5.45
35 to 44 Years	16.8	1.94	21.7	1.03	6.2	.60	13.0	.26	2.0	.06	.5	6.92
45 to 59 Years	17.2	2.07	22.6	1.15	7.0	.56	12.6	.30	2.3	.06	.6	6.73
60 Years and Over	24.8	2.55	26.3	1.38	8.2	.60	13.5	.45	3.5	.11	1.1	5.57
Household Size												
1 Person	20.4	1.72	16.7	1.01	5.9	.36	8.0	.28	2.1	.07	.7	6.32
2 Persons	26.6	2.61	28.5	1.38	8.2	.74	16.3	.40	3.1	.09	1.0	5.90
3 Persons	15.4	1.68	18.3	.92	5.5	.49	10.5	.23	1.8	.05	.5	7.12
4 Persons	13.6	1.64	18.1	.88	5.3	.50	10.8	.19	1.5	.06	.6	6.89
5 Persons	6.3	.82	9.1	.47	2.8	.24	5.3	.09	.7	.02	.2	8.88
6 or More Persons	4.1	.57	6.2	.34	2.0	.16	3.5	.06	.4	Q	.2	14.76
Secondary Heating												
Yes	35.5	3.93	44.0	1.93	11.4	1.25	26.3	.60	4.7	.15	1.6	5.31
No	50.8	5.11	52.9	3.05	18.3	1.24	28.2	.65	4.9	.16	1.6	3.93

See footnotes at end of table.

Table 10. U.S. Residential Energy Consumption and Expenditures-- April 1984 Through March 1985 (Continued)

Household Characteristics	All Major Fuels			Natural Gas		Electricity		Fuel Oil or Kerosene		Liquefied Petroleum Gas		RSE Row Factors
	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)	
RSE Column Factors:	0.54	0.60	0.59	0.92	0.89	0.71	0.69	1.49	1.48	2.50	2.37	
Fuel Combinations												
Use Natural Gas for Main Heat	47.8	5.91	53.6	4.78	28.1	1.11	25.2	0.02	0.2	Q	Q	8.39
Use Natural Gas to Heat Water												
and Have A/C	26.4	3.38	31.6	2.69	15.8	.67	15.7	.01	.1	Q	Q	11.11
and Lack A/C	16.3	1.93	15.9	1.67	9.7	.26	6.1	Q	Q	Q	Q	14.56
Use Electricity to Heat Water												
and Have A/C	2.9	.34	3.7	.22	1.3	.12	2.3	*	*	NC	NC	18.79
and Lack A/C	2.0	.24	2.2	.18	1.1	.06	1.1	Q	Q	NC	NC	23.02
Other	.2	.02	.2	.02	.1	*	.1	Q	Q	NC	NC	58.79
Use Electricity for Main Heat	14.5	.80	14.9	.04	.3	.75	14.5	.01	.1	0.01	0.1	13.93
Use Electricity to Heat Water												
and Have A/C	10.4	.57	11.2	Q	Q	.56	11.1	.01	.1	*	*	20.97
and Lack A/C	2.7	.15	2.4	Q	Q	.14	2.4	*	*	Q	Q	27.16
Other	1.4	.08	1.2	.04	.2	.04	1.0	Q	Q	*	Q	27.22
Use Fuel Oil for Main Heat	10.7	1.42	15.7	.08	.9	.24	6.5	1.08	8.2	.01	.2	7.98
Use Fuel Oil to Heat Water												
and Have A/C	2.4	.32	3.7	.01	.2	.04	1.5	.27	2.0	Q	Q	14.56
and Lack A/C	2.7	.36	3.7	.01	.2	.04	1.3	.30	2.2	Q	Q	18.78
Use Electricity to Heat Water												
and Have A/C	1.9	.21	2.6	Q	Q	.07	1.5	.14	1.1	*	*	22.14
and Lack A/C	1.7	.21	2.3	Q	Q	.05	1.1	.16	1.2	*	*	19.66
Other	2.0	.32	3.4	.06	.5	.03	1.1	.22	1.7	.01	.1	11.66
Use Wood for Main Heat	6.5	.39	5.6	.07	.4	.21	4.2	.06	.5	.05	.5	13.68
Use LPG for Main Heat	3.9	.35	4.6	NC	NC	.11	2.3	*	*	.24	2.2	15.34
Use Kerosene for Main Heat	1.5	.12	1.6	*	*	.04	.9	.07	.6	.01	.1	22.32
Use Coal for Main Heat	.7	.03	.6	Q	Q	.02	.5	Q	Q	Q	Q	48.05
No Heating Fuel	.6	.02	.4	Q	Q	.01	.3	NC	NC	*	.1	29.01
Other Fuel	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	76.27

NC No cases in sample.

* Data cannot be displayed due to rounding.

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

Notes: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. Because of rounding, data may not sum to totals. 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 1984 Residential Energy Consumption Survey.

Table 11. U.S. Residential Proportionate Energy Consumption and Expenditures--April 1984 Through March 1985

(Percent)

Household Characteristics	All Major Fuels			Natural Gas		Electricity		Fuel Oil or Kerosene		Liquefied Petroleum Gas		RSE Row Factors
	Number of Households	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	
RSE Column Factors:	0.61	0.63	0.62	0.88	0.86	0.72	0.71	1.43	1.41	2.38	2.25	
Total Households	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.00
Census Region and Division												
Northeast	21.2	25.4	27.2	18.7	23.2	16.4	22.3	73.7	72.8	8.7	11.5	4.93
New England	4.9	6.0	6.5	3.3	4.3	3.9	5.0	21.7	22.3	4.3	5.2	11.37
Middle Atlantic	16.3	19.3	20.8	15.4	18.9	12.6	17.4	52.1	50.5	4.4	6.3	6.78
North Central	25.0	31.0	25.9	39.9	37.3	21.9	21.7	10.2	10.3	42.8	37.5	4.91
East North Central	17.6	21.8	18.3	28.8	27.7	14.7	14.9	7.7	7.8	24.1	22.2	6.93
West North Central	7.4	9.1	7.5	11.1	9.6	7.2	6.8	2.5	2.5	18.7	15.3	11.47
South	34.0	27.6	31.9	23.1	22.5	42.8	39.8	12.9	13.8	37.5	39.2	5.90
South Atlantic	17.1	13.1	16.4	9.5	10.6	20.1	19.9	12.0	12.8	18.2	21.3	10.00
East South Central	6.7	5.3	5.5	3.9	3.3	10.2	7.5	.9	.9	6.1	6.0	12.12
West South Central	10.2	9.3	10.0	9.8	8.5	12.5	12.4	Q	Q	13.1	11.9	14.46
West	19.8	16.1	15.0	18.3	17.0	18.8	16.2	3.1	3.2	11.1	11.8	7.38
Mountain	5.2	5.2	4.4	6.4	5.4	4.9	4.4	Q	Q	4.2	4.0	16.85
Pacific	14.6	10.9	10.6	11.9	11.6	13.9	11.8	2.1	2.2	6.9	7.9	8.72
Metropolitan Status												
Metropolitan	76.1	78.4	78.2	82.1	84.0	74.2	76.6	81.6	81.0	39.5	41.7	3.19
Central City	35.4	36.8	34.0	43.1	43.8	30.3	30.7	33.1	31.5	3.5	4.0	5.36
Outside Central City	40.7	41.5	44.3	39.0	40.3	43.9	45.9	48.5	49.5	36.0	37.7	5.45
Nonmetropolitan	23.9	21.6	21.8	17.9	16.0	25.8	23.4	18.4	19.0	60.5	58.3	8.92
Weather Zone												
Fewer than 2,000 CDD and--												
More than 7,000 HDD	10.4	11.4	9.9	11.2	10.4	9.0	8.3	13.5	13.7	23.0	21.9	18.39
5,500 to 7,000 HDD	24.9	32.1	28.5	37.5	36.9	22.0	23.4	33.6	34.4	18.6	18.0	8.35
4,000 to 5,499 HDD	26.1	27.6	28.1	24.4	26.9	25.3	26.2	47.2	45.6	18.8	18.8	9.90
Fewer than 4,000 HDD	23.1	18.2	18.6	18.6	17.7	23.6	21.3	4.3	4.8	24.6	24.5	13.12
More than 2,000 CDD and Fewer than 4,000 HDD	15.4	10.7	14.9	8.2	8.1	20.0	20.8	Q	Q	14.9	16.8	15.04
Payment Method for Utilities												
All Paid by Household	81.8	84.6	86.1	83.8	83.1	90.7	89.1	73.3	76.1	93.6	93.0	1.38
Some Paid, Some in Rent	10.6	8.7	7.9	9.4	9.9	4.7	6.1	15.3	13.5	1.6	1.8	12.01
All Included in Rent	5.0	4.3	3.5	4.5	4.4	2.8	2.8	6.8	5.6	Q	2.4	19.11
Other Method	2.6	2.5	2.5	2.4	2.6	1.7	2.1	4.6	4.8	2.4	2.8	14.26
Housing Structure												
Single-Family Detached	62.0	69.4	69.2	69.4	67.9	72.4	70.6	61.6	63.7	75.6	74.6	2.26
Owned	52.2	59.7	59.9	59.6	58.7	62.9	61.5	54.3	56.0	57.6	57.1	2.76
Rented	9.8	9.7	9.3	9.8	9.3	9.6	9.1	7.3	7.7	18.0	17.5	8.14
Single-Family Attached	4.7	5.0	5.3	5.2	5.9	4.6	5.0	5.9	6.1	Q	Q	17.83
Owned	3.3	3.8	4.0	3.8	4.3	3.1	3.6	5.3	5.5	Q	Q	22.39
Rented	1.4	1.2	1.3	1.4	1.6	1.4	1.3	Q	Q	Q	Q	30.10
Building of 2 to 4 Units	11.6	10.8	9.8	12.8	13.6	6.8	7.7	12.7	13.0	.9	1.1	11.37
Owned	2.3	2.8	2.7	3.2	3.5	1.4	1.9	5.1	5.2	Q	Q	15.97
Rented	9.3	7.9	7.1	9.7	10.2	5.4	5.7	7.6	7.8	.7	.8	12.80
Building of 5 or More Units	15.7	10.7	10.7	10.2	10.4	9.9	10.8	16.9	13.8	Q	Q	12.25
Owned	1.6	1.2	1.5	.8	.9	1.5	1.9	2.3	1.8	NC	NC	18.35
Rented	14.1	9.5	9.2	9.4	9.5	8.4	9.0	14.6	12.1	Q	Q	13.30
Mobile Home	5.9	4.1	5.0	2.3	2.2	6.2	5.9	2.9	3.2	21.1	22.1	13.96
Owned	4.7	3.4	4.1	2.0	1.9	5.1	4.8	2.3	2.5	15.9	16.9	16.18
Rented	1.2	.8	.9	.3	.3	1.1	1.1	.6	.7	5.1	5.3	26.52

See footnotes at end of table.

Table 11. U.S. Residential Proportionate Energy Consumption and Expenditures--April 1984 Through March 1985 (Continued)

(Percent)

Household Characteristics	All Major Fuels			Natural Gas		Electricity		Fuel Oil or Kerosene		Liquefied Petroleum Gas		RSE Row Factors
	Number of Households	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	
RSE Column Factors:	0.61	0.63	0.62	0.88	0.86	0.72	0.71	1.43	1.41	2.38	2.25	
Number of Rooms												
1	0.7	0.4	0.3	0.3	0.4	0.2	0.3	Q	Q	Q	Q	30.41
2	2.5	1.4	1.4	1.3	1.4	1.3	1.4	1.8	1.6	1.7	1.9	18.85
3	10.2	6.5	6.3	5.9	6.0	5.5	5.8	10.3	9.3	8.9	9.2	10.93
4	21.4	16.9	16.7	16.7	16.3	16.4	16.5	17.0	16.6	22.7	23.2	6.34
5	23.9	23.0	22.8	23.7	23.4	23.8	23.3	18.0	18.3	25.1	24.5	5.56
6	19.2	21.1	21.6	21.5	21.9	21.9	22.1	18.4	19.0	18.6	19.1	6.79
7	10.7	13.2	13.5	12.3	12.1	14.4	14.0	14.6	15.1	12.6	12.1	8.88
8 or More	11.3	17.6	17.2	18.3	18.6	16.3	16.5	19.0	19.6	10.1	9.5	6.76
Number of Rooms that Can Be Air Conditioned												
All	39.3	38.6	41.8	38.5	37.4	51.1	49.4	15.9	15.8	31.3	29.9	5.58
Some	20.3	22.0	21.6	22.2	23.2	17.6	19.3	30.8	31.2	17.2	17.9	5.95
None	40.4	39.5	36.6	39.3	39.4	31.3	31.4	53.2	53.1	51.4	52.2	4.88
Measured Heated Area of Residence (square feet)												
Fewer than 600	9.6	5.8	6.1	5.1	5.5	5.1	5.7	8.7	8.0	11.1	12.6	9.89
600 to 999	27.2	21.2	20.8	21.2	20.8	20.4	20.5	20.9	20.0	27.5	28.9	5.23
1,000 to 1,599	28.9	27.8	28.3	26.9	26.3	31.0	30.0	23.2	23.5	35.3	33.7	4.85
1,600 to 1,999	13.3	15.3	15.5	15.2	15.3	16.4	16.0	15.2	15.6	10.0	9.6	8.21
2,000 to 2,399	8.6	11.1	11.0	11.7	11.8	10.4	10.7	11.1	11.5	4.8	4.8	9.24
2,400 to 2,999	6.7	9.2	8.8	9.9	9.9	8.3	8.3	9.2	9.4	4.3	3.6	11.45
3,000 or More	5.6	9.7	9.6	10.1	10.4	8.4	8.8	11.7	12.0	7.1	6.8	11.64
Year of Construction												
1939 or Before	29.2	35.0	31.5	37.8	39.1	21.6	23.8	50.7	50.9	33.5	33.3	6.48
1940 to 1949	8.1	8.2	7.9	8.5	8.7	7.0	7.2	10.4	10.5	4.8	5.3	12.92
1950 to 1959	14.6	15.0	14.6	16.1	15.9	13.8	14.1	14.5	14.5	9.2	9.9	8.87
1960 to 1964	8.6	8.3	8.4	8.0	7.9	9.2	9.0	7.2	6.8	9.8	9.9	12.53
1965 to 1969	9.5	9.0	9.6	9.1	8.9	10.8	10.7	5.7	5.8	7.5	7.2	11.38
1970 to 1974	12.4	10.6	11.9	9.8	9.8	14.6	14.1	3.7	3.8	18.1	18.3	10.51
1975 to 1979	11.7	9.8	11.5	7.6	7.0	16.4	15.1	5.6	5.5	9.2	9.1	10.54
1980 or After	5.8	4.1	4.7	3.1	2.8	6.6	6.0	2.1	2.1	Q	Q	22.67
Status of Unit												
Owned	64.1	70.9	72.2	69.3	69.2	74.1	73.7	69.2	71.0	75.7	76.0	1.87
Rented	35.9	29.1	27.8	30.7	30.8	25.9	26.3	30.8	29.0	24.3	24.0	4.69
1984 Family Income												
Less than $5,000	9.2	7.9	7.3	8.5	8.2	6.3	6.4	7.9	7.8	11.5	12.1	9.50
$5,000 to $9,999	16.2	14.6	13.9	14.0	13.9	12.4	12.4	18.5	18.5	25.6	25.2	6.94
$10,000 to $14,999	15.2	13.4	13.0	13.4	13.1	13.0	12.8	13.9	13.9	14.0	14.7	6.57
$15,000 to $19,999	10.4	9.9	9.7	9.7	9.7	9.1	9.2	11.2	10.9	13.8	13.8	7.07
$20,000 to $24,999	9.7	9.3	9.3	9.1	9.0	9.6	9.4	9.7	9.8	10.6	9.6	8.95
$25,000 to $34,999	17.7	18.2	18.8	18.0	18.3	20.0	19.7	17.1	17.2	11.3	12.0	5.78
$35,000 or More	21.7	26.6	28.1	27.3	27.8	29.5	30.2	21.8	21.9	13.3	12.6	6.93
Below 100% of Poverty	15.8	14.3	13.7	14.4	14.0	13.2	12.9	14.1	14.0	22.1	22.2	7.13
Below 125% of Poverty	22.7	20.8	19.8	21.0	20.5	18.6	18.4	21.2	21.1	33.6	33.1	5.97
Assistance for Heating in Winter												
Yes	6.1	6.3	5.8	6.9	6.9	5.0	5.0	4.7	4.9	12.5	12.1	10.71
No	93.9	93.7	94.2	93.1	93.1	95.0	95.0	95.3	95.1	87.5	87.9	.75
Assistance for Weatherization of Residence												
Yes	1.4	1.4	1.3	1.5	1.5	1.1	1.1	1.5	1.5	2.1	2.4	20.11
No	98.6	98.6	98.7	98.5	98.5	98.9	98.9	98.5	98.5	97.9	97.6	.30

See footnotes at end of table.

Table 11. U.S. Residential Proportionate Energy Consumption and Expenditures--April 1984 Through March 1985 (Continued)

(Percent)

Household Characteristics	All Major Fuels			Natural Gas		Electricity		Fuel Oil or Kerosene		Liquefied Petroleum Gas		RSE Row Factors
	Number of Households	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	
RSE Column Factors:	0.61	0.63	0.62	0.88	0.86	0.72	0.71	1.43	1.41	2.38	2.25	
Household Owns or Has Regular Use of a Vehicle												
Yes	87.2	88.0	89.5	87.0	86.6	93.2	92.3	81.8	83.2	89.8	89.1	1.02
No	12.8	12.0	10.5	13.0	13.4	6.8	7.7	18.2	16.8	10.2	10.9	7.74
Race of Householder												
White	84.2	83.9	84.9	81.4	80.6	87.6	86.8	85.6	86.0	88.1	87.4	1.69
Black	12.2	13.1	12.3	15.5	16.2	10.0	10.6	11.0	10.9	8.8	9.4	11.96
Other	3.6	3.0	2.8	3.1	3.2	2.4	2.6	3.4	3.1	Q	3.2	16.73
Householder of Hispanic Descent												
Yes	5.1	4.3	4.5	4.6	4.9	3.7	4.3	5.0	4.5	3.4	2.9	11.67
No	94.9	95.7	95.5	95.4	95.1	96.3	95.7	95.0	95.5	96.6	97.1	.52
Age of Householder												
Under 25 Years	7.9	6.2	6.0	6.6	6.3	6.3	6.1	4.6	4.5	4.4	4.5	11.68
25 to 34 Years	24.0	21.2	21.3	21.9	21.7	22.6	22.1	15.1	14.8	23.6	23.2	4.88
35 to 44 Years	19.5	21.5	22.4	20.6	20.8	24.2	23.8	20.4	20.5	17.9	17.1	5.84
45 to 59 Years	20.0	23.0	23.3	23.1	23.6	22.6	23.1	23.9	24.2	19.4	19.7	5.78
60 Years and Over	28.7	28.2	27.1	27.8	27.6	24.3	24.9	36.0	36.0	34.7	35.4	4.93
Household Size												
1 Person	23.6	19.0	17.2	20.2	19.8	14.5	14.8	22.6	22.1	21.1	21.1	5.96
2 Persons	30.8	28.9	29.4	27.6	27.6	29.7	29.9	32.1	32.2	29.7	30.6	5.04
3 Persons	17.9	18.6	18.9	18.4	18.6	19.6	19.3	18.2	18.4	15.1	15.9	6.89
4 Persons	15.7	18.1	18.7	17.6	17.8	20.2	19.8	15.4	15.4	19.8	18.2	5.73
5 Persons	7.3	9.1	9.4	9.4	9.5	9.8	9.8	7.2	7.2	7.1	7.1	8.50
6 or More Persons	4.8	6.3	6.4	6.8	6.8	6.3	6.4	4.4	4.6	7.2	7.1	14.15
Secondary Heating												
Yes	41.1	43.5	45.4	38.7	38.4	50.1	48.3	47.9	49.3	48.7	49.7	3.83
No	58.9	56.5	54.6	61.3	61.6	49.9	51.7	52.1	50.7	51.3	50.3	3.20

See footnotes at end of table.

Table 11. U.S. Residential Proportionate Energy Consumption and Expenditures--April 1984 Through March 1985 (Continued)

(Percent)

Household Characteristics	All Major Fuels			Natural Gas		Electricity		Fuel Oil or Kerosene		Liquefied Petroleum Gas		RSE Row Factors
	Number of Households	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	Total Btu Consumed	Total Expenditures	
RSE Column Factors:	0.61	0.63	0.62	0.88	0.86	0.72	0.71	1.43	1.41	2.38	2.25	
Fuel Combinations												
Use Natural Gas for Main Heat	55.4	65.4	55.2	95.9	94.5	44.6	46.3	1.8	1.7	Q	Q	5.61
Use Natural Gas to Heat Water												
and Have A/C	30.6	37.3	32.6	54.0	53.2	27.0	28.8	.9	.9	Q	Q	10.12
and Lack A/C	18.9	21.4	16.4	33.4	32.7	10.5	11.2	Q	Q	Q	Q	14.14
Use Electricity to Heat Water												
and Have A/C	3.4	3.8	3.8	4.4	4.5	4.8	4.2	.1	.2	NC	NC	18.68
and Lack A/C	2.3	2.7	2.3	3.7	3.8	2.2	1.9	Q	Q	NC	NC	22.64
Other	.3	.2	.2	.3	.3	.2	.2	Q	Q	NC	NC	58.55
Use Electricity for Main Heat	16.8	8.9	15.4	.8	.9	30.1	26.5	.6	.8	2.3	3.0	13.77
Use Electricity to Heat Water												
and Have A/C	12.1	6.4	11.6	Q	Q	22.6	20.3	.5	.6	.6	1.0	20.82
and Lack A/C	3.1	1.6	2.5	Q	Q	5.7	4.4	.1	.1	Q	Q	27.07
Other	1.6	.9	1.3	.7	.8	1.8	1.8	Q	Q	Q	Q	27.61
Use Fuel Oil for Main Heat	12.4	15.7	16.2	1.7	2.9	9.5	12.0	86.3	85.1	3.8	5.2	6.81
Use Fuel Oil to Heat Water												
and Have A/C	2.8	3.6	3.8	.3	.5	1.7	2.8	21.4	20.6	Q	Q	14.63
and Lack A/C	3.1	3.9	3.8	.3	.6	1.5	2.3	24.1	23.2	Q	Q	18.55
Use Electricity to Heat Water												
and Have A/C	2.2	2.3	2.7	Q	Q	2.7	2.8	10.9	11.1	.4	.6	21.87
and Lack A/C	2.0	2.3	2.4	Q	Q	2.2	2.1	12.5	12.6	.4	.5	19.75
Other	2.4	3.5	3.5	1.1	1.7	1.4	2.0	17.4	17.7	2.3	3.0	11.36
Use Wood for Main Heat	7.5	4.3	5.8	1.3	1.4	8.5	7.7	5.0	5.2	14.8	15.3	13.10
Use LPG for Main Heat	4.5	3.8	4.7	NC	NC	4.3	4.3	.3	.3	74.8	70.2	12.17
Use Kerosene for Main Heat	1.7	1.4	1.7	.1	.1	1.6	1.6	5.7	6.6	1.9	3.0	22.42
Use Coal for Main Heat	.9	.3	.6	Q	Q	.9	.9	Q	Q	Q	Q	48.48
No Heating Fuel	.7	.2	.4	Q	Q	.3	.5	NC	NC	1.5	1.9	30.10
Other Fuel	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	76.22

NC No cases in sample.

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Table 12. U.S. Residential Proportionate Energy Consumption of Fuels--April 1984 Through March 1985

(Percent of Total Btu)

Household Characteristics	All Major Fuels	Natural Gas	Electricity	Fuel Oil or Kerosene	Liquefied Petroleum Gas	RSE Row Factors
RSE Column Factors:	0.00	0.55	0.51	1.36	2.60	
Total Households	100.0	55.1	27.5	13.9	3.5	3.89
Census Region and Division						
Northeast	100.0	40.6	17.8	40.4	1.2	8.94
New England	100.0	29.8	17.7	50.0	2.5	10.52
Middle Atlantic	100.0	43.9	17.9	37.4	.8	11.28
North Central	100.0	71.1	19.5	4.6	4.8	6.22
East North Central	100.0	72.7	18.5	4.9	3.9	9.49
West North Central	100.0	67.3	21.8	3.8	7.1	9.14
South	100.0	46.2	42.6	6.5	4.7	9.65
South Atlantic	100.0	40.0	42.3	12.8	4.9	15.28
East South Central	100.0	40.5	53.2	2.3	4.0	14.89
West South Central	100.0	58.0	37.0	Q	4.9	15.79
West	100.0	62.8	32.1	2.7	2.4	9.42
Mountain	100.0	68.5	26.0	Q	2.9	21.14
Pacific	100.0	60.2	35.0	2.7	2.2	10.15
Metropolitan Status						
Metropolitan	100.0	57.7	26.0	14.5	1.8	4.99
Central City	100.0	64.5	22.6	12.5	.3	7.23
Outside Central City	100.0	51.7	29.0	16.2	3.0	5.99
Nonmetropolitan	100.0	45.7	32.7	11.8	9.7	9.29
Weather Zone						
Fewer than 2,000 CDD and--						
More than 7,000 HDD	100.0	54.6	21.8	16.6	7.1	13.01
5,500 to 7,000 HDD	100.0	64.6	18.9	14.6	2.0	7.98
4,000 to 5,499 HDD	100.0	48.7	25.2	23.7	2.4	8.76
Fewer than 4,000 HDD	100.0	56.4	35.6	3.3	4.7	10.26
More than 2,000 CDD and Fewer than 4,000 HDD	100.0	42.0	51.4	Q	4.8	14.15
Payment Method for Utilities						
All Paid by Household	100.0	54.6	29.5	12.0	3.9	4.25
Some Paid, Some in Rent	100.0	59.8	15.0	24.5	.6	11.56
All Included in Rent	100.0	57.6	18.3	22.1	Q	16.41
Other Method	100.0	52.3	18.7	25.7	3.4	14.46
Housing Structure						
Single-Family Detached	100.0	55.2	28.7	12.3	3.8	4.49
Owned	100.0	55.0	29.0	12.7	3.4	4.57
Rented	100.0	56.0	27.1	10.4	6.5	8.35
Single-Family Attached	100.0	57.2	25.0	16.4	Q	15.39
Owned	100.0	55.9	22.8	19.4	Q	19.24
Rented	100.0	60.9	31.5	Q	Q	27.69
Building of 2 to 4 Units	100.0	65.9	17.4	16.4	.3	10.20
Owned	100.0	61.5	13.5	24.8	Q	16.22
Rented	100.0	67.4	18.9	13.4	.3	10.39
Building of 5 or More Units	100.0	52.5	25.5	21.9	Q	11.97
Owned	100.0	37.4	36.0	26.6	NC	24.40
Rented	100.0	54.4	24.2	21.3	Q	12.51
Mobile Home	100.0	31.1	41.4	9.8	17.8	13.73
Owned	100.0	32.4	41.8	9.4	16.4	15.75
Rented	100.0	25.2	39.5	11.6	23.8	23.25
Number of Rooms						
1	100.0	50.2	16.8	Q	Q	35.31
2	100.0	51.4	26.2	18.2	4.2	18.42
3	100.0	49.7	23.5	22.0	4.8	10.47
4	100.0	54.5	26.8	14.0	4.7	6.89
5	100.0	56.9	28.4	10.9	3.8	5.83
6	100.0	56.2	28.6	12.1	3.1	7.33
7	100.0	51.4	30.0	15.3	3.3	8.54
8 or More	100.0	57.4	25.5	15.0	2.0	7.79

See footnotes at end of table.

Table 12. U.S. Residential Proportionate Energy Consumption of Fuels-- April 1984 Through March 1985 (Continued)

(Percent of Total Btu)

Household Characteristics	All Major Fuels	Natural Gas	Electricity	Fuel Oil or Kerosene	Liquefied Petroleum Gas	RSE Row Factors
RSE Column Factors:	0.00	0.55	0.51	1.36	2.60	
Number of Rooms that Can Be Air Conditioned						
All	100.0	55.0	36.4	5.7	2.8	6.43
Some	100.0	55.8	22.0	19.5	2.7	5.69
None	100.0	54.9	21.8	18.7	4.5	5.58
Measured Heated Area of Residence (square feet)						
Fewer than 600	100.0	48.3	24.1	20.9	6.6	9.99
600 to 999	100.0	55.3	26.5	13.7	4.5	5.74
1,000 to 1,599	100.0	53.3	30.7	11.6	4.4	6.11
1,600 to 1,999	100.0	54.6	29.4	13.8	2.3	7.31
2,000 to 2,399	100.0	58.5	26.0	14.0	1.5	8.98
2,400 to 2,999	100.0	59.6	24.9	13.9	1.6	10.15
3,000 or More	100.0	57.0	23.8	16.7	2.5	12.24
Year of Construction						
1939 or Before	100.0	59.6	17.0	20.1	3.3	5.74
1940 to 1949	100.0	57.1	23.3	17.6	2.0	12.43
1950 to 1959	100.0	59.1	25.3	13.5	2.1	8.96
1960 to 1964	100.0	53.4	30.4	12.0	4.1	12.35
1965 to 1969	100.0	55.4	32.9	8.8	2.9	11.39
1970 to 1974	100.0	51.2	38.0	4.9	5.9	10.57
1975 to 1979	100.0	42.8	46.0	8.0	3.3	11.04
1980 or After	100.0	41.8	44.4	7.2	Q	23.05
Status of Unit						
Owned	100.0	54.0	28.7	13.6	3.7	4.24
Rented	100.0	58.0	24.4	14.7	2.9	5.51
1984 Family Income						
Less than $5,000	100.0	59.1	22.0	13.8	5.1	10.20
$5,000 to $9,999	100.0	52.9	23.4	17.6	6.1	7.75
$10,000 to $14,999	100.0	55.3	26.7	14.4	3.6	6.72
$15,000 to $19,999	100.0	54.2	25.3	15.7	4.8	7.87
$20,000 to $24,999	100.0	53.5	28.2	14.4	3.9	8.25
$25,000 to $34,999	100.0	54.5	30.3	13.0	2.2	6.17
$35,000 or More	100.0	56.5	30.4	11.4	1.7	7.45
Below 100% of Poverty	100.0	55.6	25.3	13.7	5.4	8.31
Below 125% of Poverty	100.0	55.6	24.6	14.2	5.6	7.07
Assistance for Heating in Winter						
Yes	100.0	60.8	21.8	10.4	7.0	10.72
No	100.0	54.8	27.9	14.1	3.2	3.81
Assistance for Weatherization of Residence						
Yes	100.0	58.7	21.8	14.5	5.1	17.45
No	100.0	55.1	27.6	13.9	3.5	3.96
Household Owns or Has Regular Use of a Vehicle						
Yes	100.0	54.5	29.1	12.9	3.6	3.99
No	100.0	60.1	15.7	21.2	3.0	7.50
Race of Householder						
White	100.0	53.5	28.7	14.2	3.7	4.01
Black	100.0	65.2	20.9	11.6	2.3	10.96
Other	100.0	57.7	22.6	15.9	Q	13.61

See footnotes at end of table.

Table 12. U.S. Residential Proportionate Energy Consumption of Fuels--April 1984 Through March 1985 (Continued)

(Percent of Total Btu)

Household Characteristics	All Major Fuels	Natural Gas	Electricity	Fuel Oil or Kerosene	Liquefied Petroleum Gas	RSE Row Factors
RSE Column Factors:	0.00	0.55	0.51	1.36	2.60	
Householder of Hispanic Descent						
Yes	100.0	58.0	23.4	15.9	2.7	10.08
No	100.0	55.0	27.7	13.8	3.5	3.98
Age of Householder						
Under 25 Years	100.0	58.9	28.3	10.3	2.5	10.13
25 to 34 Years	100.0	57.0	29.2	9.9	3.9	5.46
35 to 44 Years	100.0	53.0	30.9	13.2	2.9	6.57
45 to 59 Years	100.0	55.5	27.1	14.5	2.9	6.88
60 Years and Over	100.0	54.3	23.7	17.7	4.3	5.89
Household Size						
1 person	100.0	58.6	20.9	16.6	3.9	7.12
2 Persons	100.0	52.7	28.3	15.4	3.6	6.25
3 Persons	100.0	54.6	29.0	13.6	2.8	5.67
4 Persons	100.0	53.7	30.6	11.8	3.8	6.30
5 Persons	100.0	56.8	29.5	11.0	2.7	7.78
6 or More Persons	100.0	59.1	27.3	9.7	4.0	12.78
Secondary Heating						
Yes	100.0	49.1	31.7	15.3	3.9	5.18
No	100.0	59.8	24.2	12.8	3.2	4.46
Fuel Combinations						
Use Natural Gas for Main Heat	100.0	80.8	18.8	.4	Q	7.20
Use Natural Gas to Heat Water						
and Have A/C	100.0	79.8	19.8	.3	Q	7.97
and Lack A/C	100.0	86.2	13.4	Q	Q	9.16
Use Electricity to Heat Water						
and Have A/C	100.0	64.4	35.1	.5	NC	10.72
and Lack A/C	100.0	76.5	23.2	Q	NC	13.15
Other	100.0	78.6	19.6	Q	NC	45.91
Use Electricity for Main Heat	100.0	5.0	93.1	1.0	.9	11.55
Use Electricity to Heat Water						
and Have A/C	100.0	Q	97.8	1.1	.3	15.57
and Lack A/C	100.0	Q	97.8	1.1	Q	20.39
Other	100.0	42.1	52.2	Q	Q	25.03
Use Fuel Oil for Main Heat	100.0	5.9	16.6	76.6	.8	5.09
Use Fuel Oil to Heat Water						
and Have A/C	100.0	4.0	13.4	82.5	Q	6.43
and Lack A/C	100.0	4.0	10.2	85.3	Q	6.78
Use Electricity to Heat Water						
and Have A/C	100.0	Q	32.8	66.4	.6	12.92
and Lack A/C	100.0	Q	25.2	73.9	.6	12.02
Other	100.0	17.7	11.0	69.1	2.2	8.04
Use Wood for Main Heat	100.0	17.1	54.7	16.1	12.0	12.96
Use LPG for Main Heat	100.0	NC	30.8	1.1	68.1	8.00
Use Kerosene for Main Heat	100.0	4.0	33.1	58.0	5.0	13.90
Use Coal for Main Heat	100.0	Q	69.9	Q	Q	45.05
No Heating Fuel	100.0	27.8	45.7	NC	26.5	27.45
Other Fuel	Q	Q	Q	Q	Q	117.42

NC No cases in sample.

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Table 13. U.S. Residential Proportionate Energy Expenditures for Fuels--April 1984 Through March 1985

(Percent of Total Dollars)

Household Characteristics	All Major Fuels	Natural Gas	Electricity	Fuel Oil or Kerosene	Liquefied Petroleum Gas	RSE Row Factors
RSE Column Factors:	0.00	0.79	0.31	1.51	2.72	
Total Households	100.0	30.7	56.2	9.9	3.2	3.46
Census Region and Division						
Northeast	100.0	26.1	46.1	26.5	1.4	7.10
New England	100.0	20.2	43.1	34.1	2.6	8.89
Middle Atlantic	100.0	28.0	47.0	24.1	1.0	9.07
North Central	100.0	44.4	47.1	3.9	4.7	5.39
East North Central	100.0	46.4	45.6	4.2	3.9	7.90
West North Central	100.0	39.4	50.7	3.3	6.6	8.59
South	100.0	21.6	70.1	4.3	4.0	8.45
South Atlantic	100.0	19.9	68.2	7.7	4.2	12.93
East South Central	100.0	18.5	76.4	1.7	3.5	11.28
West South Central	100.0	26.2	69.9	Q	3.8	9.86
West	100.0	34.8	60.6	2.1	2.5	8.74
Mountain	100.0	38.1	56.8	Q	2.9	19.54
Pacific	100.0	33.4	62.2	2.0	2.4	9.30
Metropolitan Status						
Metropolitan	100.0	33.0	55.0	10.3	1.7	4.43
Central City	100.0	39.6	50.9	9.2	.4	6.69
Outside Central City	100.0	27.9	58.2	11.1	2.7	5.54
Nonmetropolitan	100.0	22.5	60.3	8.6	8.6	7.50
Weather Zone						
Fewer than 2,000 CDD and--						
More than 7,000 HDD	100.0	32.3	46.9	13.7	7.1	11.44
5,500 to 7,000 HDD	100.0	39.8	46.2	12.0	2.0	6.70
4,000 to 5,499 HDD	100.0	29.3	52.5	16.0	2.2	7.73
Fewer than 4,000 HDD	100.0	29.2	64.1	2.5	4.2	8.54
More than 2,000 CDD and Fewer than 4,000 HDD	100.0	16.7	78.6	Q	3.6	13.85
Payment Method for Utilities						
All Paid by Household	100.0	29.6	58.1	8.7	3.5	3.79
Some Paid, Some in Rent	100.0	38.7	43.5	17.1	.7	9.62
All Included in Rent	100.0	37.9	44.2	15.7	Q	13.78
Other Method	100.0	31.9	45.8	18.8	3.6	12.13
Housing Structure						
Single-Family Detached	100.0	30.1	57.3	9.1	3.5	3.97
Owned	100.0	30.0	57.6	9.3	3.1	4.11
Rented	100.0	30.5	55.2	8.2	6.0	7.48
Single-Family Attached	100.0	34.3	53.1	11.6	Q	13.48
Owned	100.0	33.5	51.5	13.6	Q	16.77
Rented	100.0	36.7	58.0	Q	Q	25.75
Building of 2 to 4 Units	100.0	42.7	43.8	13.2	.3	8.71
Owned	100.0	39.9	40.5	19.3	Q	14.96
Rented	100.0	43.7	45.1	10.9	.4	8.78
Building of 5 or More Units	100.0	29.9	57.1	12.8	Q	11.02
Owned	100.0	17.8	70.5	11.7	NC	23.30
Rented	100.0	31.9	54.9	13.0	Q	11.38
Mobile Home	100.0	13.4	66.1	6.4	14.2	11.86
Owned	100.0	14.3	66.3	6.1	13.3	13.97
Rented	100.0	9.3	65.3	7.4	18.1	19.22
Number of Rooms						
1	100.0	32.3	45.3	Q	Q	28.91
2	100.0	29.4	55.5	11.0	4.2	17.57
3	100.0	29.2	51.7	14.5	4.7	9.28
4	100.0	30.0	55.7	9.8	4.5	6.34
5	100.0	31.4	57.2	7.9	3.5	5.33
6	100.0	31.0	57.5	8.7	2.8	6.84
7	100.0	27.6	58.5	11.1	2.9	7.59
8 or More	100.0	33.1	53.9	11.2	1.8	7.07

See footnotes at end of table.

Table 13. U.S. Residential Proportionate Energy Expenditures for Fuels-- April 1984 Through March 1985 (Continued)

(Percent of Total Dollars)

Household Characteristics	All Major Fuels	Natural Gas	Electricity	Fuel Oil or Kerosene	Liquefied Petroleum Gas	RSE Row Factors
RSE Column Factors:	0.00	0.79	0.31	1.51	2.72	
Number of Rooms that Can Be Air Conditioned						
All	100.0	27.5	66.4	3.7	2.3	6.00
Some	100.0	33.0	50.1	14.3	2.7	5.05
None	100.0	33.0	48.1	14.3	4.6	4.96
Measured Heated Area of Residence (square feet)						
Fewer than 600	100.0	27.6	52.7	13.0	6.7	8.69
600 to 999	100.0	30.7	55.3	9.5	4.5	5.35
1,000 to 1,599	100.0	28.5	59.5	8.2	3.8	5.47
1,600 to 1,999	100.0	30.3	57.8	9.9	2.0	6.49
2,000 to 2,399	100.0	33.2	55.1	10.4	1.4	7.80
2,400 to 2,999	100.0	34.8	53.2	10.6	1.3	9.56
3,000 or More	100.0	33.3	52.0	12.4	2.3	11.06
Year of Construction						
1939 or Before	100.0	38.1	42.4	16.0	3.4	4.82
1940 to 1949	100.0	33.7	51.0	13.2	2.2	11.38
1950 to 1959	100.0	33.5	54.4	9.9	2.2	7.73
1960 to 1964	100.0	28.6	59.6	8.0	3.8	10.87
1965 to 1969	100.0	28.6	63.0	6.0	2.4	10.05
1970 to 1974	100.0	25.2	66.6	3.2	5.0	9.38
1975 to 1979	100.0	18.7	74.1	4.7	2.5	9.33
1980 or After	100.0	18.2	72.5	4.5	Q	20.04
Status of Unit						
Owned	100.0	29.5	57.4	9.7	3.4	3.84
Rented	100.0	34.0	53.0	10.3	2.8	4.83
1984 Family Income						
Less than $5,000	100.0	34.6	49.4	10.6	5.4	9.07
$5,000 to $9,999	100.0	30.7	50.3	13.2	5.8	6.60
$10,000 to $14,999	100.0	30.9	55.0	10.5	3.6	5.82
$15,000 to $19,999	100.0	30.8	53.5	11.2	4.6	7.46
$20,000 to $24,999	100.0	29.8	56.5	10.4	3.3	7.30
$25,000 to $34,999	100.0	29.9	58.9	9.1	2.1	5.92
$35,000 or More	100.0	30.4	60.4	7.7	1.4	6.76
Below 100% of Poverty	100.0	31.5	53.1	10.2	5.2	7.17
Below 125% of Poverty	100.0	31.9	52.2	10.6	5.4	6.20
Assistance for Heating in Winter						
Yes	100.0	36.4	48.5	8.4	6.7	9.33
No	100.0	30.4	56.7	10.0	3.0	3.47
Assistance for Weatherization of Residence						
Yes	100.0	34.9	47.5	11.6	6.0	16.35
No	100.0	30.7	56.3	9.9	3.2	3.53
Household Owns or Has Regular Use of a Vehicle						
Yes	100.0	29.7	57.9	9.2	3.2	3.61
No	100.0	39.4	41.5	15.8	3.3	6.29
Race of Householder						
White	100.0	29.2	57.5	10.0	3.3	3.54
Black	100.0	40.4	48.4	8.8	2.4	9.82
Other	100.0	34.8	50.8	10.7	3.7	11.68

See footnotes at end of table.

Table 13. U.S. Residential Proportionate Energy Expenditures for Fuels-- April 1984 Through March 1985 (Continued)

(Percent of Total Dollars)

Household Characteristics	All Major Fuels	Natural Gas	Electricity	Fuel Oil or Kerosene	Liquefied Petroleum Gas	RSE Row Factors
RSE Column Factors:	0.00	0.79	0.31	1.51	2.72	
Householder of Hispanic Descent						
Yes	100.0	33.6	54.5	9.9	2.1	8.66
No	100.0	30.6	56.3	9.9	3.3	3.56
Age of Householder						
Under 25 Years	100.0	32.5	57.6	7.4	2.4	9.45
25 to 34 Years	100.0	31.3	58.3	6.9	3.5	4.97
35 to 44 Years	100.0	28.6	59.9	9.1	2.5	5.99
45 to 59 Years	100.0	31.1	55.8	10.3	2.7	6.09
60 Years and Over	100.0	31.2	51.5	13.1	4.2	5.28
Household Size						
1 person	100.0	35.3	48.1	12.7	3.9	6.41
2 Persons	100.0	28.7	57.1	10.8	3.3	5.47
3 Persons	100.0	30.2	57.4	9.7	2.7	4.85
4 Persons	100.0	29.3	59.4	8.2	3.1	5.77
5 Persons	100.0	31.0	58.9	7.6	2.4	7.10
6 or More Persons	100.0	32.6	56.6	7.2	3.6	12.06
Secondary Heating						
Yes	100.0	26.0	59.7	10.8	3.5	4.53
No	100.0	34.6	53.2	9.2	3.0	4.08
Fuel Combinations						
Use Natural Gas for Main Heat	100.0	52.5	47.1	.3	Q	7.43
Use Natural Gas to Heat Water						
and Have A/C	100.0	50.1	49.6	.3	Q	8.68
and Lack A/C	100.0	61.2	38.4	Q	Q	10.39
Use Electricity to Heat Water						
and Have A/C	100.0	36.8	62.7	.5	NC	10.83
and Lack A/C	100.0	51.5	48.1	Q	NC	13.19
Other	100.0	47.2	51.1	Q	NC	57.03
Use Electricity for Main Heat	100.0	1.7	97.1	.5	.6	8.82
Use Electricity to Heat Water						
and Have A/C	100.0	Q	98.9	.5	.3	12.30
and Lack A/C	100.0	Q	98.8	.6	Q	16.00
Other	100.0	18.0	77.6	Q	Q	21.98
Use Fuel Oil for Main Heat	100.0	5.5	41.5	52.0	1.0	4.76
Use Fuel Oil to Heat Water						
and Have A/C	100.0	4.3	41.3	54.2	Q	6.84
and Lack A/C	100.0	5.0	34.3	59.9	Q	6.83
Use Electricity to Heat Water						
and Have A/C	100.0	Q	58.2	40.9	.7	13.18
and Lack A/C	100.0	Q	47.7	51.3	.7	12.97
Other	100.0	14.8	32.2	50.1	2.8	7.99
Use Wood for Main Heat	100.0	7.4	75.2	8.9	8.5	10.69
Use LPG for Main Heat	100.0	NC	51.3	.7	48.0	9.39
Use Kerosene for Main Heat	100.0	2.3	53.6	38.5	5.7	13.65
Use Coal for Main Heat	100.0	Q	84.9	Q	Q	36.40
No Heating Fuel	100.0	7.8	76.3	NC	15.8	19.50
Other Fuel	Q	Q	Q	Q	Q	162.41

NC No cases in sample.

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Table 14. U.S. Average Residential Energy Consumption of All Major Fuels Used in the Household, by Main Heating Fuel Type-- April 1984 Through March 1985

(Million Btu per Household)

Household Characteristics	Consumption of Natural Gas, Electricity, Fuel Oil or Kerosene, LPG						Consumption of Electricity						RSE Row Factors
		Households Using:						Households Using:					
	All Households	Natural Gas as Main Heating Fuel	Electricity as Main Heating Fuel: With Air Conditioning	Electricity as Main Heating Fuel: Without Air Conditioning	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: With Air Conditioning	Electricity as Main Heating Fuel: Without Air Conditioning	Fuel Oil or Kerosene as Main Heating Fuel	Liquefied Petroleum Gas as Main Heating Fuel	
RSE Column Factors:	0.44	0.46	1.25	1.55	0.64	1.77	0.59	0.66	1.28	1.89	1.05	2.26	
Total Households	105	124	56	53	126	89	29	23	52	48	23	27	3.07
Census Region and Division													
Northeast	125	136	61	52	137	96	22	19	54	51	19	18	6.33
New England	128	140	41	55	150	89	23	19	41	54	20	13	8.49
Middle Atlantic	125	135	69	52	133	Q	22	18	59	51	19	Q	8.68
North Central	129	142	70	72	124	119	25	21	68	63	27	29	6.36
East North Central	130	143	68	74	122	117	24	19	67	65	27	28	8.79
West North Central	129	138	77	Q	129	122	28	25	69	Q	25	31	8.30
South	85	115	54	43	90	72	36	30	51	39	31	28	5.60
South Atlantic	80	123	49	43	90	62	34	28	46	41	30	28	7.61
East South Central	83	113	66	41	92	72	44	32	65	41	41	31	7.84
West South Central	96	111	55	Q	NC	92	35	32	52	Q	NC	25	13.12
West	85	99	54	53	121	77	27	21	48	48	35	22	5.67
Mountain	103	121	48	74	129	75	27	22	43	68	33	19	13.11
Pacific	78	90	58	52	118	78	27	21	51	46	35	24	7.44
Metropolitan Status													
Metropolitan	108	123	55	52	129	83	28	23	51	47	22	28	3.81
Central City	109	122	53	50	122	58	25	21	49	42	17	24	6.74
Outside Central City	107	125	57	54	136	88	31	25	53	51	25	29	4.59
Nonmetropolitan	95	125	60	55	113	93	31	25	58	51	27	26	5.19
Weather Zone													
Fewer than 2,000 CDD and--													
More than 7,000 HDD	114	134	68	55	132	101	25	20	65	51	24	22	7.40
5,500 to 7,000 HDD	135	146	66	68	146	133	25	20	65	64	25	35	6.11
4,000 to 5,499 HDD	111	131	69	54	124	97	28	23	61	52	19	28	5.11
Fewer than 4,000 HDD	82	97	55	41	89	86	29	23	51	28	33	27	6.02
More than 2,000 CDD and Fewer than 4,000 HDD	73	101	48	43	67	59	37	34	46	37	33	27	10.09
How Utilities are Paid													
All Paid by Household	108	132	58	56	132	91	32	26	54	52	27	28	3.20
Some Paid, Some in Rent	85	85	45	34	106	Q	13	12	39	20	10	Q	8.19
All Included in Rent	89	100	33	40	106	Q	16	15	30	36	9	Q	11.30
Other Method	101	110	Q	47	141	49	19	17	Q	27	18	17	14.27

See footnotes at end of table.

Table 14. U.S. Average Residential Energy Consumption of All Major Fuels Used in the Household, by Main Heating Fuel Type-- April 1984 Through March 1985 (Continued)

(Million Btu per Household)

Household Characteristics	Consumption of Natural Gas, Electricity, Fuel Oil or Kerosene, LPG						Consumption of Electricity						RSE Row Factors
	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			
RSE Column Factors:	0.44	0.46	1.25	1.55	0.64	1.77	0.59	0.66	1.28	1.89	1.05	2.26	
Housing Structure													
Single-Family Detached	117	140	70	64	137	96	34	28	64	60	29	30	3.40
Owned	120	143	70	65	141	99	35	29	66	60	29	31	3.54
Rented	103	126	63	60	116	88	28	23	54	59	34	27	7.25
Single-Family Attached	112	118	66	Q	142	Q	28	21	65	Q	18	Q	12.33
Owned	121	125	72	Q	145	Q	27	21	72	Q	18	Q	14.45
Rented	92	103	57	Q	Q	NC	29	20	55	Q	Q	NC	22.09
Building of 2 to 4 Units	97	101	44	45	124	Q	17	14	40	39	14	Q	9.07
Owned	130	130	Q	Q	152	NC	18	17	Q	Q	17	NC	18.19
Rented	89	94	45	44	110	Q	17	14	41	39	13	Q	9.73
Building of 5 or More Units	71	83	35	37	105	Q	18	12	33	32	9	Q	7.41
Owned	76	82	46	Q	119	NC	27	21	46	Q	17	NC	22.08
Rented	71	83	33	37	102	Q	17	12	32	33	8	Q	7.22
Mobile Home	73	102	47	54	78	72	30	22	46	50	24	22	7.84
Owned	75	104	50	57	80	71	31	23	49	54	24	22	8.44
Rented	64	91	37	Q	71	75	25	18	35	Q	26	21	14.67
Number of Rooms													
1	52	50	Q	Q	Q	Q	9	6	Q	Q	Q	Q	25.55
2	58	75	27	36	91	Q	15	9	25	30	9	Q	12.00
3	67	73	34	34	99	68	16	11	31	28	11	16	7.27
4	82	96	45	46	102	76	22	16	41	43	17	21	4.77
5	101	119	57	59	116	89	29	23	54	52	24	30	4.09
6	115	137	62	61	134	90	33	27	60	57	27	30	4.76
7	129	150	82	80	158	108	39	31	76	78	30	32	5.53
8 or More	163	183	97	71	174	165	42	37	88	67	32	55	6.37
Number of Rooms that Can Be Air Conditioned													
All	103	127	57	NC	117	95	37	30	54	NC	30	33	4.53
Some	113	127	49	NC	133	86	25	21	46	NC	23	30	4.60
None	102	119	--	53	125	85	22	17	--	48	20	22	4.04
Measured Heated Area of Residence (square feet)													
Fewer than 600	63	73	33	35	94	53	15	11	29	30	11	15	7.08
600 to 999	81	95	41	44	101	77	22	16	38	40	16	23	4.14
1,000 to 1,599	101	119	58	61	118	96	31	24	55	55	26	30	4.10
1,600 to 1,999	120	139	72	78	144	109	35	27	70	77	26	38	5.46
2,000 to 2,399	135	156	74	59	150	Q	35	31	69	56	27	Q	6.77
2,400 to 2,999	143	158	83	Q	162	Q	36	30	74	Q	31	Q	9.49
3,000 or More	180	204	104	Q	187	189	43	39	95	Q	33	65	9.05
Year of Construction													
1939 or Before	126	138	64	58	138	100	21	19	47	44	20	31	5.47
1940 to 1949	106	114	61	Q	130	Q	25	21	56	Q	23	Q	9.20
1950 to 1959	107	119	65	40	116	79	27	24	60	34	26	28	7.50
1960 to 1964	101	118	54	49	104	95	31	29	50	49	20	27	7.89
1965 to 1969	99	121	56	49	122	65	33	28	53	49	25	22	7.84
1970 to 1974	90	119	50	58	102	85	34	27	46	54	32	26	7.48
1975 to 1979	87	119	61	53	116	81	40	26	60	51	31	28	7.35
1980 or After	74	92	47	57	112	115	33	21	45	53	20	28	12.03

See footnotes at end of table.

Table 14. U.S. Average Residential Energy Consumption of All Major Fuels Used in the Household, by Main Heating Fuel Type-- April 1984 Through March 1985 (Continued)

(Million Btu per Household)

Household Characteristics	Consumption of Natural Gas, Electricity, Fuel Oil or Kerosene, LPG						Consumption of Electricity						RSE Row Factors
		Households Using:						Households Using:					
	All Households	Natural Gas as Main Heating Fuel	Electricity as Main Heating Fuel: With Air Conditioning	Electricity as Main Heating Fuel: Without Air Conditioning	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: With Air Conditioning	Electricity as Main Heating Fuel: Without Air Conditioning	Fuel Oil or Kerosene as Main Heating Fuel	Liquefied Petroleum Gas as Main Heating Fuel	
RSE Column Factors:	0.44	0.46	1.25	1.55	0.64	1.77	0.59	0.66	1.28	1.89	1.05	2.26	
Status of Unit													
Owned	116	138	66	62	137	91	33	28	63	56	26	28	3.14
Rented	85	99	40	43	107	83	21	16	37	40	16	25	4.39
1984 Family Income													
Less than $5,000	90	112	39	40	104	73	20	16	37	35	17	17	7.43
$5,000 to $9,999	95	115	40	46	115	86	22	17	39	44	18	21	6.39
$10,000 to $14,999	92	106	49	50	118	77	25	19	42	44	20	26	5.77
$15,000 to $19,999	100	117	46	46	118	86	25	20	43	44	23	28	7.00
$20,000 to $24,999	101	113	58	61	129	103	28	21	52	54	25	32	7.07
$25,000 to $34,999	108	127	61	61	137	81	33	26	58	52	24	35	5.26
$35,000 or More	129	150	72	63	148	149	39	32	68	60	29	49	4.83
Below 100% of Poverty	95	117	48	46	117	81	24	19	42	42	20	22	6.52
Below 125% of Poverty	96	118	47	46	116	82	24	19	42	42	18	22	5.51
Assistance for Heating in Winter													
Yes	107	128	59	51	108	96	23	18	54	47	22	20	8.25
No	105	123	56	53	127	88	29	24	52	48	23	28	3.13
Assistance for Weatherization of Residence													
Yes	107	123	Q	Q	123	Q	23	22	Q	Q	27	Q	18.16
No	105	124	56	53	126	89	29	23	52	48	23	28	3.11
Household Owns or Has Regular Use of a Vehicle													
Yes	106	125	57	56	130	90	31	25	54	51	26	28	3.15
No	98	112	37	38	110	77	15	13	33	34	11	18	5.67
Race of Householder													
White	104	124	56	53	128	91	30	24	53	49	24	27	3.21
Black	113	128	57	55	114	71	23	21	47	45	17	26	9.19
Other	87	95	52	53	119	Q	20	18	46	34	10	Q	15.01
Householder of Hispanic Descent													
Yes	89	98	53	Q	114	Q	21	17	46	Q	12	Q	11.73
No	106	125	56	54	127	89	29	24	53	49	23	27	3.09
Age of Householder													
Under 25 Years	82	98	39	48	103	86	23	17	38	41	24	23	8.95
25 to 34 Years	93	113	53	52	112	88	27	20	48	48	19	29	4.73
35 to 44 Years	115	134	77	60	135	103	36	29	70	52	27	32	4.72
45 to 59 Years	120	139	63	63	141	92	33	28	60	57	25	33	5.17
60 Years and Over	103	121	48	46	123	82	24	20	46	44	20	22	4.62

See footnotes at end of table.

Table 14. U.S. Average Residential Energy Consumption of All Major Fuels Used in the Household, by Main Heating Fuel Type-- April 1984 Through March 1985 (Continued)

(Million Btu per Household)

Household Characteristics	Consumption of Natural Gas, Electricity, Fuel Oil or Kerosene, LPG						Consumption of Electricity						RSE Row Factors
		Households Using:						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			
RSE Column Factors:	0.44	0.46	1.25	1.55	0.64	1.77	0.59	0.66	1.28	1.89	1.05	2.26	
Household Size													
1 Person	84	98	36	40	103	70	18	13	34	37	13	17	4.71
2 Persons	98	118	54	52	123	82	28	22	50	44	22	23	4.37
3 Persons	109	129	59	66	129	90	32	26	57	63	25	34	4.48
4 Persons	121	139	79	63	151	116	37	31	72	57	30	41	5.21
5 Persons	131	158	81	64	146	108	39	32	81	52	34	44	8.33
6 or More Persons	138	159	76	63	180	Q	38	31	64	62	36	Q	10.84

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Table 15. U.S. Average Residential Energy Expenditures for All Major Fuels Used in the Household and Expenditures as a Percent of Income by Main Heating Fuel Type-- April 1982 Through March 1984

Household Characteristics	Average Total Fuel Expenditure (dollars per household)						Expenditure as a Percent of Income (median percent)					
		Households Using:						Households Using:				
			Electricity as Main Heating Fuel						Electricity as Main Heating Fuel			
	All Households	Natural Gas as Main Heating Fuel	With Air Conditioning	Without Air Conditioning	Fuel Oil or Kerosene as Main Heating Fuel	Liquefied Petroleum Gas as Main Heating Fuel	All Households	Natural Gas as Main Heating Fuel	With Air Conditioning	Without Air Conditioning	Fuel Oil or Kerosene as Main Heating Fuel	Liquefied Petroleum Gas as Main Heating Fuel
Total Households	1,123	1,119	1,071	863	1,422	1,170	5	5	4	5	8	9
Census Region and Division												
Northeast	1,443	1,421	1,476	1,233	1,535	1,298	6	5	4	8	8	Q
New England	1,471	1,476	980	1,394	1,629	1,151	6	6	3	Q	8	Q
Middle Atlantic	1,435	1,410	1,652	1,185	1,500	Q	6	5	4	Q	8	Q
North Central	1,160	1,154	1,151	1,284	1,298	1,417	6	6	5	Q	8	9
East North Central	1,170	1,171	1,151	1,302	1,283	1,450	6	6	5	Q	8	12
West North Central	1,134	1,113	1,151	Q	1,350	1,374	5	5	5	Q	9	8
South	1,055	1,121	1,047	811	1,155	1,050	5	5	4	8	7	9
South Atlantic	1,074	1,184	1,063	917	1,156	1,028	5	5	5	Q	7	8
East South Central	930	962	1,004	623	1,136	939	6	6	4	Q	Q	6
West South Central	1,105	1,134	1,049	Q	Q	1,170	5	5	4	Q	Q	Q
West	852	873	916	705	1,124	971	4	3	4	4	6	6
Mountain	944	956	917	1,027	1,131	933	5	5	5	Q	Q	Q
Pacific	819	842	915	683	1,121	1,000	3	3	3	4	5	Q
Metropolitan Status												
Metropolitan	1,155	1,134	1,080	850	1,463	1,170	5	5	4	4	7	8
Central City	1,076	1,085	935	701	1,323	918	5	5	4	4	7	Q
Outside Central City	1,223	1,188	1,181	978	1,574	1,213	5	4	4	5	7	9
Nonmetropolitan	1,023	1,054	1,029	897	1,254	1,170	7	7	4	6	9	9
Weather Zone												
Fewer than 2,000 CDD and--												
More than 7,000 HDD	1,067	1,031	1,259	975	1,376	1,167	5	5	Q	5	9	11
5,500 to 7,000 HDD	1,283	1,214	1,161	1,291	1,627	1,728	6	6	4	6	8	7
4,000 to 5,499 HDD	1,212	1,245	1,258	761	1,384	1,218	5	5	4	5	8	8
Fewer than 4,000 HDD	905	910	933	610	1,139	1,106	4	4	5	4	6	9
More than 2,000 CDD and Fewer than 4,000 HDD	1,081	1,155	1,062	963	1,096	979	5	5	4	Q	5	8
Payment Method for Utilities												
All Paid by Household	1,183	1,202	1,105	931	1,529	1,205	5	5	4	5	8	9
Some Paid, Some in Rent	830	751	900	410	1,128	Q	5	4	Q	Q	7	Q
All Included in Rent	789	794	570	648	978	Q	7	8	6	4	7	Q
Other Method	1,099	1,085	Q	584	1,551	739	6	6	Q	Q	7	Q

See footnotes at end of table.

Table 15. U.S. Average Residential Energy Expenditures for All Major Fuels Used in the Household and Expenditures as a Percent of Income by Main Heating Fuel Type-- April 1982 Through March 1984 (Continued)

Household Characteristics	Average Total Fuel Expenditure (dollars per household)						Expenditure as a Percent of Income (median percent)					
		Households Using:						Households Using:				
			Electricity as Main Heating Fuel						Electricity as Main Heating Fuel			
	All Households	Natural Gas as Main Heating Fuel	With Air Conditioning	Without Air Conditioning	Fuel Oil or Kerosene as Main Heating Fuel	Liquefied Petroleum Gas as Main Heating Fuel	All Households	Natural Gas as Main Heating Fuel	With Air Conditioning	Without Air Conditioning	Fuel Oil or Kerosene as Main Heating Fuel	Liquefied Petroleum Gas as Main Heating Fuel
Housing Structure												
Single-Family Detached	1,255	1,272	1,289	1,046	1,582	1,253	5	5	4	5	8	9
Owned	1,291	1,310	1,305	1,102	1,610	1,288	5	5	4	5	7	9
Rented	1,062	1,064	1,165	758	1,433	1,152	7	7	5	5	10	10
Single-Family Attached	1,256	1,195	1,221	Q	1,573	Q	5	5	Q	Q	10	Q
Owned	1,356	1,282	1,414	Q	1,603	Q	5	5	Q	Q	9	Q
Rented	1,025	1,005	966	Q	Q	Q	6	6	Q	Q	Q	Q
Building of 2 to 4 Units	950	903	816	614	1,377	Q	6	6	5	5	8	Q
Owned	1,317	1,222	Q	Q	1,698	Q	6	6	Q	Q	7	Q
Rented	860	831	825	603	1,221	Q	6	5	5	5	8	Q
Building of 5 or More Units	761	705	743	604	1,040	Q	5	4	4	4	7	Q
Owned	1,047	937	1,014	Q	1,438	Q	2	2	Q	Q	Q	Q
Rented	728	684	703	614	979	Q	5	5	4	5	8	Q
Mobile Home	947	922	950	967	1,000	999	7	7	8	7	9	7
Owned	970	958	1,005	992	992	997	7	7	9	Q	9	7
Rented	860	738	762	Q	1,021	1,005	7	Q	Q	Q	Q	Q
Number of Rooms												
1	514	455	Q	Q	Q	Q	3	Q	Q	Q	Q	Q
2	634	624	514	650	937	Q	5	6	5	Q	Q	Q
3	698	618	691	581	995	888	5	5	4	5	7	7
4	874	831	882	688	1,139	1,001	6	6	6	4	9	10
5	1,074	1,073	1,099	898	1,325	1,186	6	6	5	5	8	10
6	1,270	1,285	1,235	1,069	1,529	1,207	5	5	4	5	8	8
7	1,416	1,392	1,489	1,342	1,814	1,364	5	4	4	5	8	Q
8 or More	1,708	1,697	1,667	1,347	2,038	2,188	4	4	3	Q	5	Q
Number of Rooms that Can Be Air Conditioned												
All	1,193	1,228	1,088	Q	1,417	1,268	5	5	4	Q	6	8
Some	1,197	1,152	979	Q	1,539	1,187	5	5	5	Q	7	7
None	1,019	987	Q	863	1,355	1,094	6	6	Q	5	9	10
Measured Heated Area of Residence (square feet)												
Fewer than 600	709	650	650	594	990	776	6	6	5	7	9	10
600 to 999	858	829	818	695	1,102	1,045	6	6	5	5	8	10
1,000 to 1,599	1,101	1,076	1,111	1,001	1,391	1,233	6	6	5	5	8	9
1,600 to 1,999	1,311	1,282	1,353	1,271	1,614	1,388	5	5	4	Q	9	Q
2,000 to 2,399	1,437	1,463	1,405	1,133	1,679	Q	4	4	4	Q	6	Q
2,400 to 2,999	1,466	1,436	1,534	Q	1,820	Q	4	4	4	Q	6	Q
3,000 or More	1,902	1,906	1,745	Q	2,195	2,582	4	4	Q	Q	5	Q
Year of Construction												
1939 or Before	1,212	1,177	929	809	1,502	1,309	7	7	3	5	9	9
1940 to 1949	1,092	1,030	1,231	Q	1,473	Q	5	5	6	Q	7	Q
1950 to 1959	1,120	1,101	1,290	622	1,386	1,074	5	5	5	Q	7	10
1960 to 1964	1,098	1,147	1,038	792	1,126	1,240	5	5	6	Q	8	Q
1965 to 1969	1,126	1,182	1,075	797	1,463	860	5	4	6	4	7	8
1970 to 1974	1,079	1,128	987	1,061	1,303	1,140	4	4	4	4	6	9
1975 to 1979	1,100	1,078	1,163	916	1,418	1,159	4	4	4	6	6	5
1980 or After	903	827	918	913	1,190	1,332	3	3	4	4	Q	Q

See footnotes at end of table.

Table 15. U.S. Average Residential Energy Expenditures for All Major Fuels Used in the Household and Expenditures as a Percent of Income by Main Heating Fuel Type-- April 1982 Through March 1984 (Continued)

Household Characteristics	Average Total Fuel Expenditure (dollars per household)						Expenditure as a Percent of Income (median percent)					
		Households Using:						Households Using:				
			Electricity as Main Heating Fuel						Electricity as Main Heating Fuel			
	All Households	Natural Gas as Main Heating Fuel	With Air Conditioning	Without Air Conditioning	Fuel Oil or Kerosene as Main Heating Fuel	Liquefied Petroleum Gas as Main Heating Fuel	All Households	Natural Gas as Main Heating Fuel	With Air Conditioning	Without Air Conditioning	Fuel Oil or Kerosene as Main Heating Fuel	Liquefied Petroleum Gas as Main Heating Fuel
Status of Unit												
Owned	1,265	1,283	1,254	1,055	1,570	1,197	5	5	4	5	7	8
Rented	870	845	800	660	1,162	1,092	6	5	5	5	8	10
1984 Family Income												
Less than $5,000	891	913	771	693	1,119	935	24	25	20	19	33	27
$5,000 to $9,999	964	967	772	777	1,227	1,078	12	13	9	9	17	14
$10,000 to $14,999	965	927	960	734	1,280	1,061	7	7	7	5	10	9
$15,000 to $19,999	1,043	1,023	937	661	1,352	1,150	5	5	5	4	8	6
$20,000 to $24,999	1,080	1,014	1,040	1,060	1,484	1,309	4	4	4	4	6	Q
$25,000 to $34,999	1,189	1,184	1,140	923	1,541	1,205	4	4	4	3	5	4
$35,000 or More	1,455	1,456	1,368	1,128	1,778	1,951	3	3	3	2	3	3
Below 100% of Poverty	969	982	880	773	1,280	1,038	19	19	18	12	26	21
Below 125% of Poverty	979	994	877	755	1,266	1,045	16	16	15	11	20	17
Assistance for Heating in Winter												
Yes	1,062	1,084	1,060	850	1,232	1,145	17	17	Q	12	20	19
No	1,127	1,122	1,071	864	1,434	1,173	5	5	4	4	7	8
Assistance for Weatherization of Residence												
Yes	1,052	1,051	Q	Q	1,376	Q	11	11	Q	Q	Q	Q
No	1,124	1,120	1,071	865	1,423	1,176	5	5	4	5	8	8
Household Owns or Has Regular Use of a Vehicle												
Yes	1,152	1,150	1,100	906	1,495	1,192	5	5	4	4	7	8
No	924	922	692	609	1,131	1,014	13	14	9	11	12	18
Race of Householder												
White	1,132	1,126	1,076	871	1,451	1,183	5	5	4	5	8	8
Black	1,131	1,145	1,064	920	1,294	1,046	9	10	6	7	8	10
Other	896	872	881	633	1,208	Q	5	5	Q	Q	11	Q
Age of Householder												
Under 25 Years	853	830	791	700	1,226	1,133	5	5	4	5	9	Q
25 to 34 Years	997	996	1,007	798	1,234	1,171	4	4	4	3	6	7
35 to 44 Years	1,288	1,266	1,410	939	1,569	1,316	4	4	4	5	6	6
45 to 59 Years	1,308	1,316	1,167	1,059	1,662	1,277	5	4	4	4	6	5
60 Years and Over	1,063	1,057	960	827	1,329	1,067	9	8	7	8	11	12

See footnotes at end of table.

Table 15. U.S. Average Residential Energy Expenditures for All Major Fuels Used in the Household and Expenditures as a Percent of Income by Main Heating Fuel Type-- April 1982 Through March 1984 (Continued)

Household Characteristics	Average Total Fuel Expenditure (dollars per household)						Expenditure as a Percent of Income (median percent)					
		Households Using:						Households Using:				
			Electricity as Main Heating Fuel						Electricity as Main Heating Fuel			
	All Households	Natural Gas as Main Heating Fuel	With Air Conditioning	Without Air Conditioning	Fuel Oil or Kerosene as Main Heating Fuel	Liquefied Petroleum Gas as Main Heating Fuel	All Households	Natural Gas as Main Heating Fuel	With Air Conditioning	Without Air Conditioning	Fuel Oil or Kerosene as Main Heating Fuel	Liquefied Petroleum Gas as Main Heating Fuel
Household Size												
1 Person	821	801	738	673	1,050	903	7	6	6	5	10	11
2 Persons	1,074	1,058	1,042	838	1,384	1,080	5	5	4	4	8	9
3 Persons	1,189	1,211	1,091	990	1,499	1,245	5	4	4	5	7	7
4 Persons	1,336	1,333	1,406	1,009	1,717	1,559	5	5	4	6	6	6
5 Persons	1,448	1,479	1,542	901	1,882	1,504	5	6	5	Q	7	Q
6 or More Persons	1,492	1,463	1,545	1,315	2,233	Q	6	5	Q	Q	9	Q

Q *Data withheld because fewer than 10 households were sampled, or, if the statistic is a median, fewer than 25 households were sampled. See Table C9 for a method of calculating RSE's for statistics in this table.*

Notes: 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 1984 Residential Energy Consumption Survey.

Table 16. U.S. Residential Natural Gas Consumption and Expenditures-- April 1984 Through March 1985

Household Characteristics	Natural Gas Used: Number of Households (million)	Total Amount Consumed (trillion cu.ft.)	Total Amount Consumed (quadrillion 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)	RSE Row Factors
RSE Column Factors:	1.37	1.62	1.62	1.55	0.36	0.80	0.80	0.77	
Total Households	55.4	4.83	4.98	29.8	6.16	87	90	537	2.06
Census Region and Division									
Northeast	11.7	.90	.93	6.9	7.66	77	79	588	5.38
New England	2.0	.16	.16	1.3	8.05	78	80	626	7.72
Middle Atlantic	9.7	.74	.77	5.6	7.57	77	79	580	6.60
North Central	16.9	1.93	1.99	11.1	5.76	114	118	660	2.75
East North Central	11.9	1.39	1.43	8.3	5.93	117	121	696	3.14
West North Central	5.0	.54	.55	2.9	5.33	108	111	574	5.82
South	14.3	1.12	1.15	6.7	5.99	78	80	466	5.59
South Atlantic	5.6	.46	.47	3.2	6.89	82	85	567	9.94
East South Central	2.4	.19	.19	1.0	5.29	77	80	409	10.32
West South Central	6.3	.47	.49	2.5	5.38	74	77	400	6.45
West	12.5	.89	.91	5.1	5.72	71	73	406	3.59
Mountain	3.4	.31	.32	1.6	5.23	92	95	483	5.99
Pacific	9.1	.58	.59	3.4	5.98	63	65	377	4.24
Metropolitan Status									
Metropolitan	46.1	3.97	4.09	25.0	6.31	86	89	542	2.11
Central City	24.6	2.08	2.15	13.0	6.25	85	87	529	2.76
Outside Central City	21.5	1.88	1.94	12.0	6.37	88	90	558	2.94
Nonmetropolitan	9.3	.87	.89	4.8	5.48	94	96	513	6.95
Weather Zone									
Fewer than 2,000 CDD and--									
More than 7,000 HDD	5.2	.54	.56	3.1	5.72	105	108	602	7.03
5,500 to 7,000 HDD	16.0	1.81	1.87	11.0	6.05	113	117	687	4.07
4,000 to 5,499 HDD	14.6	1.18	1.22	8.0	6.77	81	84	549	7.26
Fewer than 4,000 HDD	13.3	.90	.93	5.3	5.86	68	70	398	5.42
More than 2,000 CDD and Fewer than 4,000 HDD	6.4	.39	.41	2.4	6.10	61	63	374	6.71
All Gas Paid by Household									
Yes	43.4	4.07	4.20	25.0	6.14	94	97	576	2.48
No	12.0	.76	.79	4.8	6.27	64	66	399	4.85
Housing Structure by Ownership									
Single-Family Detached	32.8	3.36	3.46	20.2	6.03	102	105	616	2.45
Owned	27.9	2.88	2.97	17.5	6.07	103	107	627	2.46
Rented	5.0	.48	.49	2.8	5.79	95	98	553	5.13
Single-Family Attached	3.0	.25	.26	1.7	6.95	83	85	575	9.15
Owned	2.2	.18	.19	1.3	6.94	86	89	596	11.91
Rented	.9	.07	.07	.5	6.96	75	78	524	11.61
Building of 2 to 4 Units	8.5	.62	.64	4.1	6.54	73	75	478	5.68
Owned	1.8	.15	.16	1.0	6.75	87	89	585	7.53
Rented	6.7	.47	.48	3.0	6.47	70	72	450	6.42
Building of 5 or More Units	9.5	.49	.51	3.1	6.27	52	53	325	5.15
Owned	.9	.04	.04	.3	6.73	42	43	283	15.47
Rented	8.6	.46	.47	2.8	6.23	53	54	329	5.63
Mobile Home	1.5	.11	.12	.6	5.77	74	77	428	9.62
Owned	1.3	.10	.10	.6	5.88	75	77	441	9.78
Rented	.2	.02	.02	.1	5.12	71	73	362	22.37
Number of Rooms									
1	.5	.02	.02	.1	6.60	35	37	234	16.86
2	1.3	.06	.07	.4	6.40	49	50	313	9.47
3	5.8	.28	.29	1.8	6.34	49	50	309	5.61
4	11.6	.81	.83	4.9	6.02	70	72	419	4.38
5	13.2	1.15	1.18	7.0	6.07	87	89	525	3.14
6	10.4	1.04	1.07	6.5	6.28	99	102	624	4.08
7	5.7	.59	.61	3.6	6.07	105	108	636	4.87
8 or More	6.9	.89	.91	5.5	6.24	129	133	802	4.13

See footnotes at end of table.

Table 16. U.S. Residential Natural Gas Consumption and Expenditures-- April 1984 Through March 1985 (Continued)

Household Characteristics	Natural Gas Used: Number of Households (million)	Total Amount Consumed (trillion cu.ft.)	Total Amount Consumed (quadrillion 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)	RSE Row Factors
RSE Column Factors:	1.37	1.62	1.62	1.55	0.36	0.80	0.80	0.77	
Number of Rooms that Can Be Air Conditioned									
All	21.0	1.86	1.92	11.1	5.99	89	91	531	3.41
Some	12.2	1.07	1.11	6.9	6.44	88	91	566	4.20
None	22.2	1.90	1.96	11.7	6.17	86	88	527	3.27
Measured Heated Area of Residence (square feet)									
Fewer than 600	5.1	.25	.25	1.6	6.61	48	50	319	6.32
600 to 999	15.2	1.03	1.06	6.2	6.04	68	70	409	3.11
1,000 to 1,599	15.1	1.30	1.34	7.8	6.03	86	88	516	3.13
1,600 to 1,999	7.2	.73	.76	4.6	6.23	101	104	632	4.02
2,000 to 2,399	5.2	.57	.58	3.5	6.21	110	113	683	4.08
2,400 to 2,999	4.2	.48	.49	3.0	6.18	114	117	702	4.48
3,000 or More	3.4	.49	.50	3.1	6.34	143	147	907	5.97
Year of Construction									
1939 or Before	18.8	1.83	1.88	11.6	6.37	97	100	618	3.65
1940 to 1949	5.1	.41	.42	2.6	6.28	81	84	510	7.23
1950 to 1959	9.1	.78	.80	4.7	6.11	86	88	524	4.31
1960 to 1964	5.1	.39	.40	2.3	6.04	77	79	463	7.50
1965 to 1969	5.3	.44	.45	2.7	6.06	83	86	504	6.23
1970 to 1974	5.6	.48	.49	2.9	6.11	84	87	517	6.14
1975 to 1979	4.3	.37	.38	2.1	5.67	86	89	488	5.40
1980 or After	2.2	.15	.15	.8	5.50	67	69	369	11.27
Status of Unit									
Owned	34.0	3.35	3.46	20.6	6.15	99	102	607	2.25
Rented	21.4	1.48	1.53	9.2	6.19	69	71	428	3.13
1984 Family Income									
Less than $5,000	4.8	.41	.42	2.4	5.94	85	87	503	4.85
$5,000 to $9,999	8.2	.68	.70	4.1	6.10	83	86	506	5.11
$10,000 to $14,999	8.6	.65	.67	3.9	6.03	76	78	455	4.27
$15,000 to $19,999	5.7	.47	.49	2.9	6.14	83	85	507	4.54
$20,000 to $24,999	5.5	.44	.45	2.7	6.14	79	82	487	5.00
$25,000 to $34,999	10.0	.87	.90	5.4	6.25	87	90	544	3.58
$35,000 or More	12.6	1.32	1.36	8.3	6.28	105	108	657	3.28
Below 100% of Poverty	8.1	.70	.72	4.2	5.98	86	89	517	4.30
Below 125% of Poverty	11.8	1.01	1.05	6.1	6.03	86	89	520	3.74
Assistance for Heating in Winter									
Yes	3.4	.33	.34	2.0	6.13	99	102	609	7.38
No	52.1	4.50	4.64	27.7	6.16	86	89	533	2.03
Assistance for Weatherization of Residence									
Yes	.8	.07	.08	.4	6.01	95	98	569	11.43
No	54.6	4.76	4.91	29.3	6.16	87	90	537	2.11
Household Owns or Has Regular Use of a Vehicle									
Yes	47.0	4.20	4.33	25.8	6.13	89	92	548	2.24
No	8.4	.63	.65	4.0	6.35	75	78	479	4.19
Race of Householder									
White	44.8	3.93	4.06	24.0	6.10	88	91	536	2.35
Black	8.2	.75	.77	4.8	6.41	91	94	586	5.16
Other	2.4	.15	.15	1.0	6.40	62	64	398	8.31

See footnotes at end of table.

Table 16. U.S. Residential Natural Gas Consumption and Expenditures-- April 1984 Through March 1985 (Continued)

Household Characteristics	Natural Gas Used: Number of Households (million)	Total Amount Consumed (trillion cu.ft.)	Total Amount Consumed (quadrillion 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)	RSE Row Factors
RSE Column Factors:	1.37	1.62	1.62	1.55	0.36	0.80	0.80	0.77	
Householder of Hispanic Descent									
Yes	3.5	0.22	0.23	1.5	6.62	62	64	413	6.94
No	51.9	4.61	4.76	28.3	6.14	89	92	546	2.07
Age of Householder									
Under 25 Years	4.4	.32	.33	1.9	5.94	72	74	426	5.62
25 to 34 Years	13.3	1.06	1.09	6.5	6.10	80	82	488	2.65
35 to 44 Years	10.8	1.00	1.03	6.2	6.21	92	95	573	3.52
45 to 59 Years	11.6	1.12	1.15	7.0	6.28	96	99	603	3.54
60 Years and Over	15.3	1.34	1.38	8.2	6.12	88	91	537	3.40
Household Size									
1 Person	13.6	.98	1.01	5.9	6.05	72	74	434	3.63
2 Persons	16.1	1.34	1.38	8.2	6.15	83	86	511	3.88
3 Persons	9.9	.89	.92	5.5	6.22	90	93	559	3.48
4 Persons	9.0	.85	.88	5.3	6.22	95	98	590	3.42
5 Persons	4.0	.45	.47	2.8	6.21	112	116	699	4.71
6 or More Persons	2.8	.33	.34	2.0	6.16	117	120	719	6.50
Secondary Heating									
Yes	20.3	1.87	1.93	11.4	6.11	92	95	565	3.27
No	35.1	2.96	3.05	18.3	6.19	84	87	522	2.27
Fuel Combinations									
Use Natural Gas for Main Heat	47.8	4.63	4.78	28.1	6.07	97	100	588	2.06
Use Natural Gas to Heat Water									
and Have A/C	26.4	2.61	2.69	15.8	6.06	99	102	599	2.85
and Lack A/C	16.3	1.61	1.67	9.7	6.03	99	102	597	3.37
Use Electricity to Heat Water									
and Have A/C	2.9	.21	.22	1.3	6.34	73	75	461	6.47
and Lack A/C	2.0	.18	.18	1.1	6.33	91	94	578	8.08
Other	.2	.02	.02	.1	5.67	69	71	392	23.72
Use Electricity for Main Heat	1.2	.04	.04	.3	6.60	32	33	211	14.87
Use Fuel Oil for Main Heat	4.6	.08	.08	.9	10.53	18	18	185	6.63
Use Wood for Main Heat	1.2	.06	.07	.4	6.42	53	55	340	10.87
Other/None	.5	.01	.01	.1	7.29	29	30	211	19.26
Main Heating Equipment Using Natural Gas									
Central Warm Air Furnace	29.3	3.04	3.13	18.0	5.93	104	107	615	2.86
Steam or Hot-Water System	8.7	.89	.92	6.0	6.78	102	106	695	5.03
Floor, Wall or Pipeless Furnace	5.6	.39	.40	2.2	5.60	70	72	389	6.66
Room Heater	3.9	.30	.31	1.8	5.99	77	79	458	7.04
None/Other	7.9	.22	.22	1.8	8.08	28	28	222	6.47

NC No cases in sample.

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

Notes: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. Because of rounding, data may not sum to totals. 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 1984 Residential Energy Consumption Survey.

Table 17. U.S. Residential Natural Gas Consumption and Expenditures for Households Using Natural Gas as Main Heating Fuel-- April 1984 Through March 1985

Household Characteristics	Natural Gas Used:								RSE Row Factors
	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)	
RSE Column Factors:	0.97	0.45	0.45	0.46	2.14	1.86	1.86	1.47	
Total Households	47.8	97	100	588	7.6	26	27	216	3.35
Census Region and Division									
Northeast	7.2	114	117	839	4.6	18	19	193	4.95
New England	1.2	118	121	918	.9	23	24	228	10.45
Middle Atlantic	6.0	113	117	823	3.7	17	18	185	5.71
North Central	16.4	117	120	671	.5	43	44	283	5.46
East North Central	11.5	120	123	708	.3	42	44	287	7.35
West North Central	4.9	109	113	582	.1	43	45	275	9.27
South	13.1	81	84	483	1.2	40	41	286	9.13
South Atlantic	4.7	90	93	614	.9	42	43	316	13.06
East South Central	2.4	78	81	414	Q	Q	Q	Q	19.64
West South Central	6.1	76	79	409	.3	35	36	215	12.93
West	11.2	75	78	429	1.3	35	36	207	6.47
Mountain	3.1	96	99	500	.2	48	49	269	7.81
Pacific	8.1	67	69	402	1.1	32	33	192	8.51
Metropolitan Status									
Metropolitan	39.1	97	100	602	7.1	25	26	212	3.46
Central City	20.4	98	101	599	4.2	21	22	188	4.28
Outside Central City	18.6	96	99	605	2.9	31	32	248	5.07
Nonmetropolitan	8.8	96	99	526	.5	42	43	268	9.62
Weather Zone									
Fewer than 2,000 CDD and--									
More than 7,000 HDD	4.8	110	113	628	.4	40	41	246	9.95
5,500 to 7,000 HDD	14.4	122	126	733	1.6	31	32	263	5.28
4,000 to 5,499 HDD	10.8	103	106	676	3.8	19	20	189	6.97
Fewer than 4,000 HDD	12.0	71	73	416	1.3	37	39	236	9.84
More than 2,000 CDD and Fewer than 4,000 HDD	5.9	64	66	389	.5	29	30	205	10.91
All Gas Paid by Household									
Yes	38.1	103	106	620	5.3	31	32	256	3.77
No	9.8	75	77	462	2.2	15	15	121	7.39
Housing Structure by Status of Unit									
Single-Family Detached	29.8	108	112	648	3.0	41	42	302	3.92
Owned	25.2	110	114	662	2.7	41	42	303	4.14
Rented	4.6	99	102	572	.3	44	45	296	8.41
Single-Family Attached	2.5	95	98	644	.5	27	28	249	9.67
Owned	1.7	101	104	685	.4	27	28	243	13.36
Rented	.8	81	83	555	Q	Q	Q	Q	18.29
Building of 2 to 4 Units	7.0	84	86	535	1.5	22	22	205	9.32
Owned	1.3	109	113	712	.5	24	25	235	12.09
Rented	5.7	78	80	495	1.0	21	21	191	9.75
Building of 5 or More Units	7.1	66	68	400	2.5	11	11	111	6.15
Owned	.6	59	61	384	.3	10	10	94	18.87
Rented	6.5	67	69	401	2.2	11	11	114	6.94
Mobile Home	1.4	77	79	440	Q	Q	Q	Q	19.05
Number of Rooms									
1	.3	43	44	272	Q	Q	Q	Q	27.95
2	1.0	61	63	381	.3	14	14	119	15.50
3	4.4	61	62	371	1.4	13	13	122	9.68
4	10.1	77	79	456	1.5	20	21	170	6.68
5	11.8	93	96	561	1.5	31	32	240	5.07
6	9.4	107	110	662	1.0	33	34	279	5.71
7	4.9	115	119	688	.8	42	43	323	7.74
8 or More	6.0	142	147	878	.9	36	37	287	7.34

See footnotes at end of table.

Table 17. U.S. Residential Natural Gas Consumption and Expenditures for Households Using Natural Gas as Main Heating Fuel-- April 1984 Through March 1985 (Continued)

Household Characteristics	Natural Gas Used:								RSE Row Factors
	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)	
RSE Column Factors:	0.97	0.45	0.45	0.46	2.14	1.86	1.86	1.47	
Number of Rooms that Can Be Air Conditioned									
All	19.4	93	96	555	1.6	32	33	238	6.27
Some	10.0	102	105	644	2.2	23	24	209	5.94
None	18.4	98	101	592	3.8	26	27	211	4.98
Measured Heated Area of Residence (square feet)									
Fewer than 600	3.7	60	62	379	1.4	16	17	154	9.18
600 to 999	13.0	76	78	451	2.2	19	20	157	5.12
1,000 to 1,599	13.5	93	95	551	1.7	30	31	234	4.99
1,600 to 1,999	6.6	108	112	668	.7	33	35	283	6.38
2,000 to 2,399	4.5	121	125	744	.7	36	37	283	7.39
2,400 to 2,999	3.7	124	127	756	.5	43	44	324	7.95
3,000 or More	3.0	159	164	997	.4	33	34	300	8.10
Year of Construction									
1939 or Before	15.0	116	119	718	3.9	25	26	233	4.35
1940 to 1949	4.4	91	94	562	.7	22	22	183	11.92
1950 to 1959	8.3	91	94	551	.7	27	28	216	6.72
1960 to 1964	4.3	87	89	519	.8	21	22	149	13.31
1965 to 1969	4.7	90	93	543	.6	25	26	178	10.67
1970 to 1974	5.1	89	92	541	.5	37	38	258	12.51
1975 to 1979	3.9	90	93	507	.3	41	42	247	11.46
1980 or After	2.1	69	71	380	Q	Q	Q	Q	17.89
Status of Unit									
Owned	30.0	107	111	651	4.0	35	36	269	3.53
Rented	17.9	80	82	482	3.6	17	18	157	5.07
1984 Family Income									
Less than $5,000	4.4	92	95	537	.5	22	22	194	8.80
$5,000 to $9,999	7.0	94	97	561	1.2	19	19	181	8.39
$10,000 to $14,999	7.3	84	86	497	1.3	28	29	214	7.69
$15,000 to $19,999	4.8	94	97	565	.9	24	24	204	8.06
$20,000 to $24,999	4.8	88	91	536	.8	24	25	186	7.82
$25,000 to $34,999	8.4	98	101	602	1.6	30	31	238	5.86
$35,000 or More	11.3	113	117	706	1.4	32	33	255	5.40
Below 100% of Poverty	7.2	94	97	553	.9	27	28	236	7.94
Below 125% of Poverty	10.3	95	98	562	1.4	24	25	215	6.31
Assistance for Heating in Winter									
Yes	3.1	107	110	648	.3	24	25	205	11.59
No	44.8	96	99	584	7.3	26	27	217	3.37
Assistance for Weatherization of Residence									
Yes	.7	96	99	572	Q	Q	Q	Q	24.88
No	47.1	97	100	588	7.5	26	27	215	3.41
Household Owns or Has Regular Use of a Vehicle									
Yes	41.4	97	100	590	5.6	31	32	239	3.62
No	6.4	94	97	578	2.0	14	14	150	6.41

See footnotes at end of table.

Table 17. U.S. Residential Natural Gas Consumption and Expenditures for Households Using Natural Gas as Main Heating Fuel-- April 1984 Through March 1985 (Continued)

Household Characteristics	Natural Gas Used:								RSE Row Factors
	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)	
RSE Column Factors:	0.97	0.45	0.45	0.46	2.14	1.86	1.86	1.47	
Race of Householder									
White	39.0	97	100	583	5.8	27	28	219	3.53
Black	7.0	103	106	648	1.2	25	26	222	10.07
Other	1.9	75	77	466	.6	19	20	168	11.23
Householder of Hispanic Descent									
Yes	2.6	78	81	501	.9	19	19	171	9.06
No	45.3	98	101	593	6.6	27	28	222	3.44
Age of Householder									
Under 25 Years	3.9	78	81	460	.6	26	26	187	10.31
25 to 34 Years	11.4	89	92	536	1.9	24	25	197	4.72
35 to 44 Years	9.3	102	105	624	1.6	36	37	271	5.31
45 to 59 Years	10.1	107	110	661	1.5	27	28	227	5.90
60 Years and Over	13.3	98	101	590	2.0	21	21	191	5.97
Household Size									
1 Person	11.7	81	84	484	1.9	14	15	129	6.07
2 Persons	13.8	93	96	562	2.2	23	24	196	6.09
3 Persons	8.6	99	102	606	1.3	30	30	245	5.61
4 Persons	7.6	105	108	643	1.4	39	40	300	6.11
5 Persons	3.6	122	126	752	.5	37	39	281	8.09
6 or More Persons	2.6	123	127	752	.2	43	44	343	7.77

NC No cases in sample.

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

Notes: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. Because of rounding, data may not sum to totals. 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 1984 Residential Energy Consumption Survey.

Table 18. U.S. Residential Electricity Consumption and Expenditures--April 1984 Through March 1985

Household Characteristics	Electricity								RSE Row Factors
	Number of Households (million)	Total Amount Consumed (quadrillion 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)	
RSE Column Factors:	1.10	1.45	1.43	0.49	1.45	0.87	0.87	0.83	
Total Households	86.3	2.48	54.5	7.5	728	8.4	29	632	1.80
Census Region and Division									
Northeast	18.3	.41	12.2	10.2	120	6.5	22	665	3.76
New England	4.3	.10	2.7	9.6	28	6.6	23	635	5.64
Middle Atlantic	14.0	.31	9.5	10.3	91	6.5	22	674	4.38
North Central	21.6	.55	11.8	7.4	160	7.4	25	546	4.26
East North Central	15.2	.37	8.1	7.6	107	7.0	24	533	5.41
West North Central	6.4	.18	3.7	7.0	53	8.2	28	575	4.63
South	29.3	1.06	21.7	7.0	312	10.6	36	740	2.89
South Atlantic	14.8	.50	10.8	7.4	146	9.9	34	732	4.08
East South Central	5.8	.25	4.1	5.5	74	12.9	44	710	5.87
West South Central	8.8	.31	6.8	7.4	91	10.4	35	773	7.13
West	17.0	.47	8.8	6.5	137	8.0	27	518	3.28
Mountain	4.5	.12	2.4	6.8	36	7.9	27	539	8.19
Pacific	12.5	.34	6.4	6.3	101	8.1	27	511	3.91
Metropolitan Status									
Metropolitan	65.7	1.84	41.7	7.7	540	8.2	28	636	2.24
Central City	30.6	.75	16.7	7.6	221	7.2	25	548	3.50
Outside Central City	35.1	1.09	25.0	7.8	320	9.1	31	712	3.08
Nonmetropolitan	20.6	.64	12.7	6.8	188	9.1	31	618	4.36
Weather Zone									
Fewer than 2,000 CDD and--									
More than 7,000 HDD	9.0	.22	4.5	6.9	66	7.3	25	502	7.26
5,500 to 7,000 HDD	21.5	.55	12.8	8.0	160	7.5	25	593	5.44
4,000 to 5,499 HDD	22.5	.63	14.3	7.8	184	8.2	28	636	5.56
Fewer than 4,000 HDD	19.9	.59	11.6	6.7	172	8.6	29	580	5.52
More than 2,000 CDD and Fewer than 4,000 HDD	13.3	.50	11.3	7.8	146	11.0	37	850	6.19
All Electricity Paid by Household									
Yes	79.7	2.36	51.8	7.5	693	8.7	30	650	1.69
No	6.6	.12	2.7	7.6	35	5.3	18	404	6.45
Housing Structure									
Single-Family Detached	53.5	1.80	38.5	7.3	527	9.9	34	720	2.20
Owned	45.0	1.56	33.5	7.3	458	10.2	35	745	2.38
Rented	8.5	.24	5.0	7.2	70	8.2	28	588	4.82
Single-Family Attached	4.1	.11	2.7	8.2	33	8.2	28	667	12.44
Owned	2.8	.08	2.0	8.7	23	8.0	27	699	16.72
Rented	1.2	.04	.7	7.0	10	8.5	29	594	17.57
Building of 2 to 4 Units	10.0	.17	4.2	8.4	50	5.0	17	417	5.56
Owned	2.0	.03	1.1	10.4	10	5.1	18	534	7.46
Rented	8.0	.13	3.1	7.9	40	4.9	17	388	6.48
Building of 5 or More Units	13.6	.25	5.9	8.2	72	5.3	18	434	5.39
Owned	1.4	.04	1.0	9.2	11	8.0	27	738	16.52
Rented	12.2	.21	4.9	8.0	61	5.0	17	400	5.37
Mobile Home	5.1	.15	3.2	7.1	45	8.8	30	626	7.56
Owned	4.1	.13	2.6	7.0	37	9.2	31	643	8.58
Rented	1.1	.03	.6	7.5	8	7.4	25	561	10.75
Number of Rooms									
1	.6	.01	.1	9.2	2	2.6	9	237	15.11
2	2.2	.03	.8	7.8	10	4.5	15	352	11.64
3	8.8	.14	3.2	7.9	40	4.6	16	361	5.39
4	18.5	.41	9.0	7.5	120	6.5	22	486	3.50
5	20.6	.59	12.7	7.3	173	8.4	29	615	2.90
6	16.5	.54	12.1	7.6	159	9.6	33	730	3.43
7	9.2	.36	7.6	7.3	105	11.4	39	829	4.69
8 or More	9.8	.41	9.0	7.6	119	12.2	42	922	3.56

See footnotes at end of table.

Table 18. U.S. Residential Electricity Consumption and Expenditures-- April 1984 Through March 1985 (Continued)

Household Characteristics	Electricity								RSE Row Factors
	Number of Households (million)	Total Amount Consumed (quadrillion 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)	
RSE Column Factors:	1.10	1.45	1.43	0.49	1.45	0.87	0.87	0.83	
Number of Rooms that Can Be Air Conditioned									
All	34.0	1.27	26.9	7.2	372	11.0	37	792	3.05
Some	17.5	.44	10.5	8.2	128	7.3	25	599	3.21
None	34.8	.78	17.1	7.5	228	6.5	22	491	3.31
Measured Heated Area of Residence (square feet)									
Fewer than 600	8.3	.13	3.1	8.4	37	4.5	15	375	5.33
600 to 999	23.5	.51	11.2	7.5	148	6.3	22	474	2.97
1,000 to 1,599	24.9	.77	16.3	7.2	226	9.1	31	655	2.71
1,600 to 1,999	11.5	.41	8.7	7.3	119	10.4	35	757	4.12
2,000 to 2,399	7.4	.26	5.8	7.7	76	10.3	35	793	4.64
2,400 to 2,999	5.8	.21	4.5	7.5	60	10.4	36	780	5.39
3,000 or More	4.9	.21	4.8	7.9	61	12.6	43	989	5.55
Year of Construction									
1939 or Before	25.2	.54	13.0	8.2	157	6.2	21	515	3.38
1940 to 1949	7.0	.17	3.9	7.7	51	7.3	25	558	5.54
1950 to 1959	12.6	.34	7.7	7.7	100	8.0	27	610	3.75
1960 to 1964	7.5	.23	4.9	7.3	67	9.0	31	655	5.38
1965 to 1969	8.2	.27	5.8	7.4	79	9.6	33	709	4.84
1970 to 1974	10.7	.36	7.7	7.2	106	10.0	34	719	4.76
1975 to 1979	10.1	.41	8.3	6.9	119	11.8	40	815	5.43
1980 or After	5.0	.16	3.3	6.8	48	9.6	33	657	8.79
Status of Unit									
Owned	55.3	1.84	40.2	7.4	539	9.8	33	727	2.13
Rented	31.0	.64	14.3	7.6	189	6.1	21	461	2.97
1984 Family Income									
Less than $5,000	7.9	.16	3.5	7.5	46	5.8	20	440	5.01
$5,000 to $9,999	14.0	.31	6.8	7.5	91	6.5	22	486	4.00
$10,000 to $14,999	13.1	.32	7.0	7.4	95	7.2	25	532	3.72
$15,000 to $19,999	9.0	.23	5.0	7.6	67	7.4	25	557	3.71
$20,000 to $24,999	8.4	.24	5.1	7.3	70	8.4	28	610	3.93
$25,000 to $34,999	15.3	.50	10.7	7.3	146	9.5	33	702	3.70
$35,000 or More	18.7	.73	16.4	7.7	215	11.5	39	879	3.39
Below 100% of Poverty	13.7	.33	7.0	7.3	96	7.0	24	515	4.08
Below 125% of Poverty	19.6	.46	10.0	7.4	135	6.9	24	511	3.41
Assistance for Heating in Winter									
Yes	5.3	.12	2.7	7.5	36	6.8	23	515	5.84
No	81.0	2.36	51.8	7.5	692	8.5	29	639	1.57
Assistance for Weatherization of Residence									
Yes	1.2	.03	.6	7.3	8	6.9	23	500	9.34
No	85.1	2.46	53.9	7.5	720	8.5	29	633	1.33
Household Owns or Has Regular Use of a Vehicle									
Yes	75.3	2.31	50.3	7.4	678	9.0	31	668	1.69
No	11.0	.17	4.2	8.5	50	4.5	15	383	4.26

See footnotes at end of table.

Table 18. U.S. Residential Electricity Consumption and Expenditures-- April 1984 Through March 1985 (Continued)

Household Characteristics	Electricity								RSE Row Factors
	Number of Households (million)	Total Amount Consumed (quadrillion 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)	
RSE Column Factors:	1.10	1.45	1.43	0.49	1.45	0.87	0.87	0.83	
Race of Householder									
White	72.7	2.18	47.3	7.4	638	8.8	30	651	1.81
Black	10.5	.25	5.8	7.9	73	6.9	23	547	5.96
Other	3.1	.06	1.4	7.9	18	5.8	20	459	10.21
Householder of Hispanic Descent									
Yes	4.4	.09	2.4	8.8	27	6.1	21	541	6.96
No	81.9	2.39	52.1	7.4	701	8.6	29	636	1.57
Age of Householder									
Under 25 Years	6.8	.16	3.3	7.3	46	6.8	23	492	5.79
25 to 34 Years	20.7	.56	12.0	7.3	164	7.9	27	581	2.96
35 to 44 Years	16.8	.60	13.0	7.4	176	10.5	36	771	3.32
45 to 59 Years	17.2	.56	12.6	7.7	165	9.6	33	731	3.46
60 Years and Over	24.8	.60	13.5	7.7	177	7.1	24	547	3.00
Household Size									
1 Person	20.3	.36	8.0	7.6	105	5.2	18	395	3.44
2 Persons	26.6	.74	16.3	7.5	216	8.1	28	613	2.93
3 Persons	15.4	.49	10.5	7.4	143	9.3	32	684	3.18
4 Persons	13.5	.50	10.8	7.3	147	10.9	37	796	3.71
5 Persons	6.3	.24	5.3	7.5	71	11.4	39	854	4.19
6 or More Persons	4.1	.16	3.5	7.7	46	11.0	38	844	6.66
All-Electric Home									
Yes	12.8	.69	13.2	6.5	203	15.9	54	1,033	4.80
No	73.5	1.79	41.3	7.9	525	7.1	24	562	1.69
Secondary Heating									
Yes	35.5	1.25	26.3	7.2	365	10.3	35	741	2.80
No	50.8	1.24	28.2	7.8	363	7.1	24	555	2.12

See footnotes at end of table.

Table 18. U.S. Residential Electricity Consumption and Expenditures-- April 1984 Through March 1985 (Continued)

Household Characteristics	Electricity								RSE Row Factors
	Number of Households (million)	Total Amount Consumed (quadrillion 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)	
RSE Column Factors:	1.10	1.45	1.43	0.49	1.45	0.87	0.87	0.83	
Fuel Combinations									
Use Natural Gas for Main Heat	47.8	1.11	25.2	7.8	325	6.8	23	527	2.69
Use Natural Gas to Heat Water									
and Have A/C	26.4	.67	15.7	8.0	196	7.4	25	593	3.47
and Lack A/C	16.3	.26	6.1	8.0	76	4.7	16	374	3.72
Use Electricity to Heat Water									
and Have A/C	2.9	.12	2.3	6.6	35	12.0	41	784	7.15
and Lack A/C	2.0	.06	1.1	6.5	16	8.4	29	540	8.52
Other	.2	*	.1	8.2	1	5.2	18	425	32.03
Use Electricity for Main Heat	14.5	.75	14.5	6.6	219	15.1	52	996	4.75
Use Electricity to Heat Water									
and Have A/C	10.4	.56	11.1	6.7	165	15.8	54	1,064	5.80
and Lack A/C	2.7	.14	2.4	5.8	42	15.5	53	897	6.75
Other	1.4	.04	1.0	7.5	13	9.1	31	687	10.87
Use Fuel Oil for Main Heat	10.7	.24	6.5	9.4	69	6.4	22	608	4.38
Use Fuel Oil to Heat Water									
and Have A/C	2.4	.04	1.5	11.9	13	5.3	18	625	7.28
and Lack A/C	2.7	.04	1.3	12.0	11	4.0	14	478	7.81
Use Electricity to Heat Water									
and Have A/C	1.9	.07	1.5	7.6	20	10.7	36	816	7.47
and Lack A/C	1.7	.05	1.1	7.1	16	9.0	31	642	8.48
Other	2.0	.03	1.1	10.7	10	5.0	17	537	7.92
Use Wood for Main Heat	6.4	.21	4.2	6.8	62	9.7	33	656	5.51
Use LPG for Main Heat	3.9	.11	2.3	7.5	31	8.0	27	600	7.71
Use Kerosene for Main Heat	1.5	.04	.9	7.4	12	8.1	28	595	8.89
Use Coal for Main Heat	.7	.02	.5	7.6	6	8.5	29	645	22.99
No Heating Fuel	.6	.01	.3	12.2	2	4.2	14	513	14.46
Other Fuel	Q	Q	Q	Q	Q	Q	Q	Q	42.38

NC No cases in sample.
* Data cannot be displayed due to rounding.
Q Data withheld either because the RSE was greater than 50% or fewer than 10 households were sampled.

Notes: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. Because of rounding, data may not sum to totals. 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 1984 Residential Energy Consumption Survey.

Table 19. U.S. Residential Electricity Consumption and Expenditures for Households Using Electricity as Main Heating Fuel-- April 1984 Through March 1985

Household Characteristics	Electricity Used: As Main Heating Fuel												RSE Row Factors
					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)	Number of Households (million)	Avg Amount Consumed (thousand kWh)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	
RSE Column Factors:	1.41	0.65	0.65	0.65	1.71	0.79	0.79	0.78	2.19	1.12	1.12	1.12	
Total Households	14.5	15.1	52	996	11.4	15.4	52	1,043	3.2	14.1	48	829	5.15
Census Region and Division													
Northeast	1.4	15.6	53	1,340	.9	15.9	54	1,409	.5	15.1	51	1,222	14.83
New England	.3	13.2	45	1,110	.2	11.9	41	976	.1	15.8	54	1,372	18.86
Middle Atlantic	1.0	16.4	56	1,417	.6	17.3	59	1,562	.4	14.9	51	1,177	18.69
North Central	1.3	19.6	67	1,151	1.0	19.9	68	1,130	.3	18.5	63	1,222	11.95
South	8.4	14.8	50	1,008	7.9	15.0	51	1,025	.6	11.5	39	778	8.86
South Atlantic	4.7	13.3	45	1,022	4.4	13.4	46	1,032	.4	12.0	41	893	12.37
East South Central	1.8	18.4	63	962	1.7	19.1	65	1,000	.2	12.0	41	623	10.69
West South Central	1.9	15.0	51	1,017	1.8	15.2	52	1,028	Q	Q	Q	Q	22.46
West	3.4	13.9	48	768	1.6	14.0	48	876	1.8	13.9	48	671	8.30
Mountain	.8	13.8	47	902	.7	12.7	43	883	.1	19.9	68	1,010	18.28
Pacific	2.6	14.0	48	728	.9	14.8	51	871	1.7	13.5	46	647	10.03
Metropolitan Status													
Metropolitan	11.7	14.8	50	1,004	9.4	15.0	51	1,050	2.3	13.8	47	817	6.19
Central City	4.9	14.0	48	855	3.8	14.5	49	912	1.1	12.4	42	651	8.87
Outside Central City	6.8	15.3	52	1,112	5.5	15.4	53	1,146	1.2	15.1	51	960	7.43
Nonmetropolitan	2.8	16.4	56	966	2.0	17.1	58	1,010	.8	14.8	51	864	7.38
Weather Zone													
Fewer than 2,000 CDD and--													
More than 7,000 HDD	.7	16.0	55	1,030	.2	19.2	65	1,248	.5	14.9	51	950	17.80
5,500 to 7,000 HDD	1.8	18.9	65	1,181	1.3	19.0	65	1,151	.5	18.7	64	1,261	10.77
4,000 to 5,499 HDD	3.2	16.9	58	1,010	1.8	18.0	61	1,199	1.3	15.4	52	749	8.14
Fewer than 4,000 HDD	3.9	13.9	48	844	3.2	15.0	51	904	.6	8.2	28	533	10.65
More than 2,000 CDD and Fewer than 4,000 HDD	5.0	13.4	46	1,034	4.8	13.5	46	1,040	.2	11.0	37	903	14.09
All Electricity Paid by Household													
Yes	13.3	15.6	53	1,029	10.5	15.8	54	1,074	2.8	14.6	50	864	5.27
No	1.2	10.0	34	641	.9	10.0	34	680	.3	9.9	34	535	12.24
Housing Structure													
Single-Family Detached	7.2	18.6	63	1,201	5.8	18.9	64	1,247	1.4	17.5	60	1,015	5.75
Owned	6.4	18.9	65	1,229	5.2	19.2	66	1,266	1.2	17.5	60	1,066	5.81
Rented	.9	16.1	55	1,002	.6	15.7	54	1,093	.2	17.3	59	749	15.35
Single-Family Attached	.7	18.8	64	1,216	.6	19.0	65	1,215	Q	Q	Q	Q	21.36
Building of 2 to 4 Units	1.0	11.5	39	692	.6	11.7	40	784	.5	11.3	39	577	10.46
Building of 5 or More Units	4.2	9.7	33	700	3.3	9.8	33	732	.8	9.3	32	574	8.60
Mobile Home	1.4	13.8	47	930	1.0	13.5	46	931	.3	14.8	50	928	14.70
Number of Rooms													
1	.1	7.3	25	526	Q	Q	Q	Q	Q	Q	Q	Q	31.08
2	.7	7.6	26	518	.6	7.4	25	499	.1	8.7	30	614	13.37
3	1.9	8.8	30	625	1.4	9.1	31	661	.6	8.1	28	535	10.85
4	3.6	12.2	42	816	2.8	12.1	41	861	.8	12.5	43	664	6.98
5	3.2	15.8	54	1,024	2.4	15.9	54	1,075	.8	15.3	52	860	6.59
6	2.5	17.5	60	1,193	2.2	17.7	60	1,215	.3	16.7	57	1,050	7.61
7	1.4	22.4	76	1,407	1.1	22.2	76	1,433	.3	22.9	78	1,318	7.51
8 or More	1.0	24.7	84	1,561	.9	25.7	88	1,611	.2	19.6	67	1,306	8.65

See footnotes at end of table.

Table 19. U.S. Residential Electricity Consumption and Expenditures for Households Using Electricity as Main Heating Fuel-- April 1984 Through March 1985 (Continued)

Household Characteristics	Electricity Used: As Main Heating Fuel												RSE Row Factors
					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)	Number of Households (million)	Avg Amount Consumed (thousand kWh)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	
RSE Column Factors:	1.41	0.65	0.65	0.65	1.71	0.79	0.79	0.78	2.19	1.12	1.12	1.12	
Number of Rooms that Can Be Air Conditioned													
All	9.6	15.7	54	1,058	9.6	15.7	54	1,058	NC	NC	NC	NC	6.45
Some	1.8	13.6	46	958	1.8	13.6	46	958	NC	NC	NC	NC	8.21
None	3.2	14.1	48	829	--	--	--	--	3.2	14.1	48	829	6.18
Measured Heated Area of Residence (square feet)													
Fewer than 600	1.6	8.7	30	588	1.0	8.5	29	602	.6	8.9	30	563	12.26
600 to 999	4.6	11.3	39	766	3.5	11.2	38	799	1.1	11.8	40	665	6.94
1,000 to 1,599	4.6	16.1	55	1,059	3.6	16.0	55	1,084	1.0	16.2	55	968	6.35
1,600 to 1,999	1.8	20.8	71	1,325	1.6	20.5	70	1,336	.3	22.5	77	1,259	7.68
2,000 to 2,399	.9	19.7	67	1,324	.7	20.4	69	1,369	.1	16.4	56	1,100	13.58
2,400 to 2,999	.6	21.5	73	1,443	.6	21.6	74	1,472	Q	Q	Q	Q	18.76
3,000 or More	.4	28.1	96	1,688	.3	27.8	95	1,679	Q	Q	Q	Q	16.45
Year of Construction													
1939 or Before	1.0	13.3	46	763	.5	13.7	47	802	.5	12.9	44	722	13.88
1940 to 1949	.7	15.8	54	1,132	.6	16.5	56	1,203	Q	Q	Q	Q	15.21
1950 to 1959	1.1	15.1	52	1,030	.7	17.6	60	1,248	.3	10.1	34	584	16.14
1960 to 1964	1.0	14.5	49	957	.8	14.6	50	1,007	.2	14.3	49	792	10.98
1965 to 1969	1.7	15.2	52	991	1.3	15.5	53	1,046	.4	14.3	49	793	8.94
1970 to 1974	3.2	13.9	47	966	2.7	13.6	46	954	.5	15.9	54	1,035	11.46
1975 to 1979	4.1	17.1	58	1,104	3.3	17.6	60	1,152	.8	15.0	51	901	8.82
1980 or After	2.0	13.7	47	896	1.5	13.2	45	900	.5	15.6	53	880	14.25
Status of Unit													
Owned	8.4	18.0	61	1,181	6.8	18.4	63	1,222	1.6	16.5	56	1,012	5.19
Rented	6.1	11.1	38	742	4.6	10.9	37	777	1.5	11.6	40	637	6.73
1984 Family Income													
Less than $5,000	1.2	10.7	36	726	.9	10.8	37	749	.3	10.3	35	664	11.03
$5,000 to $9,999	2.2	11.9	41	763	1.5	11.5	39	765	.7	12.9	44	759	10.81
$10,000 to $14,999	2.1	12.5	43	856	1.6	12.4	42	906	.5	13.0	44	690	8.40
$15,000 to $19,999	1.3	12.7	43	850	1.0	12.6	43	907	.3	12.8	44	642	11.62
$20,000 to $24,999	1.3	15.4	53	1,003	1.0	15.3	52	998	.3	15.9	54	1,019	11.77
$25,000 to $34,999	2.9	16.6	57	1,070	2.4	17.0	58	1,119	.6	15.3	52	871	8.15
$35,000 or More	3.5	19.6	67	1,305	3.0	19.9	68	1,339	.5	17.6	60	1,102	7.06
Below 100% of Poverty	2.3	12.3	42	800	1.6	12.3	42	829	.7	12.2	42	737	9.47
Below 125% of Poverty	3.1	12.3	42	804	2.1	12.3	42	839	.9	12.2	42	721	8.84
Assistance for Heating in Winter													
Yes	.7	14.8	50	921	.3	15.9	54	1,035	.4	13.7	47	818	14.84
No	13.8	15.1	52	1,000	11.0	15.4	52	1,043	2.8	14.2	48	831	5.26
Assistance for Weatherization of Residence													
Yes	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	40.23
No	14.5	15.1	52	997	11.4	15.4	52	1,043	3.1	14.2	48	831	5.15

See footnotes at end of table.

Table 19. U.S. Residential Electricity Consumption and Expenditures for Households Using Electricity as Main Heating Fuel-- April 1984 Through March 1985 (Continued)

Household Characteristics	Electricity Used: As Main Heating Fuel												RSE Row Factors
					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)	Number of Households (million)	Avg Amount Consumed (thousand kWh)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	
RSE Column Factors:	1.41	0.65	0.65	0.65	1.71	0.79	0.79	0.78	2.19	1.12	1.12	1.12	
Household Owns or Has Regular Use of a Vehicle													
Yes	13.2	15.6	53	1,031	10.6	15.8	54	1,072	2.7	14.8	51	872	5.08
No	1.3	9.8	33	631	.8	9.8	33	660	.5	9.8	34	582	12.49
Race of Householder													
White	13.0	15.3	52	1,008	10.3	15.5	53	1,051	2.7	14.4	49	845	5.06
Black	1.1	13.7	47	955	.8	13.8	47	987	.3	13.2	45	860	16.13
Other	.4	12.0	41	713	.2	13.5	46	847	.2	9.9	34	529	22.79
Householder of Hispanic Descent													
Yes	.7	12.3	42	1,009	.6	13.5	46	1,131	Q	Q	Q	Q	24.50
No	13.9	15.2	52	996	10.8	15.5	53	1,038	3.1	14.4	49	846	5.14
Age of Householder													
Under 25 Years	1.7	11.3	38	748	1.3	11.0	38	778	.4	12.0	41	657	10.88
25 to 34 Years	4.1	14.1	48	937	3.4	14.1	48	974	.7	13.9	48	764	7.40
35 to 44 Years	2.8	19.3	66	1,248	2.1	20.6	70	1,361	.7	15.2	52	886	7.39
45 to 59 Years	2.3	17.4	59	1,116	1.8	17.5	60	1,139	.5	16.8	57	1,029	8.74
60 Years and Over	3.7	13.4	46	913	2.8	13.6	46	945	.9	12.9	44	812	8.50
Household Size													
1 Person	3.6	10.3	35	702	2.5	10.0	34	723	1.0	10.9	37	654	8.03
2 Persons	5.5	14.4	49	977	4.7	14.7	50	1,011	.8	12.8	44	790	7.28
3 Persons	2.3	17.1	58	1,049	1.8	16.7	57	1,073	.5	18.6	63	967	6.45
4 Persons	1.9	20.2	69	1,287	1.5	21.1	72	1,361	.4	16.8	57	976	7.76
5 Persons	.7	21.6	74	1,358	.6	23.7	81	1,541	.2	15.3	52	794	14.65
6 or More Persons	.6	18.6	63	1,387	.4	18.8	64	1,432	.2	18.2	62	1,306	17.68
All-Electric Home													
Yes	12.8	15.9	54	1,033	10.2	15.9	54	1,068	2.6	15.6	53	898	5.04
No	1.7	9.5	32	725	1.2	10.7	36	828	.5	7.0	24	500	11.27
Secondary Heating													
Yes	5.9	18.0	61	1,142	4.4	18.8	64	1,216	1.4	15.7	54	909	5.82
No	8.7	13.1	45	898	6.9	13.2	45	931	1.7	12.8	44	765	6.57
Main Heating Equipment Using Electricity													
Central Warm Air Furnace	5.2	16.5	56	1,039	4.7	16.1	55	1,030	.5	21.0	72	1,124	7.73
Built-In Electric Units	5.4	13.9	47	921	3.2	14.0	48	999	2.3	13.7	47	811	6.66
Heat Pump	3.1	16.0	55	1,128	3.1	16.0	55	1,128	--	--	--	--	9.63
Other	.8	10.4	36	731	.4	12.9	44	883	.4	7.9	27	576	13.13

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

Notes: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. Because of rounding, data may not sum to totals. 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 1984 Residential Energy Consumption Survey.

Table 20. U.S. Residential Electricity Consumption and Expenditures for Households Not Using Electricity as Main Heating Fuel-- April 1984 Through March 1985

Household Characteristics	Electricity Used: Not as Main Heating Fuel												RSE Row Factors
					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)	Number of Households (million)	Avg Amount Consumed (thousand kWh)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	
RSE Column Factors:	1.09	0.73	0.73	0.73	1.56	0.90	0.90	0.87	1.84	1.06	1.06	1.05	
Total Households	71.8	7.1	24	558	39.5	8.1	28	638	32.2	5.8	20	459	2.24
Census Region and Division													
Northeast	16.9	5.8	20	610	8.4	6.4	22	694	8.5	5.2	18	527	3.78
New England	3.9	6.1	21	593	1.5	7.1	24	693	2.4	5.4	18	529	5.94
Middle Atlantic	13.0	5.7	20	615	6.9	6.3	21	694	6.1	5.1	17	526	4.95
North Central	20.3	6.6	22	506	11.8	7.1	24	548	8.4	5.9	20	447	3.75
East North Central	14.1	6.1	21	486	7.3	6.5	22	527	6.8	5.7	20	442	5.50
West North Central	6.1	7.7	26	551	4.5	8.1	28	580	1.6	6.5	22	468	5.20
South	20.9	9.0	31	632	14.4	10.1	35	708	6.5	6.3	22	461	4.19
South Atlantic	10.0	8.3	28	596	6.2	9.3	32	664	3.9	6.8	23	487	5.61
East South Central	3.9	10.3	35	592	3.1	11.4	39	649	.9	6.2	21	391	7.49
West South Central	6.9	9.2	31	707	5.2	10.4	36	797	1.7	5.4	18	438	7.92
West	13.7	6.5	22	456	4.8	7.5	25	551	8.8	6.1	21	404	3.66
Mountain	3.7	6.7	23	463	1.4	7.3	25	532	2.3	6.4	22	421	6.73
Pacific	9.9	6.5	22	454	3.4	7.5	26	559	6.5	5.9	20	398	4.43
Metropolitan Status													
Metropolitan	54.0	6.8	23	556	30.8	7.8	27	636	23.2	5.5	19	450	2.81
Central City	25.7	5.9	20	489	13.9	7.2	25	593	11.8	4.4	15	366	3.78
Outside Central City	28.3	7.6	26	617	16.9	8.3	28	671	11.4	6.6	23	538	3.50
Nonmetropolitan	17.7	7.9	27	563	8.7	9.2	31	645	9.0	6.7	23	483	4.49
Weather Zone													
Fewer than 2,000 CDD and--													
More than 7,000 HDD	8.3	6.6	23	460	2.7	6.7	23	469	5.7	6.6	22	456	6.41
5,500 to 7,000 HDD	19.7	6.4	22	539	10.5	6.9	23	577	9.1	5.8	20	495	4.39
4,000 to 5,499 HDD	19.3	6.8	23	574	11.5	7.3	25	642	7.9	6.0	20	477	4.52
Fewer than 4,000 HDD	16.1	7.3	25	517	8.7	9.1	31	626	7.4	5.3	18	389	4.77
More than 2,000 CDD and Fewer than 4,000 HDD	8.3	9.5	32	740	6.1	10.9	37	826	2.2	5.5	19	494	6.95
All Electricity Paid by Household													
Yes	66.4	7.3	25	575	37.1	8.3	28	649	29.3	6.1	21	480	2.29
No	5.4	4.3	15	350	2.4	5.5	19	460	3.0	3.2	11	261	7.59
Housing Structure													
Single-Family Detached	46.2	8.5	29	645	26.0	9.6	33	729	20.2	7.1	24	535	2.42
Owned	38.6	8.7	30	665	22.5	9.7	33	743	16.1	7.3	25	556	2.56
Rented	7.6	7.3	25	541	3.5	8.7	30	644	4.1	6.0	21	451	4.59
Single-Family Attached	3.3	5.9	20	548	1.9	6.9	23	648	1.5	4.6	16	419	9.69
Owned	2.4	5.9	20	585	1.5	6.5	22	657	.9	5.0	17	466	11.82
Rented	.9	5.7	19	451	.4	8.3	28	611	.5	3.8	13	338	16.70
Building of 2 to 4 Units	9.0	4.2	14	385	3.9	4.8	16	441	5.1	3.8	13	343	6.41
Owned	1.9	5.1	17	530	1.1	5.5	19	593	.8	4.5	15	447	8.86
Rented	7.1	4.0	14	346	2.8	4.5	15	382	4.3	3.6	12	323	7.27
Building of 5 or More Units	9.4	3.4	12	316	5.5	4.0	14	373	3.9	2.5	9	236	5.59
Owned	.9	5.7	20	635	.7	5.7	20	687	Q	5.8	20	434	20.11
Rented	8.5	3.1	11	282	4.8	3.7	13	326	3.7	2.4	8	226	5.92
Mobile Home	3.8	7.0	24	516	2.2	7.7	26	560	1.6	6.1	21	456	6.51
Owned	3.0	7.1	24	521	1.8	7.7	26	564	1.2	6.3	22	456	6.98
Rented	.8	6.5	22	500	.4	7.6	26	543	.4	5.5	19	457	12.95

See footnotes at end of table.

Table 20. U.S. Residential Electricity Consumption and Expenditures for Households Not Using Electricity as Main Heating Fuel-- April 1984 Through March 1985 (Continued)

Household Characteristics	Electricity Used: Not as Main Heating Fuel												RSE Row Factors
					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)	Number of Households (million)	Avg Amount Consumed (thousand kWh)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	
RSE Column Factors:	1.09	0.73	0.73	0.73	1.56	0.90	0.90	0.87	1.84	1.06	1.06	1.05	
Number of Rooms													
1	0.5	1.7	6	184	0.3	1.8	6	224	0.3	1.6	6	139	15.10
2	1.5	3.0	10	274	.6	3.9	13	373	.9	2.4	8	201	10.97
3	6.9	3.4	12	288	3.3	3.9	13	318	3.6	3.0	10	260	6.18
4	14.9	5.1	17	406	7.4	5.6	19	447	7.4	4.6	16	366	4.00
5	17.4	7.0	24	539	9.5	7.9	27	606	7.9	6.0	20	460	2.88
6	14.0	8.2	28	645	8.3	9.2	32	719	5.7	6.7	23	538	3.01
7	7.8	9.4	32	724	4.4	10.5	36	817	3.4	8.0	27	606	4.77
8 or More	8.7	10.7	37	847	5.7	11.5	39	919	3.0	9.2	32	711	4.38
Number of Rooms that Can Be Air Conditioned													
All	24.4	9.1	31	688	23.8	9.1	31	690	.6	8.6	29	578	6.33
Some	15.7	6.6	23	559	15.7	6.6	23	559	Q	Q	Q	Q	7.78
None	31.7	5.8	20	457	--	--	--	--	31.7	5.8	20	457	2.86
Measured Heated Area of Residence (square feet)													
Fewer than 600	6.7	3.5	12	324	2.5	3.9	13	341	4.2	3.2	11	313	5.68
600 to 999	18.9	5.1	17	403	10.0	5.7	19	453	8.9	4.5	15	348	3.54
1,000 to 1,599	20.3	7.5	25	564	11.3	8.6	29	639	9.0	6.1	21	468	2.77
1,600 to 1,999	9.6	8.4	29	648	5.6	9.2	31	722	4.1	7.2	25	548	4.29
2,000 to 2,399	6.5	9.0	31	720	3.9	9.5	32	783	2.6	8.2	28	624	4.33
2,400 to 2,999	5.2	9.1	31	704	3.2	10.2	35	787	2.0	7.5	25	566	5.78
3,000 or More	4.5	11.3	38	930	3.0	11.9	41	987	1.5	9.9	34	815	6.17
Year of Construction													
1939 or Before	24.2	6.0	20	505	10.2	7.0	24	607	14.1	5.2	18	431	3.38
1940 to 1949	6.3	6.4	22	498	3.3	7.3	25	563	3.0	5.3	18	427	6.22
1950 to 1959	11.6	7.3	25	571	6.8	8.5	29	660	4.8	5.7	19	447	4.17
1960 to 1964	6.5	8.1	28	608	4.2	8.9	30	666	2.3	6.7	23	501	6.57
1965 to 1969	6.6	8.1	28	638	4.4	8.6	29	692	2.2	7.2	24	529	6.60
1970 to 1974	7.5	8.3	28	615	4.9	8.7	30	656	2.6	7.6	26	538	6.04
1975 to 1979	6.1	8.2	28	621	4.1	9.0	31	671	1.9	6.6	23	513	7.47
1980 or After	3.0	7.0	24	501	1.6	7.6	26	537	1.4	6.2	21	459	10.13
Status of Unit													
Owned	46.9	8.3	28	646	27.6	9.2	31	719	19.2	7.0	24	540	2.35
Rented	24.9	4.8	17	392	11.9	5.7	19	450	13.0	4.1	14	340	3.73
1984 Family Income													
Less than $5,000	6.7	5.0	17	388	2.1	6.2	21	459	4.6	4.4	15	356	5.42
$5,000 to $9,999	11.7	5.5	19	434	5.4	6.1	21	485	6.4	4.9	17	390	4.61
$10,000 to $14,999	11.0	6.2	21	471	5.8	7.2	25	545	5.2	5.2	18	389	5.03
$15,000 to $19,999	7.8	6.5	22	510	4.2	7.4	25	563	3.6	5.6	19	449	4.59
$20,000 to $24,999	7.0	7.0	24	535	4.1	7.3	25	567	2.9	6.6	22	490	4.72
$25,000 to $34,999	12.3	7.9	27	614	7.8	8.6	29	676	4.5	6.6	23	506	3.64
$35,000 or More	15.2	9.6	33	780	10.1	10.4	35	841	5.1	8.0	27	659	3.87
Below 100% of Poverty	11.4	6.0	20	458	3.8	7.5	25	553	7.5	5.2	18	409	4.49
Below 125% of Poverty	16.5	5.9	20	457	5.9	7.4	25	556	10.6	5.1	17	402	3.90

See footnotes at end of table.

Table 20. U.S. Residential Electricity Consumption and Expenditures for Households Not Using Electricity as Main Heating Fuel-- April 1984 Through March 1985 (Continued)

Household Characteristics	Electricity Used: Not as Main Heating Fuel												RSE Row Factors
					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)	Number of Households (million)	Avg Amount Consumed (thousand kWh)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	
RSE Column Factors:	1.09	0.73	0.73	0.73	1.56	0.90	0.90	0.87	1.84	1.06	1.06	1.05	
Assistance for Heating in Winter													
Yes	4.6	5.7	19	456	1.5	6.3	22	516	3.1	5.3	18	427	6.25
No	67.1	7.2	25	565	38.0	8.2	28	643	29.1	5.9	20	463	2.26
Assistance for Weatherization of Residence													
Yes	1.1	6.7	23	492	.4	8.4	29	581	.8	5.8	20	445	11.23
No	70.6	7.1	24	559	39.1	8.1	28	639	31.5	5.8	20	460	2.25
Household Owns or Has Regular Use of a Vehicle													
Yes	62.0	7.6	26	590	35.9	8.5	29	663	26.1	6.4	22	490	2.37
No	9.7	3.8	13	351	3.6	4.4	15	392	6.1	3.5	12	326	4.08
Race of Householder													
White	59.6	7.3	25	573	34.6	8.2	28	643	25.0	6.2	21	475	2.46
Black	9.5	6.1	21	500	3.9	8.2	28	617	5.6	4.7	16	419	6.10
Other	2.7	4.9	17	421	1.0	6.6	22	533	1.7	4.0	14	357	9.97
Householder of Hispanic Descent													
Yes	3.7	5.0	17	459	1.5	6.4	22	598	2.2	4.1	14	361	8.47
No	68.0	7.2	25	563	38.0	8.2	28	640	30.1	6.0	20	466	2.29
Age of Householder													
Under 25 Years	5.1	5.3	18	407	2.3	6.5	22	493	2.8	4.3	15	340	7.28
25 to 34 Years	16.6	6.4	22	493	8.5	7.4	25	562	8.1	5.4	18	422	3.58
35 to 44 Years	14.1	8.7	30	678	7.8	9.8	34	764	6.3	7.3	25	571	3.63
45 to 59 Years	14.9	8.4	29	672	9.2	9.1	31	739	5.7	7.1	24	565	3.70
60 Years and Over	21.1	6.1	21	483	11.7	7.0	24	559	9.3	4.9	17	389	3.16
Household Size													
1 Person	16.8	4.1	14	330	9.0	4.7	16	378	7.8	3.4	12	275	3.66
2 Persons	21.1	6.5	22	518	12.2	7.3	25	588	8.9	5.4	18	422	3.16
3 Persons	13.1	7.9	27	620	7.7	9.1	31	717	5.4	6.2	21	482	3.34
4 Persons	11.7	9.4	32	717	6.6	11.0	38	825	5.1	7.2	25	577	3.79
5 Persons	5.5	10.0	34	787	2.6	11.5	39	909	2.9	8.6	29	675	4.74
6 or More Persons	3.6	9.8	33	759	1.4	11.7	40	917	2.2	8.6	29	657	7.58
Secondary Heating													
Yes	29.6	8.8	30	662	17.0	9.9	34	749	12.6	7.3	25	545	3.03
No	42.1	5.9	20	485	22.5	6.8	23	554	19.6	4.9	17	404	2.46

See footnotes at end of table.

Table 20. U.S. Residential Electricity Consumption and Expenditures for Households Not Using Electricity as Main Heating Fuel-- April 1984 Through March 1985 (Continued)

Household Characteristics	Electricity Used: Not as Main Heating Fuel												RSE Row Factors
					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)	Number of Households (million)	Avg Amount Consumed (thousand kWh)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	
RSE Column Factors:	1.09	0.73	0.73	0.73	1.56	0.90	0.90	0.87	1.84	1.06	1.06	1.05	
Fuel Combinations													
Use Natural Gas for Main Heat	47.8	6.8	23	527	28.8	7.9	27	613	19.0	5.2	18	397	3.03
Use Natural Gas to Heat Water and Have A/C	26.4	7.4	25	593	25.9	7.4	25	595	.6	7.9	27	540	6.18
and Lack A/C	16.3	4.7	16	374	--	--	--	--	16.3	4.7	16	374	3.65
Use Electricity to Heat Water and Have A/C	2.9	12.0	41	784	2.9	11.8	40	778	Q	Q	Q	Q	14.27
and Lack A/C	2.0	8.4	29	540	--	--	--	--	2.0	8.4	29	540	9.31
Other	.2	5.2	18	425	Q	Q	Q	Q	.2	3.6	12	273	42.22
Use Fuel Oil for Main Heat	10.7	6.4	22	608	5.3	7.3	25	689	5.4	5.6	19	527	4.61
Use Fuel Oil to Heat Water and Have A/C	2.4	5.3	18	625	2.4	5.3	18	625	NC	NC	NC	NC	8.16
and Lack A/C	2.7	4.0	14	478	--	--	--	--	2.7	4.0	14	478	6.13
Use Electricity to Heat Water and Have A/C	1.9	10.7	36	816	1.9	10.7	36	816	NC	NC	NC	NC	5.82
Use Natural Gas to Heat Water and Have A/C	.9	6.0	20	633	.9	6.0	20	633	NC	NC	NC	NC	9.78
Other	2.9	7.1	24	571	.2	5.3	18	504	2.7	7.2	25	575	12.13
Use Wood for Main Heat	6.4	9.7	33	656	2.3	11.5	39	763	4.1	8.7	30	595	5.01
Use LPG for Main Heat	3.9	8.0	27	600	2.1	9.3	32	686	1.8	6.6	22	504	8.51
Use Coal for Main Heat	.7	8.5	29	645	.2	9.3	32	698	Q	8.1	28	624	20.19
No Heating Fuel	.6	4.2	14	513	Q	Q	Q	Q	.5	4.0	14	530	21.51
Other Fuel	1.6	8.3	28	610	.7	10.3	35	723	.9	6.8	23	525	8.99

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

Notes: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. Because of rounding, data may not sum to totals. 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 1984 Residential Energy Consumption Survey.

Table 21. U.S. Residential Fuel Oil or Kerosene Consumption and Expenditures--April 1984 Through March 1985

Household Characteristics	Fuel Oil or Kerosene Used:									RSE Row Factors
						As Main Heating Fuel				
	Number of Households (million)	Total Amount Consumed (billion gallons)	Total Amount Consumed (quadrillion Btu)	Total Expenditures (billion dollars)	Avg Price (dollars per gallon)	Number of Households (million)	Avg Amount Consumed (gallons)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	
RSE Column Factors:	1.53	1.71	1.72	1.71	0.17	1.72	0.75	0.75	0.78	
Total Households	17.5	9.08	1.26	9.6	1.06	12.2	685	95	722	3.03
Census Region and Division										
Northeast	9.5	6.69	.93	7.0	1.04	8.2	779	108	811	3.07
New England	2.5	1.97	.27	2.1	1.09	2.2	857	119	933	3.91
Middle Atlantic	7.0	4.72	.65	4.8	1.03	6.0	750	104	767	4.14
North Central	2.6	.93	.13	1.0	1.06	1.2	672	93	704	8.02
East North Central	2.0	.70	.10	.7	1.06	.9	663	92	691	10.61
West North Central	.6	.23	.03	.2	1.05	.3	699	97	750	13.27
South	4.6	1.18	.16	1.3	1.12	2.4	389	53	440	9.26
South Atlantic	3.9	1.10	.15	1.2	1.12	2.2	391	54	443	10.09
East South Central	.5	.08	.01	.1	1.13	.2	364	49	403	14.96
West South Central	Q	Q	Q	Q	Q	NC	NC	NC	NC	31.00
West	.7	.28	.04	.3	1.08	.5	581	80	628	13.53
Metropolitan Status										
Metropolitan	13.1	7.41	1.02	7.8	1.05	9.8	705	98	739	3.71
Central City	5.4	3.01	.42	3.0	1.01	4.4	666	92	670	5.49
Outside Central City	7.7	4.40	.61	4.8	1.08	5.5	737	102	795	4.96
Nonmetropolitan	4.4	1.68	.23	1.8	1.09	2.4	599	83	649	7.46
Weather Zone										
Fewer than 2,000 CDD and--										
More than 7,000 HDD	2.1	1.23	.17	1.3	1.07	1.4	762	105	816	10.49
5,500 to 7,000 HDD	4.9	3.05	.42	3.3	1.08	3.6	794	110	859	5.25
4,000 to 5,499 HDD	7.4	4.28	.59	4.4	1.02	5.8	694	96	706	4.75
Fewer than 4,000 HDD	2.0	.40	.05	.5	1.15	1.0	360	49	412	12.07
More than 2,000 CDD and Fewer than 4,000 HDD	1.0	Q	Q	Q	1.19	Q	225	31	268	34.13
Fuel Oil or Kerosene Paid by Household										
Yes	13.7	6.74	.93	7.4	1.10	8.9	690	95	754	3.46
No	3.8	2.35	.33	2.2	.94	3.3	670	93	635	4.89
Housing Structure										
Single-Family Detached	11.1	5.60	.77	6.1	1.09	7.0	723	100	787	3.65
Owned	9.4	4.93	.68	5.4	1.09	5.9	753	104	817	3.70
Rented	1.6	.66	.09	.7	1.12	1.1	562	77	625	8.61
Single-Family Attached	.7	.54	.07	.6	1.10	.7	776	107	850	13.56
Owned	.6	.48	.07	.5	1.10	.6	794	110	870	14.12
Rented	Q	Q	Q	Q	Q	Q	Q	Q	Q	24.49
Building of 2 to 4 Units	1.8	1.15	.16	1.3	1.09	1.6	689	95	750	6.20
Owned	.6	.46	.06	.5	1.09	.5	853	118	928	7.92
Rented	1.2	.69	.10	.8	1.09	1.1	610	84	663	6.86
Building of 5 or More Units	2.7	1.53	.21	1.3	.87	2.3	633	88	551	5.96
Mobile Home	1.1	.27	.04	.3	1.15	.7	360	49	413	12.51
Number of Rooms										
1	Q	Q	Q	Q	Q	Q	Q	Q	Q	38.32
2	.4	.17	.02	.2	.91	.3	530	73	486	13.55
3	1.7	.94	.13	.9	.96	1.6	590	82	564	7.10
4	3.4	1.55	.21	1.6	1.03	2.3	568	78	581	6.64
5	3.6	1.64	.23	1.8	1.07	2.5	605	84	647	5.86
6	3.4	1.67	.23	1.8	1.09	2.2	711	98	771	6.57
7	2.4	1.32	.18	1.4	1.09	1.4	834	115	907	7.23
8 or More	2.5	1.73	.24	1.9	1.09	1.7	939	130	1,022	5.85

See footnotes at end of table.

Table 21. U.S. Residential Fuel Oil or Kerosene Consumption and Expenditures--April 1984 Through March 1985 (Continued)

Household Characteristics	Fuel Oil or Kerosene Used:									RSE Row Factors
						As Main Heating Fuel				
	Number of Households (million)	Total Amount Consumed (billion gallons)	Total Amount Consumed (quadrillion Btu)	Total Expenditures (billion dollars)	Avg Price (dollars per gallon)	Number of Households (million)	Avg Amount Consumed (gallons)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	
RSE Column Factors:	1.53	1.71	1.72	1.71	0.17	1.72	0.75	0.75	0.78	
Number of Rooms that Can Be Air Conditioned										
All	4.2	1.45	0.20	1.5	1.05	2.3	592	82	613	8.27
Some	5.0	2.80	.39	3.0	1.07	3.7	718	99	768	4.45
None	8.3	4.84	.67	5.1	1.05	6.2	699	97	734	4.11
Measured Heated Area of Residence (square feet)										
Fewer than 600	1.7	.79	.11	.8	.97	1.4	542	75	525	8.10
600 to 999	4.3	1.90	.26	1.9	1.01	3.1	555	77	561	4.92
1,000 to 1,599	4.6	2.11	.29	2.3	1.07	3.0	618	85	655	5.24
1,600 to 1,999	2.5	1.38	.19	1.5	1.09	1.6	791	110	859	5.82
2,000 to 2,399	1.7	1.01	.14	1.1	1.09	1.2	803	111	874	6.55
2,400 to 2,999	1.3	.83	.12	.9	1.08	.8	890	123	961	9.65
3,000 or More	1.4	1.06	.15	1.2	1.09	1.0	1,020	141	1,108	8.95
Year of Construction										
1939 or Before	7.1	4.61	.64	4.9	1.06	5.6	757	105	801	4.33
1940 to 1949	1.7	.94	.13	1.0	1.07	1.3	728	101	775	10.24
1950 to 1959	2.8	1.32	.18	1.4	1.06	1.9	620	86	662	9.13
1960 to 1964	1.4	.65	.09	.7	1.00	1.1	561	78	556	12.04
1965 to 1969	1.2	.52	.07	.6	1.06	.7	668	92	700	13.53
1970 to 1974	1.3	.34	.05	.4	1.09	.6	478	66	513	14.65
1975 to 1979	1.6	.51	.07	.5	1.03	.7	609	84	632	11.95
1980 or After	.5	.19	.03	.2	1.07	.3	664	92	707	20.51
Status of Unit										
Owned	11.8	6.29	.87	6.8	1.08	7.8	737	102	795	3.29
Rented	5.6	2.80	.39	2.8	1.00	4.4	593	82	591	4.61
1984 Family Income										
Less than $5,000	1.5	.72	.10	.7	1.05	1.0	576	79	606	10.35
$5,000 to $9,999	3.0	1.69	.23	1.8	1.05	2.4	650	90	684	5.97
$10,000 to $14,999	2.5	1.26	.17	1.3	1.06	1.9	645	89	679	6.13
$15,000 to $19,999	2.1	1.02	.14	1.0	1.03	1.5	630	87	648	7.17
$20,000 to $24,999	1.8	.88	.12	.9	1.07	1.1	709	98	754	8.32
$25,000 to $34,999	2.9	1.55	.21	1.7	1.07	2.0	742	103	789	5.26
$35,000 or More	3.7	1.98	.27	2.1	1.06	2.4	774	107	819	5.90
Below 100% of Poverty	2.6	1.29	.18	1.3	1.05	1.7	632	87	665	8.10
Below 125% of Poverty	3.7	1.93	.27	2.0	1.05	2.6	639	88	673	6.52
Assistance for Heating in Winter										
Yes	1.0	.43	.06	.5	1.10	.7	568	78	621	7.57
No	16.5	8.66	1.20	9.1	1.05	11.5	692	96	728	3.08
Assistance for Weatherization of Residence										
Yes	.3	.13	.02	.1	1.08	.2	637	88	706	16.53
No	17.2	8.95	1.24	9.5	1.06	12.0	686	95	722	3.07
Household Owns or Has Regular Use of a Vehicle										
Yes	14.7	7.43	1.03	8.0	1.08	9.8	695	96	745	3.20
No	2.8	1.65	.23	1.6	.97	2.4	643	89	628	5.17

See footnotes at end of table.

Table 21. U.S. Residential Fuel Oil or Kerosene Consumption and Expenditures--April 1984 Through March 1985 (Continued)

Household Characteristics	Fuel Oil or Kerosene Used:									RSE Row Factors
						As Main Heating Fuel				
	Number of Households (million)	Total Amount Consumed (billion gallons)	Total Amount Consumed (quadrillion Btu)	Total Expenditures (billion dollars)	Avg Price (dollars per gallon)	Number of Households (million)	Avg Amount Consumed (gallons)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	
RSE Column Factors:	1.53	1.71	1.72	1.71	0.17	1.72	0.75	0.75	0.78	
Race of Householder										
White	14.7	7.78	1.08	8.3	1.06	10.2	698	97	739	3.03
Black	2.2	1.00	.14	1.0	1.05	1.5	592	82	623	11.63
Other	.5	.31	.04	.3	.96	.4	691	96	662	10.22
Householder of Hispanic Descent										
Yes	.8	.45	.06	.4	.95	.7	647	90	614	6.54
No	16.7	8.63	1.19	9.2	1.06	11.5	687	95	728	3.19
Age of Householder										
Under 25 Years	.9	.42	.06	.4	1.04	.7	527	73	549	11.56
25 to 34 Years	3.7	1.37	.19	1.4	1.04	2.0	601	83	619	5.95
35 to 44 Years	3.8	1.86	.26	2.0	1.06	2.4	701	97	736	5.59
45 to 59 Years	3.7	2.17	.30	2.3	1.07	2.5	759	105	811	6.26
60 Years and Over	5.4	3.27	.45	3.5	1.06	4.5	699	97	739	3.85
Household Size										
1 Person	3.7	2.06	.28	2.1	1.03	3.1	611	84	629	5.56
2 Persons	5.6	2.92	.40	3.1	1.06	4.0	686	95	726	4.84
3 Persons	3.4	1.66	.23	1.8	1.07	2.3	675	93	721	5.99
4 Persons	2.9	1.40	.19	1.5	1.06	1.6	773	107	811	5.98
5 Persons	1.3	.66	.09	.7	1.05	.7	723	100	761	7.70
6 or More Persons	.6	.40	.06	.4	1.12	.4	874	121	969	11.83
Secondary Heating										
Yes	10.3	4.36	.60	4.7	1.09	5.6	675	93	729	4.30
No	7.1	4.72	.65	4.9	1.03	6.6	693	96	715	3.82
Fuel Combinations										
Use Fuel Oil for Main Heat	10.7	7.83	1.08	8.2	1.04	10.7	730	101	762	3.05
Use Fuel Oil to Heat Water and Have A/C	1.7	1.13	.16	1.2	1.06	1.7	651	90	691	7.08
and Lack A/C	2.4	1.93	.27	2.0	1.02	2.4	801	111	820	5.81
Use Electricity to Heat Water and Have A/C	1.9	.99	.14	1.1	1.08	1.9	532	74	573	7.67
Use Natural Gas to Heat Water and Have A/C	.9	.75	.10	.8	1.10	.9	871	121	959	8.55
Other	3.8	3.01	.42	3.1	1.03	3.8	786	109	806	4.91
Other Fuel	6.7	1.26	.17	1.4	1.14	1.5	357	48	428	8.64
Main Heating Equipment Using Fuel Oil										
Steam or Hot Water system	6.3	5.18	.72	5.3	1.03	6.3	824	114	850	3.77
Central Warm Air Furnace	4.0	2.45	.34	2.6	1.07	4.0	608	84	648	4.95
Other/None	7.1	1.45	.20	1.6	1.13	1.9	384	52	451	7.77

NC No cases in sample.

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

Notes: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. Because of rounding, data may not sum to totals. 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 1984 Residential Energy Consumption Survey.

Table 22. U.S. Residential Liquefied Petroleum Gas Consumption and Expenditures--April 1984 Through March 1985

Household Characteristics	Liquefied Petroleum Gas (LPG) Used:											RSE Row Factors
				As Main Heating Fuel				Not as Main Heating Fuel				
	Number of Households (million)	Total Amount Consumed (billion gallons)	Avg Price (dollars per gallon)	Number of Households (million)	Avg Amount Consumed (gallons)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	Number of Households (million)	Avg Amount Consumed (gallons)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	
RSE Column Factors:	1.14	1.35	0.26	1.53	0.93	0.93	0.81	1.45	1.28	1.28	1.00	
Total Households	7.8	3.45	0.90	3.9	661	60	562	3.8	217	20	231	6.92
Census Region and Division												
Northeast	1.4	.30	1.20	.2	762	70	752	1.2	147	13	198	14.53
North Central	1.9	1.47	.79	1.3	975	89	765	.7	373	34	310	9.18
East North Central	1.1	.83	.83	.7	958	88	795	.4	365	33	305	14.91
West North Central	.8	.64	.74	.5	997	91	725	.3	385	35	316	12.05
South	3.7	1.29	.95	2.1	475	43	429	1.6	194	18	212	13.34
South Atlantic	2.3	.63	1.06	1.1	363	33	364	1.2	184	17	214	14.99
East South Central	.5	.21	.89	.4	453	41	398	.2	Q	Q	Q	22.85
West South Central	.8	.45	.82	.6	720	66	581	.3	Q	Q	Q	28.86
West	.9	.38	.96	.4	602	55	536	.3	259	24	279	11.59
Mountain	.3	.15	.85	.2	609	56	504	.1	387	35	349	17.39
Pacific	.6	.24	1.04	.2	597	54	561	.2	208	19	250	16.54
Metropolitan Status												
Metropolitan	3.6	1.36	.96	1.7	598	55	516	2.0	189	17	227	12.96
Central City	.4	.12	1.04	Q	Q	Q	369	.2	171	16	205	32.88
Outside Central City	3.2	1.24	.95	1.4	636	58	542	1.8	191	17	229	13.07
Nonmetropolitan	4.2	2.08	.87	2.2	708	65	595	1.8	247	23	234	8.61
Weather Zone												
Fewer than 2,000 CDD and--												
More than 7,000 HDD	1.5	.79	.86	.7	845	77	696	.8	226	21	226	16.62
5,500 to 7,000 HDD	1.1	.64	.87	.4	1,071	98	861	.7	236	22	254	15.39
4,000 to 5,499 HDD	1.6	.65	.91	.6	734	67	597	1.0	236	22	251	16.15
Fewer than 4,000 HDD	1.8	.85	.90	1.1	644	59	555	.7	206	19	222	15.84
More than 2,000 CDD and Fewer than 4,000 HDD	1.8	.51	1.02	1.1	344	31	333	.6	163	15	186	17.97
All LPG Paid by Household												
Yes	7.4	3.31	.90	3.7	673	61	570	3.5	221	20	233	7.16
No	.5	.13	1.00	.2	453	41	409	.3	159	15	192	26.60
Housing Structure by Status of Unit												
Single-Family Detached	5.7	2.68	.89	2.6	721	66	598	2.9	250	23	258	7.56
Owned	4.4	2.05	.89	2.0	744	68	615	2.3	244	22	256	7.92
Rented	1.3	.62	.88	.7	654	60	548	.6	274	25	265	16.53
Building of 2 or More Units	.2	.04	1.12	Q	Q	Q	Q	Q	115	10	156	40.05
Mobile Home	1.9	.73	.95	1.2	540	49	489	.7	107	10	139	12.10
Number of Rooms												
1 to 3	1.1	.38	.95	.5	515	47	468	.6	196	18	201	17.63
4	1.9	.78	.93	1.0	584	53	512	.8	188	17	202	12.77
5	1.8	.86	.89	1.0	643	59	534	.8	243	22	256	11.73
6	1.5	.64	.93	.7	655	60	578	.7	223	20	236	13.47
7	.9	.43	.87	.4	800	73	661	.5	211	19	218	18.09
8 or More	.6	.35	.85	.2	1,207	110	893	.4	258	24	297	19.25
Number of Rooms that Can Be Air Conditioned												
All	2.3	1.08	.86	1.3	684	62	559	1.1	192	18	205	12.29
Some	1.4	.59	.94	.8	613	56	534	.7	171	16	210	12.94
None	4.1	1.77	.92	1.8	666	61	575	2.0	245	22	251	8.76

See footnotes at end of table.

Table 22. U.S. Residential Liquefied Petroleum Gas Consumption and Expenditures--April 1984 Through March 1985 (Continued)

Household Characteristics	Liquefied Petroleum Gas (LPG) Used:											RSE Row Factors
				As Main Heating Fuel				Not as Main Heating Fuel				
	Number of Households (million)	Total Amount Consumed (billion gallons)	Avg Price (dollars per gallon)	Number of Households (million)	Avg Amount Consumed (gallons)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	Number of Households (million)	Avg Amount Consumed (gallons)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	
RSE Column Factors:	1.14	1.35	0.26	1.53	0.93	0.93	0.81	1.45	1.28	1.28	1.00	
Measured Heated Area of Residence (square feet)												
Fewer than 600	1.2	0.38	1.03	0.6	415	38	396	0.4	148	13	181	13.96
600 to 999	2.5	.95	.95	1.3	577	53	521	1.1	148	13	175	10.81
1,000 to 1,599	2.3	1.22	.86	1.3	709	65	589	1.0	292	27	281	12.63
1,600 to 1,999	.8	.34	.87	.3	784	72	621	.5	189	17	210	18.17
2,000 to 2,399	.4	.17	.89	Q	Q	Q	Q	.3	186	17	215	22.48
2,400 to 2,999	.2	.15	.76	Q	Q	Q	Q	.2	457	42	378	22.14
3,000 or More	.4	.24	.87	.1	1,350	123	1,005	.2	268	25	323	25.27
Year of Construction												
1939 or Before	2.4	1.15	.90	1.2	734	67	612	1.2	240	22	257	11.94
1940 to 1949	.4	.17	.99	Q	Q	Q	Q	.2	256	23	305	23.53
1950 to 1959	1.0	.32	.97	.4	557	51	480	.6	157	14	194	19.07
1960 to 1964	.7	.34	.91	.4	733	67	616	.3	117	11	157	21.28
1965 to 1969	.8	.26	.87	.3	477	44	393	.5	196	18	181	23.66
1970 to 1974	1.3	.62	.92	.7	633	58	574	.5	296	27	284	12.78
1975 to 1979	.7	.32	.89	.4	574	52	493	.2	174	16	178	14.75
1980 or After	.4	Q	.81	Q	948	87	733	.2	262	24	245	31.00
Status of Unit												
Owned	5.9	2.61	.91	2.9	677	62	575	2.9	216	20	232	7.41
Rented	1.9	.84	.90	1.0	615	56	524	.8	219	20	226	12.91
1984 Family Income												
Less than $5,000	1.0	.40	.95	.5	594	54	543	.4	191	17	204	17.68
$5,000 to $9,999	1.8	.88	.89	1.0	692	63	596	.7	196	18	200	11.96
$10,000 to $14,999	1.3	.48	.96	.7	539	49	471	.7	178	16	214	11.15
$15,000 to $19,999	1.1	.47	.90	.5	637	58	529	.5	252	23	277	19.47
$20,000 to $24,999	.6	.36	.83	.3	775	71	631	.3	321	29	275	14.83
$25,000 to $34,999	1.1	.39	.96	.5	503	46	460	.6	242	22	244	15.50
$35,000 or More	.9	.46	.86	.3	1,093	100	806	.6	197	18	231	18.13
Below 100% of Poverty	1.8	.76	.91	.9	648	59	564	.8	204	19	207	13.01
Below 125% of Poverty	2.6	1.16	.89	1.4	652	60	559	1.1	212	19	210	11.61
Assistance for Heating in Winter												
Yes	.8	.43	.87	.5	829	76	700	.3	141	13	160	12.28
No	7.0	3.01	.91	3.4	639	58	543	3.4	224	20	237	7.16
Assistance for Weatherization of Residence												
Yes	.2	.07	1.05	Q	Q	Q	Q	Q	Q	Q	Q	32.06
No	7.7	3.37	.90	3.8	667	61	563	3.7	215	20	229	6.96
Household Owns or Has Regular Use of a Vehicle												
Yes	7.0	3.09	.90	3.4	665	61	559	3.4	225	21	237	7.30
No	.8	.35	.96	.5	634	58	581	.4	140	13	171	14.21
Race of Householder												
White	6.8	3.03	.90	3.3	681	62	575	3.4	221	20	233	6.76
Black	.8	.30	.96	.5	471	43	435	.3	175	16	205	20.25
Other	.2	Q	.93	Q	Q	Q	Q	Q	Q	Q	Q	50.57

See footnotes at end of table.

Table 22. U.S. Residential Liquefied Petroleum Gas Consumption and Expenditures--April 1984 Through March 1985 (Continued)

Household Characteristics	Liquefied Petroleum Gas (LPG) Used:											RSE Row Factors
				As Main Heating Fuel				Not as Main Heating Fuel				
	Number of Households (million)	Total Amount Consumed (billion gallons)	Avg Price (dollars per gallon)	Number of Households (million)	Avg Amount Consumed (gallons)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	Number of Households (million)	Avg Amount Consumed (gallons)	Avg Amount Consumed (million Btu)	Avg Expenditures per Household (dollars)	
RSE Column Factors:	1.14	1.35	0.26	1.53	0.93	0.93	0.81	1.45	1.28	1.28	1.00	
Householder of Hispanic Descent												
Yes	0.2	0.12	0.78	Q	Q	Q	Q	Q	Q	Q	Q	35.85
No	7.6	3.33	.91	3.8	662	60	565	3.7	214	20	228	6.93
Age of Householder												
Under 25 Years	.4	.15	.92	.2	689	63	574	.2	188	17	214	19.41
25 to 34 Years	2.0	.81	.89	.9	604	55	514	1.1	253	23	243	13.04
35 to 44 Years	1.3	.62	.87	.6	784	72	628	.6	199	18	223	14.31
45 to 59 Years	1.6	.67	.92	.7	636	58	535	.9	241	22	259	12.51
60 Years and Over	2.6	1.20	.92	1.5	654	60	573	1.0	174	16	201	11.68
Household Size												
1 Person	1.7	.73	.90	1.1	573	52	501	.6	166	15	178	14.87
2 Persons	2.5	1.02	.93	1.2	636	58	555	1.3	195	18	214	10.70
3 Persons	1.4	.52	.95	.5	588	54	508	.8	236	22	256	12.94
4 Persons	1.2	.68	.83	.7	816	75	651	.6	248	23	236	11.83
5 Persons	.6	.25	.90	.2	700	64	591	.3	256	23	256	19.70
6 or More Persons	.4	Q	.90	Q	Q	Q	Q	.2	297	27	355	32.03
Secondary Heating												
Yes	4.2	1.68	.92	1.8	611	56	525	2.4	248	23	258	9.33
No	3.6	1.77	.89	2.1	703	64	592	1.3	161	15	181	9.32
Main Heating Equipment Using LPG												
Central Warm Air Furnace	2.3	1.74	.83	2.3	760	69	627	--	--	--	--	8.96
Other/None	5.5	1.70	.99	1.6	520	48	467	3.8	217	20	231	7.71

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

Notes: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. Because of rounding, data may not sum to totals. 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 1984 Residential Energy Consumption Survey.

Table 23. U.S. Residential Average Energy Consumption of All Major Fuels, by Climate Zone and Heated Square Footage-- April 1984 Through March 1985

(Million Btu per Household)

Household Characteristics	Total	Heating Degree-Days (HDD) April 1984 Through March 1985 by Heated Square Footage (Sq. Ft.)									RSE Row Factors
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD			
		Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	
RSE Column Factors:	0.43	0.81	0.82	0.96	1.10	1.05	1.39	1.05	0.91	2.38	
Total Households	105	92	132	160	87	109	148	56	84	123	2.85
Metropolitan Status											
Metropolitan	108	92	136	168	93	117	156	55	83	122	2.86
Central City	109	97	146	175	102	126	161	55	84	134	4.37
Outside Central City	107	87	127	164	77	110	154	55	82	116	4.17
Nonmetropolitan	95	91	123	134	69	86	96	60	88	127	7.54
Payment Method for Utilities											
All Paid by Household	108	93	132	160	81	109	150	58	85	124	3.42
Some Paid, Some in Rent	85	90	126	Q	91	115	Q	48	56	Q	10.52
All Included in Rent	89	87	113	Q	102	102	Q	51	84	Q	12.32
Other Method	101	102	151	143	91	102	135	46	70	Q	14.15
Housing Structure											
Single-Family Detached	117	103	134	161	90	109	150	70	90	127	3.66
Owned	120	98	131	161	92	108	150	71	90	128	3.86
Rented	103	112	161	157	85	111	145	69	89	117	7.64
Single-Family Attached	112	109	131	162	123	105	159	49	76	Q	11.79
Owned	121	Q	141	159	118	106	160	Q	72	Q	17.45
Rented	92	103	Q	Q	Q	98	Q	52	81	NC	22.36
Building of 2 to 4 Units	97	102	133	152	87	124	125	53	69	Q	7.69
Owned	130	129	151	146	Q	117	137	Q	Q	NC	13.54
Rented	89	99	121	163	84	127	Q	53	70	Q	9.59
Building of 5 or More Units	71	78	119	Q	88	103	Q	40	52	Q	10.79
Owned	76	86	Q	NC	101	Q	Q	Q	62	Q	27.05
Rented	71	78	117	Q	86	107	Q	40	47	Q	12.82
Mobile Home	73	91	101	NC	71	84	NC	51	73	NC	10.57
Owned	75	89	102	NC	71	87	NC	53	75	NC	11.64
Rented	64	100	Q	NC	73	Q	NC	49	Q	NC	24.45
Year of Construction											
1939 or Before	126	113	150	172	93	119	165	66	91	166	4.63
1940 to 1949	106	93	133	168	87	112	148	67	91	123	6.95
1950 to 1959	107	98	130	156	106	120	139	58	94	109	5.31
1960 to 1964	101	92	119	141	81	124	161	57	88	120	7.81
1965 to 1969	99	74	121	165	87	96	162	58	87	149	7.85
1970 to 1974	90	83	103	165	75	84	123	47	77	123	7.72
1975 to 1979	87	73	106	145	68	91	120	48	70	99	8.08
1980 or After	74	73	110	110	48	86	90	38	59	102	11.61
Status of Unit											
Owned	116	97	132	160	90	108	150	64	87	126	3.48
Rented	85	89	133	157	86	113	131	51	75	99	5.36

See footnotes at end of table.

Table 23. U.S. Residential Average Energy Consumption of All Major Fuels, by Climate Zone and Heated Square Footage-- April 1984 Through March 1985 (Continued)

(Million Btu per Household)

Household Characteristics	Total	Heating Degree-Days (HDD) April 1984 Through March 1985 by Heated Square Footage (Sq. Ft.)									RSE Row Factors
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD			
		Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	
RSE Column Factors:	0.43	0.81	0.82	0.96	1.10	1.05	1.39	1.05	0.91	2.38	
1984 Family Income											
Less than $5,000	90	97	141	155	88	114	Q	60	74	Q	10.69
$5,000 to $9,999	95	91	139	155	87	108	143	52	74	Q	7.02
$10,000 to $14,999	92	95	125	141	88	103	148	57	80	116	6.56
$15,000 to $19,999	100	83	123	161	91	110	145	55	85	106	6.88
$20,000 to $24,999	101	85	137	141	80	115	121	51	80	107	6.75
$25,000 to $34,999	108	89	126	157	83	103	144	57	89	120	5.20
$35,000 or More	129	105	135	171	94	116	160	62	91	129	4.94
Below 100% of Poverty	95	100	138	164	90	106	117	61	79	Q	7.83
Below 125% of Poverty	96	96	141	165	90	110	128	61	79	128	6.43
Assistance for Heating in Winter											
Yes	107	98	151	170	89	117	Q	68	102	Q	11.17
No	105	91	130	160	87	108	149	55	84	123	2.84
Assistance for Weatherization of Residence											
Yes	107	Q	133	Q	121	Q	NC	74	96	Q	16.19
No	105	92	132	160	87	109	148	56	84	123	2.86
Household Owns or Has Regular Use of a Vehicle											
Yes	106	91	128	159	83	109	148	56	84	123	3.01
No	98	97	158	194	96	111	Q	55	80	Q	7.35
Race of Householder											
White	104	88	129	159	81	104	146	53	81	123	3.15
Black	113	129	177	207	108	141	161	68	100	125	6.57
Other	87	82	125	Q	106	120	Q	47	93	Q	13.43
Householder of Hispanic Descent											
Yes	89	97	129	154	112	103	183	50	78	Q	8.62
No	106	92	132	160	86	109	147	57	85	123	2.95
Age of Householder											
Under 25 Years	82	86	121	125	82	105	Q	51	73	Q	9.15
25 to 34 Years	93	90	121	152	82	98	122	53	83	102	4.59
35 to 44 Years	115	101	131	166	98	110	146	61	88	129	4.50
45 to 59 Years	120	92	144	168	94	115	161	62	95	118	4.97
60 Years and Over	103	94	135	152	87	112	148	57	77	127	4.74
Household Size											
1 Person	84	83	120	139	78	113	142	43	69	Q	5.92
2 Persons	98	90	126	153	86	103	138	57	73	110	4.41
3 Persons	109	102	143	163	91	102	134	60	90	133	4.55
4 Persons	121	105	139	163	111	109	154	70	97	127	4.48
5 Persons	131	137	138	161	105	125	171	73	113	128	7.52
6 or More Persons	138	132	153	194	105	125	181	81	98	167	10.10
Secondary Heating											
Yes	111	88	118	159	79	101	147	64	89	131	4.05
No	101	93	142	162	90	115	150	53	80	102	3.35

See footnotes at end of table.

Table 23. U.S. Residential Average Energy Consumption of All Major Fuels, by Climate Zone and Heated Square Footage-- April 1984 Through March 1985 (Continued)

(Million Btu per Household)

Household Characteristics	Total	Heating Degree-Days (HDD) April 1984 Through March 1985 by Heated Square Footage (Sq. Ft.)									RSE Row Factors
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD			
		Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	
RSE Column Factors:	0.43	0.81	0.82	0.96	1.10	1.05	1.39	1.05	0.91	2.38	
Main Heating Fuel											
Natural Gas	124	104	152	179	99	129	164	70	100	148	3.00
Electricity	55	47	72	88	41	69	89	36	57	74	5.97
Fuel Oil	132	113	141	166	105	128	171	81	83	Q	4.20
Wood	60	44	66	77	44	64	64	38	56	81	11.77
LPG	89	88	111	166	85	111	Q	57	86	NC	12.55
Coal	41	Q	Q	43	Q	45	Q	Q	Q	Q	37.84
No Heating Fuel	31	NC	NC	NC	NC	NC	NC	31	NC	NC	16.50
Other Fuel	80	92	Q	Q	66	Q	Q	62	84	Q	17.06
Heating Controls											
Have Controls	113	94	137	165	88	114	153	59	87	126	2.86
Do Not Have Controls, Unknown, Not Reported	74	86	92	82	85	85	95	53	74	93	7.69
Daytime Temperature When Someone Is at Home											
Heat Turned On	114	93	137	165	89	113	154	60	88	129	2.83
66 Degrees or Less	106	87	120	161	81	102	145	61	86	82	5.41
67-69 Degrees	120	88	144	162	87	110	148	55	87	145	4.42
70 Degrees	114	95	139	161	95	116	169	64	87	139	4.72
71 Degrees or More	112	102	137	185	90	121	154	58	89	127	5.17
Heat Turned Off	54	Q	NC	NC	Q	NC	NC	38	66	Q	24.85
Unknown/No Answer	94	Q	Q	Q	Q	Q	Q	58	Q	NC	26.27
Daytime Temperature When No One Is at Home											
Heat Turned On	119	95	138	166	89	114	154	62	91	138	2.99
63 Degrees or Less	111	86	122	156	80	104	153	60	90	123	4.72
64-66 Degrees	119	98	135	159	89	108	153	72	91	129	5.01
67-69 Degrees	129	97	151	166	88	122	161	58	91	182	5.74
70 Degrees or More	122	101	150	198	102	123	148	61	91	129	5.35
Heat Turned Off	75	77	108	153	90	101	Q	54	79	94	9.10
Unknown/No Answer	112	Q	Q	Q	69	Q	Q	Q	Q	NC	29.11
Nighttime (Sleeping Hours)											
Heat Turned On	116	95	138	165	88	114	153	60	88	130	2.91
63 Degrees or Less	113	84	123	157	80	109	148	61	88	112	4.62
64-66 Degrees	110	95	129	156	82	106	140	65	87	121	4.53
67-69 Degrees	122	95	151	167	85	118	157	50	86	166	5.27
70 Degrees or More	119	104	152	192	100	121	167	61	90	127	5.06
Heat Turned Off	80	61	83	158	93	105	Q	52	83	98	9.20
Unknown/No Answer	107	Q	Q	Q	Q	Q	Q	Q	Q	NC	31.06

NC No cases in sample.

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

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Table 24. U.S. Residential Average Energy Expenditures for All Major Fuels, by Climate Zone and Heated Square Footage-- April 1984 Through March 1985

(Dollars per Household)

Household Characteristics	Total	Heating Degree-Days (HDD) April 1984 Through March 1985 by Heated Square Footage (Sq. Ft.)									RSE Row Factors
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD			
		Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	
RSE Column Factors:	0.42	0.88	0.86	1.14	0.94	0.99	1.54	1.00	0.88	2.18	
Total Households	1,123	862	1,219	1,537	895	1,237	1,656	732	1,072	1,537	2.49
Metropolitan Status											
Metropolitan	1,155	864	1,252	1,612	932	1,307	1,737	709	1,065	1,549	2.75
Central City	1,076	850	1,205	1,488	973	1,253	1,811	674	1,022	1,598	4.43
Outside Central City	1,223	879	1,293	1,685	865	1,346	1,701	751	1,101	1,524	3.25
Nonmetropolitan	1,023	857	1,142	1,298	776	1,032	1,129	807	1,095	1,460	5.04
Payment Method for Utilities											
All Paid by Household	1,183	945	1,245	1,537	854	1,238	1,642	786	1,091	1,551	2.84
Some Paid, Some in Rent	830	752	1,005	Q	956	1,350	Q	544	605	Q	11.68
All Included in Rent	789	712	789	Q	880	975	Q	534	1,012	Q	12.77
Other Method	1,099	1,005	1,326	1,442	1,190	1,133	1,792	642	708	Q	12.40
Housing Structure											
Single-Family Detached	1,255	964	1,259	1,553	872	1,227	1,622	863	1,138	1,579	2.86
Owned	1,291	950	1,239	1,560	907	1,237	1,635	915	1,157	1,575	3.25
Rented	1,062	996	1,420	1,418	796	1,170	1,327	782	1,052	1,626	6.71
Single-Family Attached	1,256	999	1,253	1,370	1,376	1,227	1,993	716	963	Q	11.37
Owned	1,356	Q	1,274	1,344	1,328	1,239	2,055	Q	975	Q	19.91
Rented	1,025	957	Q	Q	Q	1,163	Q	727	948	NC	16.76
Building of 2 to 4 Units	950	906	1,157	1,391	964	1,332	1,432	578	701	Q	7.32
Owned	1,317	1,259	1,339	1,361	Q	1,377	1,660	Q	Q	NC	12.62
Rented	860	873	1,043	1,450	919	1,313	Q	575	705	Q	8.89
Building of 5 or More Units	761	694	892	Q	871	1,261	Q	579	788	Q	9.70
Owned	1,047	795	Q	NC	1,222	Q	Q	Q	917	Q	24.05
Rented	728	691	888	Q	838	1,231	Q	584	706	Q	11.12
Mobile Home	947	1,054	1,066	NC	810	1,123	NC	841	1,062	NC	8.52
Owned	970	1,050	1,070	NC	825	1,100	NC	870	1,078	NC	9.80
Rented	860	1,079	Q	NC	742	Q	NC	787	Q	NC	19.96
Year of Construction											
1939 or Before	1,212	974	1,319	1,585	957	1,273	1,819	722	959	1,611	4.59
1940 to 1949	1,092	863	1,220	1,572	840	1,148	1,698	718	1,061	1,525	7.02
1950 to 1959	1,120	872	1,143	1,497	977	1,257	1,524	710	1,131	1,500	4.88
1960 to 1964	1,098	803	1,109	1,332	832	1,295	1,590	774	1,116	1,560	6.12
1965 to 1969	1,126	771	1,113	1,727	908	1,192	1,813	784	1,111	1,570	8.06
1970 to 1974	1,079	868	1,135	1,575	864	1,243	1,342	749	1,055	1,540	5.92
1975 to 1979	1,100	748	1,226	1,472	749	1,258	1,585	744	1,125	1,537	6.20
1980 or After	903	741	986	1,198	557	1,024	1,263	633	986	1,371	10.08
Status of Unit											
Owned	1,265	998	1,239	1,547	967	1,241	1,684	882	1,131	1,552	2.95
Rented	870	797	1,149	1,412	854	1,221	1,288	650	905	1,409	4.51

See footnotes at end of table.

Table 24. U.S. Residential Average Energy Expenditures for All Major Fuels, by Climate Zone and Heated Square Footage-- April 1984 Through March 1985 (Continued)

(Dollars per Household)

Household Characteristics	Total	Heating Degree-Days (HDD) April 1984 Through March 1985 by Heated Square Footage (Sq. Ft.)									RSE Row Factors
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD			
		Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	
RSE Column Factors:	0.42	0.88	0.86	1.14	0.94	0.99	1.54	1.00	0.88	2.18	
1984 Family Income											
Less than $5,000	891	823	1,154	1,119	850	1,114	Q	715	960	Q	8.52
$5,000 to $9,999	964	882	1,192	1,415	887	1,110	1,423	708	913	Q	5.35
$10,000 to $14,999	965	860	1,153	1,344	880	1,117	1,549	695	1,007	1,342	5.96
$15,000 to $19,999	1,043	780	1,130	1,441	881	1,216	1,528	784	1,028	1,458	5.25
$20,000 to $24,999	1,080	841	1,310	1,416	803	1,293	1,301	665	993	1,376	5.65
$25,000 to $34,999	1,189	868	1,210	1,486	932	1,222	1,567	794	1,156	1,626	4.51
$35,000 or More	1,455	1,061	1,322	1,691	1,120	1,448	1,864	851	1,192	1,614	4.53
Below 100% of Poverty	969	900	1,203	1,472	890	1,134	1,237	758	987	Q	6.05
Below 125% of Poverty	979	879	1,229	1,465	899	1,145	1,290	757	969	1,437	5.16
Assistance for Heating in Winter											
Yes	1,062	981	1,298	1,377	937	1,270	Q	785	1,177	Q	9.21
No	1,127	849	1,212	1,542	890	1,235	1,666	728	1,069	1,551	2.48
Assistance for Weatherization of Residence											
Yes	1,052	Q	1,115	Q	1,170	Q	NC	836	996	Q	15.73
No	1,124	862	1,221	1,536	891	1,238	1,656	729	1,073	1,537	2.50
Household Owns or Has Regular Use of a Vehicle											
Yes	1,152	877	1,211	1,538	849	1,257	1,655	754	1,088	1,547	2.62
No	924	800	1,274	1,505	982	1,064	Q	635	841	Q	6.12
Race of Householder											
White	1,132	853	1,207	1,534	853	1,196	1,651	730	1,069	1,551	2.57
Black	1,131	1,001	1,407	1,757	1,029	1,529	1,734	790	1,106	1,446	5.55
Other	896	753	1,106	Q	1,047	1,341	Q	582	1,009	Q	12.61
Householder of Hispanic Descent											
Yes	992	845	1,085	1,371	1,094	1,261	2,284	547	1,066	Q	9.80
No	1,130	863	1,222	1,541	881	1,235	1,638	754	1,073	1,531	2.49
Age of Householder											
Under 25 Years	853	772	1,104	1,137	793	1,060	Q	698	973	Q	9.49
25 to 34 Years	997	855	1,153	1,391	852	1,118	1,346	686	1,041	1,370	3.82
35 to 44 Years	1,288	929	1,258	1,620	994	1,373	1,720	807	1,136	1,719	4.33
45 to 59 Years	1,308	903	1,320	1,698	1,017	1,303	1,825	811	1,163	1,500	4.42
60 Years and Over	1,063	875	1,205	1,376	880	1,160	1,555	724	1,011	1,443	3.91
Household Size											
1 Person	821	724	1,032	1,185	774	1,031	1,348	566	861	Q	4.70
2 Persons	1,074	908	1,165	1,410	899	1,211	1,516	771	975	1,356	3.27
3 Persons	1,189	978	1,309	1,531	941	1,209	1,563	773	1,171	1,594	3.90
4 Persons	1,336	1,012	1,348	1,694	1,133	1,260	1,779	913	1,227	1,580	3.95
5 Persons	1,448	1,141	1,362	1,613	1,082	1,477	1,999	906	1,313	1,758	6.31
6 or More Persons	1,492	1,353	1,501	1,892	1,152	1,518	1,899	933	1,143	2,200	9.74
Secondary Heating											
Yes	1,240	940	1,175	1,579	904	1,223	1,649	820	1,114	1,579	3.33
No	1,042	845	1,250	1,481	892	1,248	1,668	697	1,033	1,425	3.24

See footnotes at end of table.

Table 24. U.S. Residential Average Energy Expenditures for All Major Fuels, by Climate Zone and Heated Square Footage-- April 1984 Through March 1985 (Continued)

(Dollars per Household)

Household Characteristics	Total	Heating Degree-Days (HDD) April 1984 Through March 1985 by Heated Square Footage (Sq. Ft.)									RSE Row Factors
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD			
		Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	
RSE Column Factors:	0.42	0.88	0.86	1.14	0.94	0.99	1.54	1.00	0.88	2.18	
Main Heating Fuel											
Natural Gas	1,119	821	1,214	1,508	876	1,196	1,675	701	1,050	1,612	3.27
Electricity	1,026	818	1,088	1,445	707	1,283	1,490	722	1,130	1,516	6.64
Fuel Oil	1,465	1,138	1,506	1,878	1,072	1,502	1,954	1,213	1,144	Q	4.88
Wood	866	681	898	1,086	641	938	994	593	826	1,074	7.61
LPG	1,170	1,051	1,296	2,124	1,040	1,326	Q	897	1,213	NC	10.46
Coal	760	Q	Q	899	Q	745	Q	Q	Q	Q	29.02
No Heating Fuel	672	NC	NC	NC	NC	NC	NC	672	NC	NC	17.32
Other Fuel	1,085	1,117	Q	Q	878	Q	Q	860	1,362	Q	15.54
Heating Controls											
Have Controls	1,197	889	1,235	1,570	912	1,276	1,681	783	1,125	1,592	2.48
Do Not Have Controls, Unknown, Not Reported	852	766	1,086	1,053	864	1,040	1,389	665	892	1,088	6.54
Daytime Temperature When Someone Is at Home											
Heat Turned On	1,203	889	1,233	1,571	909	1,274	1,688	794	1,133	1,605	2.49
66 Degrees or Less	1,163	881	1,118	1,597	896	1,342	1,637	839	1,091	1,174	5.42
67-69 Degrees	1,271	908	1,315	1,538	910	1,318	1,653	750	1,113	1,679	3.84
70 Degrees	1,187	890	1,260	1,483	936	1,196	1,818	771	1,124	1,790	3.91
71 Degrees or More	1,171	874	1,180	1,724	885	1,266	1,637	814	1,174	1,572	4.56
Heat Turned Off	834	Q	NC	NC	Q	NC	NC	599	991	Q	30.49
Unknown/No Answer	1,024	Q	Q	Q	Q	Q	Q	790	Q	NC	19.96
Daytime Temperature When No One Is at Home											
Heat Turned On	1,244	896	1,241	1,573	923	1,297	1,689	848	1,178	1,659	2.60
63 Degrees or Less	1,181	901	1,116	1,520	906	1,202	1,650	830	1,110	1,499	4.18
64-66 Degrees	1,247	931	1,209	1,540	921	1,318	1,678	864	1,153	1,583	4.85
67-69 Degrees	1,349	898	1,389	1,552	933	1,436	1,759	814	1,290	1,990	5.37
70 Degrees or More	1,243	860	1,313	1,787	944	1,269	1,656	875	1,228	1,672	4.82
Heat Turned Off	925	779	1,008	1,380	847	1,010	Q	715	1,014	1,405	8.18
Unknown/No Answer	1,097	Q	Q	Q	763	Q	Q	Q	Q	NC	24.65
Nighttime (Sleeping Hours)											
Heat Turned On	1,222	893	1,239	1,571	904	1,283	1,677	812	1,164	1,622	2.54
63 Degrees or Less	1,202	870	1,121	1,546	886	1,250	1,716	856	1,057	1,402	4.52
64-66 Degrees	1,193	935	1,217	1,474	861	1,296	1,510	825	1,168	1,526	4.13
67-69 Degrees	1,273	901	1,357	1,580	928	1,338	1,695	703	1,146	1,892	4.60
70 Degrees or More	1,221	871	1,289	1,734	935	1,256	1,754	835	1,241	1,702	4.60
Heat Turned Off	945	766	1,030	1,527	963	1,154	Q	690	936	1,377	8.55
Unknown/No Answer	1,097	Q	Q	Q	Q	Q	Q	Q	Q	NC	24.87

NC No cases in sample.

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

Notes: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. Because of rounding, data may not sum to totals. 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 1984 Residential Energy Consumption Survey.

Table 25. Number of U.S. Households by Climate Zone and Heated Square Footage--November 1984

(Million Households)

Household Characteristics	Total	Heating Degree-Days (HDD) April 1984 Through March 1985 by Heated Square Footage (Sq. Ft.)									RSE Row Factors
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD			
		Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	
RSE Column Factors:	0.24	0.92	0.97	1.04	1.20	1.23	1.53	1.02	0.96	2.08	
Total Households	86.3	11.4	12.0	9.5	7.9	10.3	5.2	12.6	14.1	3.3	0.36
Metropolitan Status											
Metropolitan	65.7	8.5	8.4	7.3	6.0	7.7	4.5	9.6	10.8	2.8	6.89
Central City	30.6	4.4	3.9	2.7	3.7	3.2	1.5	5.3	4.9	1.0	10.05
Outside Central City	35.1	4.1	4.5	4.6	2.3	4.5	3.0	4.3	6.0	1.9	9.51
Nonmetropolitan	20.6	2.9	3.6	2.3	1.8	2.6	.7	3.0	3.2	.4	18.83
Payment Method for Utilities											
All Paid by Household	70.6	6.3	10.6	9.4	4.2	9.3	4.9	9.6	13.1	3.2	7.36
Some Paid, Some in Rent	9.2	3.6	.6	Q	2.3	.5	Q	1.7	.3	Q	26.24
All Included in Rent	4.3	1.2	.5	Q	1.2	Q	Q	.8	.4	Q	34.32
Other Method	2.2	.3	.4	.1	.2	.3	.2	.4	.2	Q	27.60
Housing Structure											
Single-Family Detached	53.5	3.0	8.9	8.8	2.4	7.3	4.3	5.0	10.9	3.0	8.52
Owned	45.0	2.1	7.9	8.3	1.6	6.2	4.1	3.0	9.0	2.8	9.39
Rented	8.5	.9	1.0	.5	.7	1.1	.2	2.0	1.9	.3	15.82
Single-Family Attached	4.1	.3	.5	.3	.2	1.4	.5	.3	.5	Q	33.23
Owned	2.8	Q	.4	.2	.2	1.2	.4	Q	Q	Q	40.54
Rented	1.2	.2	Q	Q	Q	.2	Q	.3	.2	NC	51.42
Building of 2 to 4 Units	10.0	2.3	1.6	.5	1.3	1.0	.3	2.2	.8	Q	20.41
Owned	2.0	.2	.6	.3	Q	.3	.2	Q	Q	NC	28.17
Rented	8.0	2.1	1.0	.2	1.2	.7	Q	2.1	.7	Q	25.29
Building of 5 or More Units	13.6	4.3	.7	Q	3.2	.5	Q	3.3	1.3	Q	19.23
Owned	1.4	Q	Q	NC	.3	Q	Q	Q	.5	Q	38.45
Rented	12.2	4.2	.6	Q	2.9	.4	Q	3.2	.8	Q	26.01
Mobile Home	5.1	1.5	.4	NC	.8	.2	NC	1.8	.6	NC	27.26
Owned	4.1	1.2	.4	NC	.6	Q	NC	1.2	.5	NC	30.11
Rented	1.1	.2	Q	NC	.1	Q	NC	.6	Q	NC	53.47
Year of Construction											
1939 or Before	25.2	3.7	5.2	3.5	2.9	3.1	1.8	2.3	2.2	.4	11.01
1940 to 1949	7.0	.5	.8	.8	.8	.8	.3	1.3	1.3	.3	19.30
1950 to 1959	12.6	1.0	1.6	1.3	1.1	1.9	.8	2.2	2.3	.5	14.66
1960 to 1964	7.5	.6	.8	.5	.7	1.0	.5	1.3	1.6	.5	18.56
1965 to 1969	8.2	.9	.8	.8	.7	.8	.6	1.4	2.0	.2	18.43
1970 to 1974	10.7	1.8	1.0	1.1	.8	1.2	.5	1.9	1.6	.6	17.03
1975 to 1979	10.1	1.9	1.1	1.3	.5	1.0	.6	1.4	1.9	.6	17.63
1980 or After	5.0	.8	.7	.4	.3	.6	.1	.9	1.0	.2	27.75
Status of Unit											
Owned	55.3	3.7	9.3	8.9	2.8	7.9	4.9	4.4	10.4	2.9	8.16
Rented	31.0	7.7	2.7	.7	5.0	2.4	.4	8.1	3.6	.3	11.04

See footnotes at end of table.

Table 25. Number of U.S. Households by Climate Zone and Heated Square Footage--November 1984 (Continued)

(Million Households)

Household Characteristics	Total	Heating Degree-Days (HDD) April 1984 Through March 1985 by Heated Square Footage (Sq. Ft.)									RSE Row Factors
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD			
		Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	
RSE Column Factors:	0.24	0.92	0.97	1.04	1.20	1.23	1.53	1.02	0.96	2.08	
1984 Family Income											
Less than $5,000	7.9	1.6	0.9	0.2	1.3	0.6	Q	2.0	1.2	Q	19.04
$5,000 to $9,999	14.0	2.8	2.2	.7	1.9	1.4	0.4	2.9	1.6	Q	15.13
$10,000 to $14,999	13.1	2.4	1.6	.6	1.5	1.6	.3	2.8	2.1	0.2	13.20
$15,000 to $19,999	9.0	1.3	1.4	.8	1.1	1.1	.4	1.4	1.4	.2	15.13
$20,000 to $24,999	8.4	1.4	1.4	1.0	.5	1.2	.4	1.1	1.3	.2	14.56
$25,000 to $34,999	15.3	1.3	2.2	2.2	1.1	2.3	1.3	1.7	2.8	.5	11.97
$35,000 or More	18.7	.7	2.3	4.0	.5	2.1	2.5	.9	3.7	2.0	12.04
Below 100% of Poverty	13.7	2.7	1.5	.6	1.9	1.2	.2	3.3	2.1	Q	13.90
Below 125% of Poverty	19.6	3.6	2.4	.8	2.8	2.0	.4	4.3	3.0	.2	12.69
Assistance for Heating in Winter											
Yes	5.3	1.2	1.0	.3	.9	.5	Q	.9	.4	Q	24.07
No	81.0	10.2	11.1	9.3	7.0	9.8	5.1	11.7	13.7	3.2	5.82
Assistance for Weatherization of Residence											
Yes	1.2	Q	.3	Q	.1	Q	NC	.3	.2	Q	34.22
No	85.1	11.3	11.7	9.5	7.7	10.2	5.2	12.3	13.9	3.3	5.15
***Household Owns or Has Regular* Use of a Vehicle**											
Yes	75.3	9.2	10.6	9.3	5.2	9.2	5.1	10.3	13.2	3.2	6.28
No	11.0	2.2	1.4	.2	2.7	1.1	Q	2.3	.9	Q	16.89
Race of Householder											
White	72.7	9.9	11.0	9.2	6.0	8.9	4.6	8.8	11.4	2.9	6.68
Black	10.5	1.0	.8	.3	1.5	1.2	.5	2.8	2.2	.4	20.57
Other	3.1	.4	.3	Q	.4	Q	Q	1.0	.5	Q	28.81
Householder of Hispanic Descent											
Yes	4.4	.3	.3	.2	.5	.5	.1	1.3	.9	Q	22.19
No	81.9	11.1	11.7	9.3	7.4	9.8	5.1	11.3	13.1	3.2	5.93
Age of Householder											
Under 25 Years	6.8	1.9	.7	.1	1.0	.3	Q	1.8	.9	Q	21.61
25 to 34 Years	20.7	3.1	2.8	1.8	2.2	2.3	.8	4.0	3.3	.4	10.69
35 to 44 Years	16.8	1.3	2.0	2.8	1.1	2.9	1.3	1.9	2.5	1.0	11.17
45 to 59 Years	17.2	1.5	2.4	2.6	1.0	2.1	1.8	1.6	3.2	1.0	11.20
60 Years and Over	24.8	3.5	4.1	2.2	2.5	2.8	1.3	3.4	4.3	.8	10.99
Household Size											
1 Person	20.4	4.8	3.0	1.0	2.9	1.5	.6	4.2	2.2	Q	12.10
2 Persons	26.6	3.6	3.6	2.7	2.3	3.1	1.5	3.8	4.9	1.1	9.65
3 Persons	15.4	1.4	2.0	1.7	1.3	2.3	.9	2.0	2.9	.8	10.50
4 Persons	13.6	1.1	1.8	2.2	.8	1.8	1.4	1.5	2.3	.6	11.53
5 Persons	6.3	.3	.9	1.1	.3	1.0	.7	.6	1.0	.4	16.39
6 or More Persons	4.1	.2	.7	.8	.2	.6	.2	.5	.8	.3	20.85
Secondary Heating											
Yes	35.5	2.1	5.1	5.5	1.9	4.8	3.3	3.6	6.8	2.4	9.28
No	50.8	9.3	6.9	4.0	5.9	5.6	1.9	9.0	7.3	.9	7.70

See footnotes at end of table.

Table 25. Number of U.S. Households by Climate Zone and Heated Square Footage--November 1984 (Continued)

(Million Households)

Household Characteristics	Total	Heating Degree-Days (HDD) April 1984 Through March 1985 by Heated Square Footage (Sq. Ft.)									RSE Row Factors
		More than 5,499 HDD			4,000 to 5,499 HDD			Fewer than 4,000 HDD			
		Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	Fewer than 1,000 Sq. Ft.	1,000 to 1,999 Sq. Ft.	More than 1,999 Sq. Ft.	
RSE Column Factors:	0.24	0.92	0.97	1.04	1.20	1.23	1.53	1.02	0.96	2.08	
Main Heating Fuel											
Natural Gas	47.8	7.1	7.2	6.1	3.5	4.7	3.0	6.1	8.1	2.1	9.12
Electricity	14.5	1.8	1.2	.5	1.0	1.6	.5	3.5	3.7	.8	17.81
Fuel Oil	10.7	1.1	1.8	1.7	2.3	2.0	1.2	.2	.4	Q	15.83
Wood	6.5	.5	1.2	.9	.5	1.3	.3	.6	.9	.2	21.39
LPG	3.9	.5	.4	.3	.3	.4	Q	1.2	.8	NC	29.63
Coal	.7	Q	Q	.1	Q	Q	Q	Q	Q	Q	66.15
No Heating Fuel	.6	NC	NC	NC	NC	NC	NC	.6	NC	NC	44.02
Other Fuel	1.6	.3	Q	Q	.2	Q	Q	.5	.2	Q	37.43
Heating Controls											
Have Controls	68.0	8.9	10.7	8.9	5.1	8.6	4.8	7.1	10.9	2.9	7.02
Do Not Have Controls, Unknown, Not Reported	18.4	2.5	1.3	.6	2.8	1.7	.4	5.5	3.2	.4	13.42
Daytime Temperature When Someone Is at Home											
Heat Turned On	66.5	8.8	10.6	8.9	5.0	8.5	4.7	6.6	10.5	2.8	7.17
66 Degrees or Less	11.8	1.8	1.9	1.9	1.3	1.3	.6	1.1	1.5	.5	13.13
67-69 Degrees	19.1	2.2	3.3	3.4	1.1	2.6	1.9	1.2	2.4	.8	11.98
70 Degrees	18.7	2.4	3.1	2.1	1.5	2.4	1.1	1.9	3.3	.8	10.60
71 Degrees or More	16.9	2.4	2.4	1.6	1.1	2.3	1.0	2.3	3.3	.7	11.89
Heat Turned Off	.8	Q	NC	NC	Q	NC	NC	.4	.3	Q	47.89
Unknown/No Answer	.7	Q	Q	Q	Q	Q	Q	.2	Q	NC	47.33
Daytime Temperature When No One Is at Home											
Heat Turned On	57.5	8.3	10.3	8.8	4.5	7.9	4.6	3.6	7.4	2.2	7.63
63 Degrees or Less	18.9	2.9	3.4	3.3	1.7	2.1	1.4	1.1	2.6	.6	11.63
64-66 Degrees	12.8	1.7	2.3	2.1	.9	1.8	.9	.7	1.7	.6	13.03
67-69 Degrees	11.5	1.6	2.0	2.0	.7	1.6	1.4	.7	1.0	.4	13.83
70 Degrees or More	14.4	2.1	2.7	1.3	1.1	2.4	1.0	1.1	2.2	.5	13.08
Heat Turned Off	9.9	.6	.3	.1	.5	.7	Q	3.5	3.4	.8	19.04
Unknown/No Answer	.6	Q	Q	Q	Q	Q	Q	Q	Q	NC	50.01
Nighttime (Sleeping Hours)											
Heat Turned On	61.5	8.5	10.4	8.8	4.2	7.9	4.6	5.4	9.1	2.6	7.37
63 Degrees or Less	15.5	2.0	3.0	2.9	1.1	1.8	1.3	.9	2.0	.5	12.40
64-66 Degrees	14.5	2.0	2.3	2.2	1.0	1.9	.9	1.4	2.0	.8	11.25
67-69 Degrees	14.0	2.2	2.2	2.2	.8	1.9	1.3	1.0	1.9	.5	12.71
70 Degrees or More	17.4	2.4	2.9	1.6	1.4	2.4	1.0	2.1	3.1	.6	11.71
Heat Turned Off	5.9	.3	.3	.1	.8	.6	Q	1.7	1.7	.4	21.84
Unknown/No Answer	.5	Q	Q	Q	Q	Q	Q	Q	Q	NC	49.28

NC No cases in sample.

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

Notes: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. Because of rounding, data may not sum to totals. 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 1984 Residential Energy Consumption Survey.

Table 26. U.S. Average Residential Energy Prices-- April 1984 Through March 1985

(Dollars per Million Btu)

Household Characteristics	Average Energy Prices					RSE Row Factors
	All Fuels	Natural Gas	Electricity	Fuel Oil or Kerosene	Liquefied Petroleum Gas	
RSE Column Factors:	0.92	0.87	0.93	0.64	2.11	
Total Households	10.73	5.97	21.94	7.64	9.91	1.11
Census Region and Division						
Northeast	11.52	7.43	29.77	7.54	13.11	2.28
New England	11.53	7.81	28.03	7.87	11.97	1.87
Middle Atlantic	11.52	7.35	30.31	7.41	14.23	2.71
North Central	8.96	5.59	21.64	7.67	8.67	2.16
East North Central	9.02	5.75	22.18	7.69	9.09	2.29
West North Central	8.82	5.17	20.55	7.62	8.13	3.12
South	12.39	5.81	20.39	8.14	10.38	2.53
South Atlantic	13.44	6.68	21.66	8.12	11.59	3.48
East South Central	11.27	5.13	16.19	8.32	9.75	2.99
West South Central	11.54	5.22	21.79	Q	8.99	4.64
West	10.02	5.55	18.94	7.85	10.56	2.21
Mountain	9.13	5.08	19.95	7.77	9.26	4.67
Pacific	10.44	5.80	18.58	7.89	11.36	2.61
Metropolitan Status						
Metropolitan	10.71	6.12	22.65	7.59	10.47	1.40
Central City	9.89	6.07	22.24	7.26	11.35	2.19
Outside Central City	11.43	6.18	22.93	7.81	10.38	1.44
Nonmetropolitan	10.80	5.32	19.89	7.89	9.54	2.06
Weather Zone						
Fewer than 2,000 CDD and--						
More than 7,000 HDD	9.38	5.55	20.16	7.76	9.43	2.45
5,500 to 7,000 HDD	9.52	5.87	23.34	7.82	9.55	2.05
4,000 to 5,499 HDD	10.91	6.57	22.74	7.38	9.91	2.44
Fewer than 4,000 HDD	10.98	5.68	19.75	8.46	9.84	2.31
More than 2,000 CDD and Fewer than 4,000 HDD	14.87	5.91	22.75	8.71	11.17	2.75
Payment Method for Utilities						
All Paid by Household	10.92	5.93	21.54	7.93	9.84	1.12
Some Paid, Some in Rent	9.72	6.29	28.14	6.78	11.11	2.98
All Included in Rent	8.88	5.84	21.43	6.31	10.00	5.87
Other Method	10.83	6.62	26.57	7.89	11.57	2.93
Housing Structure						
Single-Family Detached	10.71	5.85	21.39	7.91	9.77	1.20
Owned	10.77	5.88	21.45	7.88	9.83	1.25
Rented	10.30	5.62	21.01	8.11	9.60	1.99
Single-Family Attached	11.24	6.74	23.91	7.91	Q	3.98
Owned	11.26	6.73	25.44	7.92	Q	4.65
Rented	11.20	6.75	20.57	Q	Q	8.57
Building of 2 to 4 Units	9.79	6.34	24.61	7.86	11.76	1.66
Owned	10.10	6.54	30.41	7.85	Q	3.36
Rented	9.68	6.28	23.12	7.86	10.97	1.95
Building of 5 or More Units	10.68	6.08	23.91	6.27	Q	3.45
Owned	13.71	6.52	26.87	6.03	NC	7.93
Rented	10.30	6.05	23.37	6.31	Q	3.76
Mobile Home	13.02	5.60	20.79	8.47	10.40	2.97
Owned	12.94	5.70	20.52	8.46	10.48	3.36
Rented	13.37	4.96	22.10	8.50	10.15	4.77
Number of Rooms						
1	9.95	6.40	26.90	Q	Q	12.34
2	10.86	6.20	22.98	6.55	10.93	5.60
3	10.49	6.15	23.08	6.91	10.25	2.75
4	10.60	5.84	22.04	7.43	10.14	2.00
5	10.66	5.89	21.44	7.75	9.70	1.58
6	11.02	6.09	22.17	7.87	10.18	1.60
7	10.97	5.89	21.39	7.92	9.56	1.76
8 or More	10.50	6.05	22.18	7.86	9.29	2.13

See footnotes at end of table.

Table 26. U.S. Average Residential Energy Prices-- April 1984 Through March 1985 (Continued)

(Dollars per Million Btu)

Household Characteristics	Average Energy Prices					RSE Row Factors
	All Fuels	Natural Gas	Electricity	Fuel Oil or Kerosene	Liquefied Petroleum Gas	
RSE Column Factors:	0.92	0.87	0.93	0.64	2.11	
Number of Rooms that Can Be Air Conditioned						
All	11.62	5.81	21.18	7.57	9.46	1.97
Some	10.56	6.25	24.03	7.73	10.30	1.81
None	9.96	5.98	21.99	7.62	10.05	1.38
Measured Heated Area of Residence (square feet)						
Fewer than 600	11.24	6.41	24.60	7.00	11.27	2.69
600 to 999	10.55	5.86	22.03	7.33	10.44	1.71
1,000 to 1,599	10.93	5.85	21.21	7.73	9.44	1.48
1,600 to 1,999	10.88	6.05	21.40	7.85	9.58	1.71
2,000 to 2,399	10.63	6.02	22.56	7.88	9.78	1.95
2,400 to 2,999	10.26	6.00	21.93	7.84	8.33	2.32
3,000 or More	10.54	6.15	23.06	7.86	9.51	2.74
Year of Construction						
1939 or Before	9.65	6.18	24.15	7.67	9.84	1.57
1940 to 1949	10.30	6.09	22.52	7.71	10.89	2.63
1950 to 1959	10.44	5.92	22.46	7.65	10.63	2.33
1960 to 1964	10.92	5.85	21.40	7.23	9.93	3.34
1965 to 1969	11.36	5.88	21.74	7.69	9.51	2.57
1970 to 1974	12.03	5.93	21.09	7.92	10.07	2.33
1975 to 1979	12.60	5.50	20.29	7.48	9.76	2.46
1980 or After	12.25	5.34	20.00	7.74	8.85	4.47
Status of Unit						
Owned	10.93	5.96	21.83	7.84	9.93	1.14
Rented	10.25	6.00	22.24	7.20	9.82	1.61
1984 Family Income						
Less than $5,000	9.85	5.76	22.11	7.58	10.42	2.41
$5,000 to $9,999	10.20	5.91	21.94	7.62	9.75	1.66
$10,000 to $14,999	10.47	5.84	21.55	7.65	10.46	1.81
$15,000 to $19,999	10.48	5.96	22.14	7.46	9.88	2.20
$20,000 to $24,999	10.69	5.96	21.42	7.71	9.04	1.84
$25,000 to $34,999	11.05	6.06	21.53	7.71	10.47	1.63
$35,000 or More	11.30	6.09	22.45	7.69	9.41	1.67
Below 100% of Poverty	10.24	5.80	21.47	7.60	9.95	1.96
Below 125% of Poverty	10.20	5.85	21.67	7.62	9.74	1.62
Assistance for Heating in Winter						
Yes	9.94	5.95	22.10	8.00	9.58	2.16
No	10.78	5.98	21.93	7.62	9.95	1.12
Assistance for Weatherization of Residence						
Yes	9.80	5.83	21.38	7.86	11.54	3.79
No	10.74	5.98	21.94	7.64	9.87	1.12
Household Owns or Has Regular Use of a Vehicle						
Yes	10.91	5.95	21.72	7.78	9.83	1.13
No	9.41	6.16	24.82	7.04	10.53	1.99
Race of Householder						
White	10.85	5.92	21.75	7.68	9.83	1.24
Black	10.04	6.22	23.29	7.58	10.57	2.29
Other	10.30	6.21	23.12	6.91	10.18	5.13

See footnotes at end of table.

Table 26. U.S. Average Residential Energy Prices-- April 1984 Through March 1985 (Continued)

(Dollars per Million Btu)

Household Characteristics	Average Energy Prices					RSE Row Factors
	All Fuels	Natural Gas	Electricity	Fuel Oil or Kerosene	Liquefied Petroleum Gas	
RSE Column Factors:	0.92	0.87	0.93	0.64	2.11	
Householder of Hispanic Descent						
Yes	11.10	6.42	25.86	6.88	8.54	3.00
No	10.71	5.95	21.79	7.68	9.95	1.15
Age of Householder						
Under 25 Years	10.43	5.76	21.28	7.51	10.09	2.48
25 to 34 Years	10.76	5.91	21.44	7.49	9.74	1.57
35 to 44 Years	11.16	6.03	21.61	7.65	9.50	1.70
45 to 59 Years	10.87	6.09	22.43	7.74	10.10	1.57
60 Years and Over	10.33	5.94	22.44	7.65	10.10	1.54
Household Size						
1 Person	9.74	5.86	22.39	7.46	9.91	1.85
2 Persons	10.93	5.96	22.09	7.67	10.20	1.52
3 Persons	10.90	6.03	21.60	7.73	10.42	1.35
4 Persons	11.08	6.03	21.49	7.66	9.10	1.58
5 Persons	11.02	6.03	22.03	7.58	9.89	1.95
6 or More Persons	10.84	5.98	22.52	8.07	9.84	2.95
Secondary Heating						
Yes	11.20	5.93	21.12	7.87	10.12	1.33
No	10.37	6.00	22.76	7.43	9.70	1.29
Fuel Combinations						
Use Natural Gas for Main Heat	9.06	5.89	22.76	7.30	Q	3.40
Use Natural Gas to Heat Water						
and Have A/C	9.36	5.88	23.42	7.19	Q	3.88
and Lack A/C	8.23	5.85	23.52	6.70	Q	4.87
Use Electricity to Heat Water						
and Have A/C	10.75	6.15	19.21	9.50	NC	3.50
and Lack A/C	9.12	6.14	18.94	Q	NC	4.20
Other	9.15	5.50	23.92	Q	NC	17.11
Use Electricity for Main Heat	18.54	6.40	19.34	9.29	13.08	3.51
Use Electricity to Heat Water						
and Have A/C	19.50	Q	19.72	9.34	17.23	6.29
and Lack A/C	16.82	Q	17.00	8.93	Q	11.95
Other	14.86	6.36	22.09	Q	Q	7.88
Use Fuel Oil for Main Heat	11.09	10.21	27.65	7.54	13.69	1.84
Use Fuel Oil to Heat Water						
and Have A/C	11.24	12.18	34.78	7.38	Q	3.30
and Lack A/C	10.44	13.10	35.29	7.33	Q	4.22
Use Electricity to Heat Water						
and Have A/C	12.62	Q	22.40	7.77	14.43	5.31
and Lack A/C	11.06	Q	20.89	7.68	13.09	5.24
Other	10.70	8.96	31.47	7.76	13.39	3.09
Use Wood for Main Heat	14.45	6.23	19.87	7.92	10.25	2.33
Use LPG for Main Heat	13.20	NC	22.02	8.52	9.30	2.60
Use Kerosene for Main Heat	13.35	7.66	21.60	8.87	15.28	3.52
Use Coal for Main Heat	18.39	Q	22.33	8.23	Q	11.30
No Heating Fuel	21.46	6.05	35.85	NC	12.81	10.81
Other Fuel	Q	Q	Q	Q	Q	48.57

NC *No cases in sample.*

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

Notes: To obtain a Relative Standard Error Percent (RSE) for any table cell, multiply the cell's corresponding column and row factors. Because of rounding, data may not sum to totals. 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 1984 Residential Energy Consumption Survey.

Table 27. U.S. Residential Wood Consumption for the Year Ending November 1984

Household Characteristics	Number of Households Burning Wood		Total Amount Consumed		Total Amount Consumed (quadrillion Btu)	Mean Amount Consumed per Household		Median Amount Consumed per Household	
	(million)	(percent)	(million cords)	(percent)		(cords)	(million Btu)	(cords)	(million Btu)
Total Households	22.9	100.0	49.0	100.0	0.98	2.1	42.8	1.0	20.0
Census Region and Division									
Northeast	4.4	19.3	10.6	21.6	.21	2.4	47.8	1.0	20.0
New England	1.3	5.9	3.2	6.4	.06	2.3	46.9	1.0	20.0
Middle Atlantic	3.1	13.4	7.4	15.1	.15	2.4	48.1	1.0	20.0
North Central	4.7	20.5	13.4	27.2	.27	2.8	56.9	1.0	20.0
East North Central	3.0	13.3	9.5	19.3	.19	3.1	62.3	1.0	20.0
West North Central	1.6	7.2	3.9	7.9	.08	2.3	47.0	1.0	20.0
South	8.3	36.2	16.4	33.5	.33	2.0	39.6	1.0	20.0
South Atlantic	4.3	18.6	9.1	18.6	.18	2.1	42.8	1.5	30.0
East South Central	2.0	8.6	5.3	10.7	.11	2.7	53.1	2.0	40.0
West South Central	2.1	9.0	2.1	4.2	.04	1.0	20.1	.5	10.0
West	5.5	24.0	8.7	17.7	.17	1.6	31.4	.5	10.0
Mountain	1.3	5.8	2.8	5.7	.06	2.1	42.2	1.0	20.0
Pacific	4.2	18.3	5.9	12.0	.12	1.4	28.0	.5	10.0
Metropolitan Status									
Metropolitan	16.0	69.9	24.5	49.9	.49	1.5	30.6	.5	10.0
Central City	4.8	20.7	4.2	8.6	.08	.9	17.8	.3	6.0
Outside Central City	11.3	49.1	20.2	41.3	.40	1.8	35.9	.7	14.0
Nonmetropolitan	6.9	30.1	24.6	50.1	.49	3.6	71.1	3.0	60.0
Weather Zone									
Fewer than 2,000 CDD and--									
More than 7,000 HDD	3.0	13.1	12.2	24.8	.24	4.0	80.9	3.0	60.0
5,500 to 7,000 HDD	5.1	22.4	10.9	22.3	.22	2.1	42.5	1.0	20.0
4,000 to 5,499 HDD	6.6	28.7	13.2	26.9	.26	2.0	40.0	1.0	20.0
Fewer than 4,000 HDD	5.9	25.7	10.1	20.6	.20	1.7	34.2	.7	14.0
More than 2,000 CDD and Fewer than 4,000 HDD	2.3	10.0	2.7	5.5	.05	1.2	23.5	.5	10.0
Payment Method for Utilities									
All Paid by Household	21.9	95.7	47.9	97.7	.96	2.2	43.7	1.0	20.0
Some Paid, Some in Rent	.5	2.0	.1	.2	Q	.2	3.6	Q	Q
All Included in Rent	.1	.4	.1	.2	Q	1.1	22.3	Q	Q
Other Method	.5	2.0	1.0	2.0	.02	2.2	43.1	1.0	20.0
Housing Structure									
Single-Family Detached	20.4	88.9	45.3	92.5	.91	2.2	44.5	1.0	20.0
Owned	18.3	79.8	40.9	83.4	.82	2.2	44.7	1.0	20.0
Rented	2.1	9.2	4.5	9.1	.09	2.1	42.4	1.0	20.0
Single-Family Attached	.6	2.7	.4	.9	.01	.7	14.0	.3	6.0
Owned	.5	2.1	.3	.7	.01	.7	14.0	.3	6.0
Rented	Q	Q	Q	Q	Q	Q	Q	Q	Q
Building of 2 to 4 Units	.7	3.0	.8	1.6	.02	1.2	23.3	.3	6.0
Owned	.3	1.2	.5	1.0	.01	1.8	35.7	Q	Q
Rented	.4	1.8	.3	.6	.01	.7	14.8	.3	6.0
Building of 5 or More Units	.6	2.5	.2	.4	Q	.4	7.4	.1	2.0
Owned	.3	1.2	.1	.2	Q	.3	6.3	Q	Q
Rented	.3	1.3	.1	.3	Q	.4	8.5	Q	Q
Mobile Home	.7	2.9	2.2	4.6	.04	3.3	66.8	2.0	40.0
Owned	.5	2.3	1.8	3.6	.04	3.4	68.1	2.5	50.0
Rented	.1	.6	.5	.9	.01	3.1	62.2	Q	Q
Number of Rooms									
1 to 3	.9	4.1	2.0	4.1	.04	2.2	43.0	1.0	20.0
4	2.6	11.4	7.9	16.2	.16	3.0	60.6	2.0	40.0
5	4.6	20.1	12.4	25.3	.25	2.7	53.9	1.0	20.0
6	5.3	23.0	10.2	20.8	.20	1.9	38.7	1.0	20.0
7	4.0	17.6	7.1	14.5	.14	1.8	35.3	1.0	20.0
8 or More	5.5	23.8	9.4	19.1	.19	1.7	34.3	.5	10.0

See footnotes at end of table.

Table 27. U.S. Residential Wood Consumption for the Year Ending November 1984 (Continued)

Household Characteristics	Number of Households Burning Wood		Total Amount Consumed		Total Amount Consumed (quadrillion Btu)	Mean Amount Consumed per Household		Median Amount Consumed per Household	
	(million)	(percent)	(million cords)	(percent)		(cords)	(million Btu)	(cords)	(million Btu)
Number of Rooms that Can Be Air Conditioned									
All	9.1	39.8	12.8	26.0	0.26	1.4	28.0	0.5	10.0
Some	3.7	16.2	6.5	13.3	.13	1.8	35.2	.7	14.0
None	10.1	44.0	29.7	60.7	.59	2.9	58.9	2.0	40.0
Measured Heated Area of Residence (*square feet*)									
Fewer than 600	.6	2.6	1.5	3.0	.03	2.5	49.3	1.0	20.0
600 to 999	2.8	12.2	8.0	16.2	.16	2.9	57.1	2.0	40.0
1,000 to 1,599	6.2	27.1	14.8	30.1	.30	2.4	47.5	1.0	20.0
1,600 to 1,999	4.4	19.3	9.1	18.6	.18	2.1	41.1	1.0	20.0
2,000 to 2,399	3.5	15.2	5.9	12.0	.12	1.7	33.8	1.0	20.0
2,400 to 2,999	2.6	11.3	4.8	9.9	.10	1.9	37.4	1.0	20.0
3,000 or More	2.8	12.3	5.0	10.2	.10	1.8	35.3	.5	10.0
Year of Construction									
1939 or Before	5.4	23.4	14.3	29.2	.29	2.7	53.2	1.5	30.0
1940 to 1949	1.5	6.7	3.9	7.9	.08	2.5	50.2	1.0	20.0
1950 to 1959	3.1	13.7	6.2	12.6	.12	2.0	39.4	1.0	20.0
1960 to 1964	1.9	8.5	4.1	8.4	.08	2.1	42.3	1.0	20.0
1965 to 1969	2.5	10.7	4.6	9.4	.09	1.9	37.6	.7	14.0
1970 to 1974	3.2	14.1	6.1	12.5	.12	1.9	37.9	1.0	20.0
1975 to 1979	3.6	15.8	7.2	14.6	.14	2.0	39.6	1.0	20.0
1980 or After	1.6	7.2	2.7	5.5	.05	1.6	32.8	.7	14.0
Status of Unit									
Owned	19.8	86.5	43.6	88.9	.87	2.2	43.9	1.0	20.0
Rented	3.1	13.5	5.4	11.1	.11	1.8	35.2	.5	10.0
1984 Family Income									
Less than $5,000	1.1	4.8	4.0	8.1	.08	3.6	72.0	3.0	60.0
$5,000 to $9,999	1.9	8.4	6.3	12.8	.13	3.3	65.7	2.0	40.0
$10,000 to $14,999	2.4	10.4	7.1	14.5	.14	3.0	59.6	2.0	40.0
$15,000 to $19,999	1.9	8.2	6.1	12.4	.12	3.2	64.8	2.0	40.0
$20,000 to $24,999	2.0	8.6	4.0	8.1	.08	2.0	40.4	1.0	20.0
$25,000 to $34,999	4.9	21.3	10.0	20.4	.20	2.1	41.0	1.0	20.0
$35,000 or More	8.8	38.3	11.5	23.6	.23	1.3	26.3	.5	10.0
Below 100% of Poverty	2.2	9.5	8.0	16.4	.16	3.7	73.3	3.0	60.0
Below 125% of Poverty	3.2	13.8	11.3	23.0	.23	3.6	71.1	2.5	50.0
Assistance for Heating in Winter									
Yes	.8	3.7	2.9	5.9	.06	3.4	68.4	2.5	50.0
No	22.1	96.3	46.2	94.1	.92	2.1	41.8	1.0	20.0
Assistance for Weatherization of Residence									
Yes	.3	1.2	.8	1.7	.02	3.0	60.3	Q	Q
No	22.7	98.8	48.2	98.3	.96	2.1	42.6	1.0	20.0
Household Owns or Has Regular Use of a Vehicle									
Yes	22.3	97.3	47.5	96.9	.95	2.1	42.6	1.0	20.0
No	.6	2.7	1.5	3.1	.03	2.5	49.0	1.5	30.0
Race of Householder									
White	21.4	93.2	45.4	92.5	.91	2.1	42.5	1.0	20.0
Black	1.2	5.3	2.3	4.7	.05	1.9	38.3	.7	14.0
Other	.4	1.5	1.3	2.7	.03	3.8	76.8	Q	Q

See footnotes at end of table.

Table 27. U.S. Residential Wood Consumption for the Year Ending November 1984 (Continued)

Household Characteristics	Number of Households Burning Wood		Total Amount Consumed		Total Amount Consumed (quadrillion Btu)	Mean Amount Consumed per Household		Median Amount Consumed per Household	
	(million)	(percent)	(million cords)	(percent)		(cords)	(million Btu)	(cords)	(million Btu)
Householder of Hispanic Descent									
Yes	0.5	2.1	0.7	1.4	0.01	1.4	28.9	1.0	20.0
No	22.5	97.9	48.3	98.6	.97	2.2	43.1	1.0	20.0
Age of Householder									
Under 25 Years	.9	3.8	1.0	2.1	.02	1.2	23.9	.3	6.0
25 to 34 Years	5.6	24.4	12.1	24.7	.24	2.2	43.4	1.0	20.0
35 to 44 Years	6.4	28.0	12.5	25.5	.25	1.9	39.0	1.0	20.0
45 to 59 Years	5.4	23.5	12.1	24.7	.24	2.2	44.9	1.0	20.0
60 Years and Over	4.7	20.4	11.3	23.0	.23	2.4	48.2	1.0	20.0
Household Size									
1 Person	2.9	12.6	5.0	10.1	.10	1.7	34.5	.7	14.0
2 Persons	6.8	29.7	14.3	29.2	.29	2.1	41.9	.7	14.0
3 Persons	4.6	20.2	9.5	19.4	.19	2.0	40.9	1.0	20.0
4 Persons	4.9	21.3	11.1	22.7	.22	2.3	45.6	1.0	20.0
5 Persons	2.6	11.4	6.5	13.3	.13	2.5	50.1	1.5	30.0
6 or More Persons	1.1	4.8	2.6	5.3	.05	2.4	47.4	1.0	20.0
Secondary Heating									
Yes	20.9	91.3	39.1	79.7	.78	1.9	37.3	.7	14.0
No	2.0	8.7	10.0	20.3	.20	5.0	99.6	4.0	80.0
Main Heating Fuel									
Natural Gas	9.1	39.5	9.0	18.3	.18	1.0	19.8	.5	10.0
Fuel Oil or Kerosene	2.6	11.4	4.1	8.3	.08	1.6	31.2	.7	14.0
Electricity	3.6	15.7	3.9	8.0	.08	1.1	21.6	.5	10.0
Wood	6.4	28.0	29.4	60.0	.59	4.6	91.8	4.0	80.0
Fireplace	.3	1.5	.9	1.7	.02	2.5	49.9	Q	Q
Airtight Stove	4.8	21.1	20.5	41.8	.41	4.2	84.7	4.0	80.0
Nonairtight Stove	.8	3.4	4.5	9.2	.09	5.8	115.3	5.0	100.0
Furnace/Other	.4	1.9	3.6	7.3	.07	8.0	160.9	6.0	120.0
LPG	.7	3.2	1.9	3.8	.04	2.6	51.3	2.0	40.0
Other	.5	2.2	.8	1.6	.02	1.5	31.0	1.0	20.0
Amount of Wood Burned									
less than 0.5 Cord	7.2	31.5	1.4	2.9	.03	.2	3.9	.1	2.0
0.5 to 1.4 Cords	5.8	25.2	4.2	8.6	.08	.7	14.6	.7	14.0
1.5 to 2.4 Cords	2.9	12.7	5.3	10.9	.11	1.8	36.6	2.0	40.0
2.5 to 3.4 Cords	2.1	9.2	6.1	12.4	.12	2.9	57.7	3.0	60.0
3.5 to 4.4 Cords	1.3	5.5	4.9	10.1	.10	3.9	78.9	4.0	80.0
4.5 Cords or More	3.6	15.9	27.0	55.1	.54	7.4	148.6	6.0	120.0

-- Data not applicable.

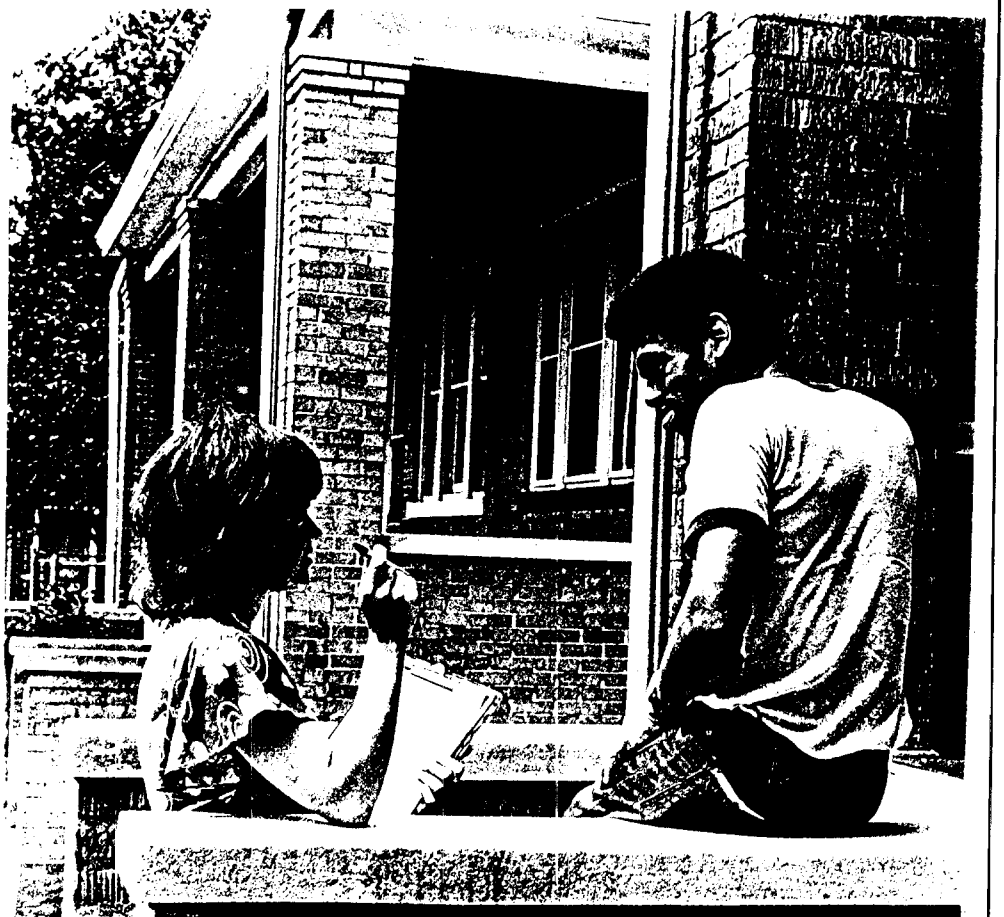
Q Data withheld because fewer than 10 households were sampled, or, if the statistic is a median, fewer than 25 households were sampled. See Table C9 for a method of calculating RSE's for statistics in this table.

Notes: 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 1984 Residential Energy Consumption Survey.

Appendix A

How the Survey Was Conducted



Appendix A

How the Survey Was Conducted

The Residential Energy Consumption Survey (RECS) was 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.[14]

Data Collection

The original sample consisted of 7,658 units, of which some 123 either were not used for dwelling purposes or were not habitable. Of the 7,535 habitable housing units, 783 were ineligible for this study due to a current vacancy or seasonal occupancy (the units were not the primary residence for the occupants). Personal interviews were conducted at 5,479 of the 6,752 eligible units, for a response rate of 81.1 percent. Subsequently, mail questionnaires were sent to 1,042 of the 1,273 households that had not participated in personal interviews. Completed questionnaires were returned by 203 of these households, or 19.5 percent of those mailed. Of the total eligible households, responses were received from 84.2 percent (or 5,682 households).

Approximately two-thirds of the personal interviews were completed in October and November 1984; 95 percent were completed by the end of January 1985. Interviewing continued until April 1985 in a few sample locations in which low response rates were experienced. Most of the 203 completed mail questionnaires were received in March and April 1985, with a few additional questionnaires received in May. In keeping with past practice in this series of surveys, November was regarded as the rough midpoint for data-collection activity. Thus, November 1984 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 which included measurements of the housing unit lasted 52 minutes, with 83 percent of the interviews lasting between 30 and 70 minutes. For a subsample of households in which measurements were not made (584 households), the average interview lasted 49 minutes. The interview with the householder (or spouse) covered structural features of the house related to energy, such as insulation, doors, and windows; the heating and cooling systems, with the fuels used in these systems; use of wood; energy conservation improvements; household appliances; household vehicles; receipt of government assistance for the cost of heating; and demographic data on household members. The questionnaire is reproduced in Appendix D.

[14]Fuel-consumption data for household vehicles are collected in the Residential Transportation Energy Consumption Survey, which uses subsamples from the residential surveys. Data collected for calendar year 1983 are reported in *Residential Transportation Energy Consumption Survey: Consumption Patterns of Household Vehicles 1983,* DOE/EIA-0464(83), (Washington, D.C., January 1985). Data for 1985 were collected from households of the 1984 survey.

At the end of the interview, respondents were asked to sign a waiver authorizing the interviewing contractor to obtain records of energy consumption from the housing unit's energy supplier(s). At this time, the interviewer also measured the dimensions of certain housing units, 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 319 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 a prior RECS. As shown in Table A1, 190 interviewers (60 percent) had completed interviews on a prior RECS. The remainder were conducting their first RECS, but had interviewing experience either with other survey research organizations, or with the U.S. Bureau of the Census.

Table A1. Experience and Training of 1984 RECS Interviewers

Experience on Prior RECS	Training for This RECS[a]	Number of Interviewers
Yes	Home study	182
Yes	Regional training meeting	8
No	Regional training meeting	109
No	Other training	20
		319

[a] All interviewers completed a practice interview and quiz.
Source: Energy Information Administration, Office of Energy Markets and End Use, The 1984 Residential Energy Consumption Survey.

Two-day regional training meetings were held in 10 locations around the country in September and October 1984. These meetings were attended by 117 interviewers, including most of those who had not interviewed on a prior 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 an 89-page manual, *Instructions for Interviewers, Residential Energy Consumption Survey, Fall-Winter, 1984-1985.*

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 17 interviews. Thirty-five interviewers each completed fewer than six interviews; the average for this group of 35 interviewers was 3.1 completed interviews. Six interviewers completed 50 or more interviews; the average for this group of interviewers was 67.7 completed interviews. 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 1984 estimates was selected by using a probability sampling design developed especially for the Residential Energy Consumption Survey. The sample design was used for the first time for the 1980 RECS and was revised prior to the 1984 survey.

To accommodate all objectives of the RECS, including provisions for a longitudinal feature of the sample of housing units, the sample for the 1984 RECS was divided into two approximately equal parts. One half of the sample of housing units was selected using the original 1980 sample design; the second half was selected using the revised 1984 design. The plan for subsequent surveys in the RECS series is to use the revised design for the complete sample.

In both the original and revised sample designs, the total land area of the 50 States and District of Columbia was divided into approximately 1,800 Primary Sample Units (PSU's) on the basis of Metropolitan Statistical Areas (MSA's), county and independent city boundary lines, and population characteristics.[15]

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

Three principal sources of information were used to update the data base used for sample revisions: population estimates, metropolitan statistical area definitions, and principal heating fuel (Table A2).

Table A2. Sources of Data for 1984 RECS Sample Design

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

Source: Energy Information Administration, Office of Energy Markets and End Use, The 1984 Residential Energy Consumption Survey.

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

Some PSU's comprising all or part of large metropolitan areas were large enough in population to be a stratum by themselves; PSU's of this type are called Self-Representing (SR) because the sample from each PSU represents only that PSU. In other strata, one PSU was selected from among two or more PSU's in the stratum. Each of the PSU's selected from these strata is called Non-Self-Representing (NSR) because each PSU also represents the nonselected PSU's in its stratum. The original design included a total of 131 strata, of which 31 were SR PSU's and 100 were NSR. The revised design included 129 strata, of which 32 were SR PSU's and 97 were NSR.

[15]Boundary definitions for counties, independent cities, and equivalent units were generally those used by the Census of Population and Housing, 1970 and 1980, for the original and revised designs, respectively. There were 3,141 such units in the 1970 Census and 3,135 in the 1980 Census. Prior to 1983, MSA's were referred to as Standard Metropolitan Statistical Areas. The number of PSU's created for the 1980 and 1984 RECS sample designs were, respectively, 1,782 and 1,799. Additional detail on RECS sample design can be found in "The 1984 RECS Sample Design Procedures Manual," prepared by the Orkand Corporation, March 1986.

Although both PSU's and strata were often defined somewhat differently in the two designs, the specific procedures used to make probability selections of PSU's for the revised design produced a high degree of overlap in the actual PSU's selected. Of the 129 PSU's in the revised design, 111 continued in the sample from the original design and 18 were newly selected. Thus the 1984 RECS sample was selected from a total of 149 PSU's (131 in the original design plus the 18 newly selected in the revised design).

A number of intermediate probability sampling stages preceded the final selection of RECS households in each half of the 1984 sample.

- Minor Civil Divisions (MCD) such as cities, towns, and other Census units were selected within each PSU. Within the MCD's, census tracts, block groups, or enumeration districts (ED's) were selected. In the RECS design, 1,516 units are selected at this secondary level (tracts or ED's). These tracts and ED's continue in the RECS sample for a number of surveys. Rough field counts in tracts and ED's form the basis for selection of listing segments of 25 or more housing units, with well-defined geographic boundaries.
- A *listing segment* is selected from each tract or ED. Detailed field listings are created for selected segments by field workers who visit the area and identify each housing unit by street address or apartment number or other obvious features.
- A cluster of 25 housing units is selected from each listing. The *ultimate cluster* to be contacted for interviews (averaging about 5 housing units for the 1984 RECS) is systematically selected from the cluster and these housing units constitute the assignments given to interviewers.

Longitudinal Sample Design

A plan for rotation of sample units from an earlier RECS, first used in the 1982 RECS, was continued in 1984. The primary objective of this rotation plan was to observe changes in a sample of the same housing units over the period between two RECS data-collection cycles. To accomplish this objective in an efficient way and to set the stage for continuity in the RECS series, systematic random procedures were used to divide the total set of 1,516 tracts and ED's into four subsamples, designated in Table A3 as C, D, E, and F.

Table A3. Overview of RECS Sample Operations

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

[a] Assumes three-year spacing between surveys starting with 1987 RECS.
[b] Revised sample used for the first time for these rotation groups; new tracts/ED's are selected in sample units that do not continue from the original sample.
R = Housing units returning from 2 years earlier.
S = Selected housing units from the same clusters as had been used 2 years earlier.
N = Selected new segments.

In the 1984 RECS, Groups E and F were the returning rotation groups in which procedures were designed to interview a sample of the same housing units that had been in the sample in the preceding 1982 RECS. Selection of housing units in these returning rotation groups was based on the original sample design used for the 1980 through 1982 surveys.

Groups C and D constitute the new rotation groups in which housing units were included in the RECS sample for the first time in 1984. Selection of housing units in the new rotation groups was based on the revised sample design used for the first time for this half of the 1984 RECS.

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

Returning Rotation Groups E and F

The general plan for these sample units (758 of the total of 1,516) was to conduct interviews in the same housing units that had been contacted 2 years earlier--including housing units that had been vacant, as well as noninterviews (refusals, not-at-homes, etc.) and completed units--plus a supplemental sample of housing units in sample clusters believed to include large proportions of low-income households.

Before contacting households for the 1984 RECS, interviewers made visits to sample segments to check 1982 housing unit listings for missed units and to update listings for new construction, demolition, and conversion of structures from one use to another. Newly constructed or converted units, and those missed in the 1982 listings, were sampled at the 1984 RECS sampling rate.

Rotation Groups C and D

The 758 sample units (at the census tract or ED level) in these rotation groups included 608 that continued in the sample from the original design and 150 newly selected units. In the 150 newly selected units, up-to-date field counts and detailed listings of housing units formed the basis for selection of a listing segment and a cluster of 25 housing units from the listing segment.

In the 608 tracts and ED's that continued in the sample, the first step was to perform a new construction update procedure based on a canvass, primarily by telephone, of local sources of information (such as building-permit-issuing agencies, zoning boards, tax offices, etc.). The objective was to determine whether significant new construction--defined as groups of 25 or more housing units--had occurred within the tracts or ED's in the 1980-1984 period.

In the canvass, significant new construction was found in census tracts and ED's in approximately 130 of the 608 units. New field counts were made and new segments were selected based on the new measures of size.

In census tracts and ED's in which significant new construction (clusters of 25 or more new housing units) was not found, procedures diverged in Rotation Groups C and D.

In Rotation Group C, 1982 RECS housing unit listings were checked and updated (for such things as missed units, new construction) before the start of field contacts for interviews. This step in Rotation Group C was identical to the listing checks carried out for Rotation Groups E and F. However, housing units for the 1984 RECS sample were selected from among those *not* selected in the earlier RECS.

In Rotation Group D, a new listing segment was selected for the 1984 RECS.

Supplemental Sample

A feature of the 1984 survey was a supplemental sample of households designed to be merged with the main RECS sample and meet special analytical needs of the Office of Family Assistance, Social Security Administration. The supplemental sample comprised some 1,305 (19.3 percent) of the total sample of 6,752 occupied housing units.

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

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

The actual selection of supplemental units was accomplished by increasing sampling rates in listing segments that interviewers judged to include large proportions of poor or near-poor households and, in some cases, lower-middle income segments were included. **Relative sampling rates** were established for groups of housing units as shown in Table A4.

An additional aspect of the selection of supplemental units was a ceiling on the actual sampling rate that applied to any given sample unit. The ceiling was equal to the highest overall sampling rate used in any Census division in the 1984 RECS sample. Thus, in some cases the relative sampling rates shown in Table A4 were adjusted downward so that the overall sampling rate for housing units did not exceed the ceiling rate for the 1984 RECS.

A relative sampling rate of 1.0 in Table A4 means that the overall sampling rate applied to households in a sample cluster is the rate established for the main sample. Relative sampling rates higher than 1.0 were used for households in the "oversampled" groups shown in Table A4. (For example, a relative sampling rate of 1.5 means that households in the group were sampled at a rate 50 percent higher than the rate established for the main sample.) An estimated 1,305 additional households (that is, households selected as a result of the supplemental sampling process) were selected in 411 segments, and 1,127 interviews were completed in these households (including both personal and mailed questionnaires).[16]

Table A4. Relative Sampling Rates Based on Income Rating and Main Home Heating Fuels

Rotation Group and Main Home Heating Fuel	Income Rating		
	Upper-Middle or Highest	Lower Middle	Poor or Near-Poor
Rotation Groups C, D			
Electricity or Fuel Oil/Kerosene	1.0	1.5	3.0
All Other Fuels	1.0	1.0	3.0
Rotation Groups E, F			
Electricity or Fuel Oil/Kerosene	1.0	1.55	3.2
All Other Fuels	1.0	1.0	3.2

Source: Energy Information Administration, Office of Energy Markets and End Use, The 1984 Residential Energy Consumption Survey.

The outcome of the oversampling procedure is summarized in Table A5. Some 33.6 percent of completed interviews in the supplemental sample were with households below the poverty level, compared with 15.5 percent of completed interviews in the main sample. The corresponding figures for 125 percent of poverty level were 42.9 percent and 21.7 percent of supplemental sample and main sample interviews, respectively.

Survey Estimates

Survey estimates were developed to project sample results to the survey 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 1984, the universe was estimated to contain 86,328,000 households, based on Current Population Survey (CPS) estimates of the population.

[16]The estimated numbers of basic sample interviews were derived by multiplying the number of household units in each ultimate cluster by the ratio: Sampling rate for basic sample / Sampling rate for total (basic + supplemental) sample. For example, the ratio above for a sample segment in the E or F rotation groups rated "lower-middle" for income level and "electricity or fuel oil/ kerosene" as main home heating fuel, in general, was equal to 1/1.55. The number of units in the supplemental sample was then equal to the total number of units in the ultimate cluster minus the estimated number in the basic sample.

Table A5. Poverty Status in 1984 and Home Heating Fuel in 1984 RECS Main and Supplemental Samples[a]

Poverty Status and Home Heating Fuel	Basic Sample Households[a]		Supplemental Sample Households[a]	
	Number	Percent	Number	Percent
All Households	4,555	100.0	1,127	100.0
Below Poverty Level	704	15.5	378	33.6
Electricity	117	2.6	48	4.3
Fuel Oil/Kerosene	95	2.1	56	5.0
Other Fuels	492	10.8	274	24.3
Not Below Poverty Level	3,851	84.5	749	66.4
Below 125 Percent of Poverty Level	987	21 7	484	42.9
Electricity	155	5.4	58	5.1
Fuel Oil/Kerosene	143	3.2	76	6.7
Other Fuels	689	15.1	350	31.1
Not Below 125 Percent of Poverty Level	3,568	78.3	643	57.1

[a] Households are classified according to the poverty status of the family or nonfamily householder. The actual reference period for income reported in the 1984 RECS was the 12 months preceding the ECS interview; the interview date for most households was within the final calendar quarter of 1984. Table shows unweighted numbers and percentages of completed units. See glossary for the definition of "poverty."

Source: Energy Information Administration, Office of Energy Markets and End Use, The 1984 Residential Energy Consumption Survey.

Weights were calculated for each sample household. A number of steps were involved; each step was carried out separately for the two parts of the 1984 RECS sample--the part that used the original RECS sample design (returning rotation groups), and the part that used the revised sample design (new rotation groups). The household weight reflected the selection probability for that household, and additional adjustments to correct for potential biases arising from the failure to contact all sample housing units and to list all housing units in the sample area. Contacts were not successful with 15.8 percent of the eligible units.

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

The failure to list all housing units in the field-listing task is a common problem in surveys of this type. The result is an undercount of housing units in the sample area and, hence, an underestimate of the number of households in the universe. The undercount in the 1984 RECS survey is in the range of 8 to 10 percent. This problem is treated in two ways in the RECS. One treatment occurs during the interviewing process 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 1984 RECS. The first stage adjustment was computed from information for PSU's in NSR strata only. A separate factor was created for each of 20 cells (four regions classified by five home heating-fuel categories). The implementation of this factor reduced somewhat the amount of variance caused by the sampling of PSU's. The first-stage adjustment for Cell "c" is given by:

$$R_{1c} = N_c / M_c \qquad (1)$$

where N_c is the total number of households (1980 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 1980 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 A6. The second-stage adjustment for Category k is given by:

$$R_{2k} = H_k / G_k \qquad (2)$$

where H_k is an independent estimate of the total, and G_k is the RECS estimate before the second-stage ratio adjustment of the total number of households in Category k.

The numerator is based on a linear extrapolation of values for each of the 12 cells from Current Population Survey (CPS) estimates for March 1983 and March 1984. The second-stage factor reduced both the between-PSU variance and the within-PSU variance.

An intermediate step was used to adjust RECS estimates approximately to current CPS estimates for numbers of households of each of the following types:

One-person households, male householder

One-person households, female householder

All other households.

The purpose of this intermediate step was to reduce possible bias in the RECS sample due to undercoverage of one-person households, particularly those with male householders.

The procedures related to the second-stage ratio estimate were carried out in three steps: the second-stage ratio estimate was performed, the intermediate adjustment for number of persons in household was carried out, and the second-stage ratio estimate was iterated to produce the final estimates approximately equal to the control totals shown in Table A6.

Table A6. Population Estimates Used as Controls in Ratio Estimates

Census Region	Thousand Households			
	MSA--Central City	MSA--Outside Central City	Non-MSA	Total
Northeast	6,021	8,400	3,877	18,298
North Central	6,163	8,039	7,415	21,617
South	7,909	9,269	12,146	29,324
West	5,567	7,868	3,654	17,089
Total	**25,660**	**33,576**	**27,092**	**86,328**

Source: Estimates derived from extrapolating data from the March 1983 and March 1984 Current Population Surveys.

Minimizing Nonresponse

In an effort to maximize the validity of the survey data, a multiwave, multicontact approach was employed. Before the initial contacts, a letter was sent to each household from the Administrator of the EIA, briefly describing the purposes and stressing the importance of the survey. Beginning in October 1984, 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, 123 addresses were found to be nonresidential and an additional 691 were found to be ineligible (Table A7). Some 4,659 personal interviews were completed, leaving 2,185 nonrespondents in this wave.

A second wave was initiated in an effort to contact households that were not available during the first wave and to attempt to convince selected first-wave refusals to reconsider. A new set of letters preceded the renewed effort and, in most cases, the sampled housing units were assigned to a different interviewer. Again, up to seven or more attempts were made to contact the prospective respondents. At the end of this wave, an additional 91 addresses were found to be ineligible. As a result of the second wave, an additional 761 interviews were completed, leaving 1,333 nonrespondents.

A third wave was initiated in an effort to reach nonrespondents in a number of locations that had low completion rates. One address was found to be ineligible and an additional 59 personal interviews were completed in the third wave.

In a final attempt to reduce nonresponse, an abbreviated version of the questionnaire (adapted for self-administration) was mailed to most of the remaining nonrespondents. As a result of this effort, 203 additional households responded.

After three waves of personal interview attempts and the mailed questionnaire, 1,070 households or 15.8 percent of all eligible housing units had not responded.

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

- Approximately 81 percent of the households were contacted and agreed to be interviewed personally. An additional 3 percent of the sample households completed and returned mailed questionnaires.
- Of the 5,682 responses, 82.0 percent were obtained during the first wave of contacts; 13.4 percent were obtained during the second wave; and 1.0 percent resulted from third-wave contacts. Some 3.6 percent were responses to the mailed questionnaire.
- Of all households that participated in the personal interviews, 35.3 percent required only one visit and 60.4 percent were completed with no more than two callbacks.
- A total of 371 personal interviews were completed in the second and third waves with respondents who had previously refused to participate, representing 6.8 percent of all completed personal interviews. In addition, of the 203 mailed questionnaires that were completed and returned, 155 were from households that previously refused to participate.

Response Rates and Household Characteristics

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

Several patterns are clear from Table A8. First, personal interviews enjoyed the most success in the South Region (83.5 percent), in non-MSA areas (86.2 percent), and among residents of mobile homes (83.8 percent). Conversely, the interviewers had their lowest success rates in the West Region (79.4 percent), metropolitan areas (central city) (79.4 percent), and in buildings with five or more residential units (79.4 percent). When looking at the categories comprising these groupings it is important to remember that their characteristics are not necessarily independent. Rather, they are very likely to overlap; for example, large apartment buildings are concentrated in metropolitan areas.

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

Overall response rates are approximately six percentage points higher for new rotation groups (households not contacted for an earlier RECS) than for returning rotation groups. Among the factors that may have contributed to lowering the response rate for returning rotation groups, one factor is known to have done so. That was the request that 1,922 households interviewed for the 1982 RECS check odometer readings and keep records of gasoline purchases as part of the 1983 Residential Transportation Energy Consumption Survey (RTECS). The RTECS appears to have decreased response to the 1984 RECS, as RTECS participants responded to the 1984 RECS at a rate of 75.7 percent versus a rate of 80.6 percent for the 465 non-RTECS participants.

Table A7. Interviews Completed by Stage

	Personal Interviews			Status After Third Wave	Mail	Final Status
	First Wave	Second Wave	Third Wave			
Total Listed Units	**7,658**	**2,185**	**1,333**	**7,658**	**1,273**	**7,658**
Nonhousing Units						
Business, Other	40	0	0	40	--	40
Not Habitable	48	0	0	48	--	48
Nonhousing Unit	35	0	0	35	--	35
Subtotal	**123**			**123**		**123**
Housing Units	7,535	2,185	1,333	7,535	1,273	7,535
Ineligible Units						
Vacant	536	73	1	610	--	610
Seasonal Vacant	155	18	0	173	--	173
Subtotal	**691**	**91**	**1**	**783**		**783**
Eligible Units	6,844	2,094	1,332	6,752	1,273	6,752
Not Completed--Personal						
No One Home	761	343	48	169	--	169
Eligible Respondent Not Home	43	22	2	13	--	13
Refused	1,196	671	47	[a] 1,004	--	1,004
Illness	22	4	0	13	--	13
Language Barrier	31	4	0	12	--	12
Wrong Respondent or Unit	3	0	0	4	--	4
Not Contacted[b]	94	282	1,176	40	--	40
Other	35	5	0	18	--	18
Subtotal	**2,185**	**1,333**	**1,273**	**1,273**		**1,273**
Not Completed--Mail						
Unusable Address	--	--	--	--	91	91
Post Master Return	--	--	--	--	69	69
Returned Blank	--	--	--	--	19	19
Returned Unusable	--	--	--	--	0	0
Not Returned	--	--	--	--	751	751
Other Not Mailed	--	--	--	--	140	140
Subtotal					**1,070**	**1,070**
Total Interviews Completed	**4,659**	**761**	**59**	**5,479**	**203**	**5,682**

[a] A household that refused an interview during any one of the three waves was classified as a "refusal" for the final status even though no one was at home in the second or third wave.
[b] Includes households that moved after initial contact.
-- Data not applicable.
Source: Energy Information Administration, Office of Energy Markets and End Use, The 1984 Residential Energy Consumption Surveys.

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 to be used for making national estimates and those having 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; and the presence of wall insulation. For these items, the number of missing cases was considered large enough so that the imputations would have introduced too many additional errors.

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

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

(Percentage of Eligible Housing Units)

Characteristic	Response Rates			Personal Interview Nonresponse Rates	
	Personal Interview	Mail Questionnaire	Total Response	Refuse	Unable to Contact
Total	81.1	3.0	84.2	14.9	4.0
Census Region					
Northeast	81.2	2.0	83.2	15.1	3.7
North Central	79.7	4.1	83.8	16.5	3.8
South	83.5	2.1	85.6	12.8	3.7
West	79.4	4.0	83.4	15.7	4.8
Location Type					
MSA--Central City	79.4	3.5	82.9	15.8	4.8
MSA--Outside Central City	79.3	3.7	83.0	16.7	4.0
Non-MSA	86.2	1.4	87.6	10.9	2.9
Structure Type					
Single-Family or Mobile Home	83.8	1.2	85.0	12.2	4.0
Buildings with Two to Four Units	81.4	2.9	84.3	12.7	5.9
Buildings with Five or More Units	79.4	3.8	83.2	14.4	6.2
Rotation Group					
Returning Rotation Group	78.2	2.8	81.0	17.6	4.2
New Rotation Group	84.1	3.2	87.3	12.2	3.7

Source: Energy Information Administration, Office of Energy Markets and End Use, The 1984 Residential Energy Consumption Survey.

Less frequently used imputation methods included regression estimates, random selection from the distribution of the known values of a variable, and use of modal values. Regression procedures were used to impute the total square footage of the housing unit when actual measurements 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 447 items of information. These items were treated as follows with respect to imputations.

Imputation Method	Number of Questionnaire Items
Not Imputed	141
Imputed	306
Hot-deck	253
Random	39
Modal	14
Total	447

Table A9 shows the most frequently imputed items, the number of cases requiring imputation, and the method used.

The incidence of missing data on the 203 mailed questionnaires was considerable because the mailed questionnaire was a small subset of questions from the household interview. For the mailed questionnaire, a modified hot-deck imputation method was used. A hot-deck matrix was created for both mailed-questionnaire and personal-interview households using Census region, type of housing unit structure, space-heating fuel, hot-water fuel, and presence and type of air conditioning. Whenever possible, a donor personal-interview household was chosen for each mailed questionnaire household from the same cell of the hot-deck matrix. For 94 percent of the mailed questionnaires, donors matched on all hot-deck variables.

Because each cell of the matrix usually contained several possible donors, a donor was chosen from the cell on the basis of how closely it matched the mailed questionnaire household on a number of additional variables. These variables were: income, number of household members, number of household vehicles, age of householder, tenure, number of rooms, model year of newest vehicle, and household structure (married couple, other). Except for

information on household vehicles, which was taken directly from the mailed questionnaire, the entire set of responses from the donor household was imputed to the mailed questionnaire household. This means that all responses for mailed questionnaire households are imputed except weather data, fuel-consumption data acquired from the household's fuel suppliers, the geographic location of the mailed questionnaire household, information on household vehicles, and those items in the hot-deck imputation process for which an exact match was obtained.

Table A9. Items Most Frequently Imputed

Imputed Item	Cases Imputed	Percentage of Total Sample[a] (5,682)	Method of Imputing	Question Number in Appendix D
Protection on Windows Without Storm Windows	756	13	Hot-deck	54
1984 Family Income	698	12	Hot-deck	109
Age of Main Heating Equipment	604	11	Hot-deck	16
Year House Was Built	537	9	Hot-deck	3
Availability of Natural Gas	472	8	Hot-deck	122
Main Fuel Same as in November 1982	452	8	Hot-deck	9
Age of Water-Heating Equipment	426	7	Hot-deck	36
Square Footage of Housing Unit	328	6	[b]	--
Lower Rent Due to Government Aid	294	5	Hot-deck	119
Household Completed Highest Grade	272	5	Hot-deck	107
Number of Windows with Protection Other than Storm Windows	270	5	Hot-deck	55
Roof or Ceiling Insulation Added Since September 1982	207	4	Hot-deck	60
Warm Air Forced Through Ducts	154	3	Hot-deck	14
Use of Supplementary Heating Equipment	152	3	Modal	13
Public-Housing Status	124	2	Hot-deck	118
Times of No Heat Last Winter	122	2	Hot-deck	24
Budget-Plan Status	121	2	Hot-deck	123
Condominium or Cooperative	109	2	Hot-deck	116
Heating System Broken Last Winter	98	2	Hot-deck	22d
Power Outage Last Winter	96	2	Hot-deck	22f
Presence of Hot Running Water	96	2	Modal	35
No Heat from Landlord Last Winter	94	2	Hot-deck	22c
Unable To Pay for Heating Fuel Last Winter	94	2	Hot-deck	22a
Use of Supplementary Fuel for Heating Water	93	2	Modal	33
No Fuel Available Last Winter	92	2	Hot-deck	22e
Other Reason No Heat Last Winter	91	2	Hot-deck	22h
Unable To Pay for Electricity Last Winter	90	2	Hot-deck	22b
Age of Householder	77	1	Hot-deck	96
Monthly Rent of Dwelling	73	1	Hot-deck	117
Age of Second Household Member	70	1	Hot-deck	96
Heating Stove Is Airtight	67	1	Hot-deck	15
Month Weatherstripping Was Added	64	1	Random	67f
Gas Line Broken Last Winter	62	1	Hot-deck	22g
Heated Home Some Way When No Heat Was Available	60	1	Hot-deck	25
Government Provided Other Energy Device	59	1	Hot-deck	110h
Month Caulking Was Added	58	1	Random	67e
Storm Windows Added Since September 1982	58	1	Hot-deck	52
Basement or Crawl Space Heated	51	1	Hot-deck	156
Insulation in Walls Added Since September 1982	50	1	Hot-deck	63

[a] Mailed questionnaires are not included in the percentage. To account for these, add four percentage points to the percentage points given.
[b] See Appendix B for details on the square-footage imputations.
-- Data not available.
Source: Energy Information Administration, Office of Energy Markets and End Use, The 1984 Residential Energy Consumption Survey.

Rental-Agent Survey

Telephone or personal interviews were carried out with rental agents and landlords of RECS households living in multiunit dwellings whose occupants did not pay directly to utility companies or fuel suppliers for one or more household fuels. One purpose of the rental agent survey was to verify information from household respondents on fuels used and main heating equipment. Another purpose was to obtain billing data for the buildings containing RECS respondents living in buildings with five or more units.

The interviews with rental agents or their deputies were conducted in the summer of 1985. Altogether, 210 rental agents were interviewed. These interviews covered 549 households in 262 buildings. The 549 households were 66.5 percent of the total of 826 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. Keypunching of important items was fully verified (overall, 25 percent). Finally, the data were machine edited to further ensure completeness, logical consistency, and the legitimacy of coded values. The computer editing utilized a proprietary software package called EDITOR II.

The contractor attempted to resolve inconsistencies or ambiguities in the data internally, by reference to other parts of the questionnaire. When these efforts failed to resolve an important problem, particularly those involving heating fuels or heating equipment and/or relationships between questionnaire responses 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 6 percent of households during the course of data editing for this survey.

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

Editors 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 when the landlord paid for the main heating fuel and his or her description of the main heating equipment differed from that of the household respondent.

As 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 A10.

Table A10. Changes Made in Household Records on the Basis of Information from Rental Agents

Type of Changes Made in Household Records	Fuel Paid by Rental Agent	Number with Any Changes Made	Percentage with Changes Made
All Households in Rental-Agent Survey	549	178	32
Main Heating Fuel	511	75	15
Main Heating Equipment	[a]	68	13
Supplementary Heating Fuel	[a]	41	8
Water-Heating Fuel	531	103	19
Air-Conditioning Fuel	119	14	12

[a] For the 511 households whose rental agent paid for the main heating fuel, responses of rental agents and household respondents were compared.
Source: Energy Information Administration, Office of Energy Markets and End Use, The 1984 Residential Energy Consumption Survey.

Fuel-Supplier Survey

The overall objective of the fuel-supplier survey was to provide data on which to estimate the annual fuel consumption and expenditures of sample households. Five utility fuels were covered in the annualization--electricity, natural gas, fuel oil, kerosene, and LPG.[17] For each of the fuels, the goal was to obtain complete consumption records from April 1, 1984 through March 31, 1985.

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

Altogether, the fuel-supplier survey included initial contact attempts with 1,124 companies. The number of companies in the survey supplying each fuel and the total number of households supplied are shown in Table A11.

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

Fuel Supplier	Number of Companies[a]	Number of Survey Households Supplied
Electricity	281	4,742
Natural Gas	152	2,614
Fuel Oil or Kerosene		[b] 525
Kerosene	[c] 524	[b] 188
LPG	230	[b] 444

[a] The total number of companies in the survey was 1,124--44 supplied both electricity and natural gas; 1 supplied natural gas and LPG; and 18 supplied fuel oil and LPG.

[b] The fuel-oil figure excluds 24 households with suppliers unknown and 9 households whose estimates of fuel-oil quantities were based mainly on cash-and-carry purchases. The kerosene figure excludes 7 households with suppliers unknown and 206 households whose estimates of kerosene quantities were cash-and-carry purchases. The LPG figures exclude 9 households with suppliers unknown.

[c] Households were asked for names of their "fuel oil or kerosene" suppliers. For those households using both fuels and more than one supplier, it was not possible to determine which fuel was purchased from a given supplier until data were received.

Source: Energy Information Administration, Office of Energy Markets and End Use, The 1984 Residential Energy Consumption Survey.

Data-Collection Procedures

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

- An initial letter from the Deputy Administrator of the EIA, addressed to the president or other official in the company, outlining the general nature of the request for participation. Enclosures in the letter included a printed statement, "About the Residential Energy Consumption Survey," specimen copies of reporting and authorization forms, and a postage-paid postcard with a checklist of available publications and data tapes.
- A telephone contact to determine the name of the person to whose attention the survey materials should be sent.
- The mailing of survey materials to the person named as contact person.
- A 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.
- 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.

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

Procedures for fuel-oil or kerosene and LPG dealers were the same as for electric and natural-gas companies up through and including the mailing of survey materials to the company person named as the contact. These companies, however, most often had only one or two households for which information was to be supplied, and data collection was generally completed by telephone. A pretest of the procedure conducted earlier had indicated a somewhat greater likelihood that companies would respond by telephone than as a result of a request to complete and return the forms by mail.[18] 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.

Households lacking consumption records because they do not pay fuel bills directly to fuel suppliers occur most frequently among users of natural gas and fuel oil (see Table A12). These households are 21.0 percent of users of natural gas and 30.9 percent of users of fuel oil.

The proportion of households that did not sign authorization forms (access to records denied) was in the range of 4 to 8 percent for the five fuels. Most households that signed authorization forms did so at the time of the personal interview or at the time of completing the mailed questionnaire. To maximize the number of households with records, however, a follow-up request was mailed to those who did not sign a form at the time of the personal interview. About 13 percent of this group returned signed forms in response to the mail request and therefore were included in the fuel-supplier survey.

Table A12 shows that factors affecting nonresponse are somewhat different for fuel oil, kerosene, and LPG than they are for electricity and natural gas. For example, the most frequent reason for nonresponse from fuel-oil, 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, kerosene, and LPG was the inability to locate the fuel-oil, 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.

[18]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.

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

(Percentage of Households Using the Fuel)

Survey Households	Electricity	Natural Gas	Fuel Oil	Kerosene	LPG
Total Households Using the Fuel	100.0	100.0	100.0	100.0	100.0
(Sample Number)	(5,677)	(3,599)	(918)	(421)	(525)
Usable Records Received from Fuel Supplier[a]	79.5	70.0	43.2	9.7	58.5
Quantity Estimated by Household[b]	[d]	[d]	1.0	49.0	[d]
Unusable Records Received from Fuel Supplier	1.5	1.0	8.9	3.3	13.9
Household Pays Supplier Directly--No Record Available for the Household	10.0	8.0	16.0	37.5	21.3
Household Not Identified in Company Records	1.9	1.0	4.9	30.6	11.6
Company Refused to Participate	.7	.6	.2	.9	.6
Company Unknown or Not Located	[d]	[d]	2.6	1.7	1.7
Authorization Form Not Signed	7.4	6.4	8.3	4.3	7.4
Fuel Used Included in Rent or Paid in Other Way[c]	9.0	21.0	30.9	.5	6.3

[a] Data were unusable for electricity and natural gas if the records covered less than 5 months, and for fuel oil, kerosene, and LPG if the record covered less than 1 year.

[b] Households in this group are those that purchased kerosene or fuel oil primarily on a cash-and-carry basis. These households supplied estimated purchases of kerosene and fuel oil by telephone after the end of the 1984-1985 heating season.

[c] These data include households with mixed payment methods--for one or more uses of a specified fuel a supplier was paid directly, and payment for other uses was included in rent or paid in other way.

[d] Represents or rounds to zero

Source: Energy Information Administration, Office of Energy Markets and End Use, The 1984 Residential Energy Consumption Survey.

Comparison with 1982 RECS

The proportion of households with usable fuel-consumption records is lower in 1984 than it was in 1982. The difference is four percentage points for electricity, four for natural gas, and nine for LPG. Data on usability of fuel records for fuel oil and kerosene are not comparable between the 1982 and 1984 RECS, because those two fuels were combined in the 1982 RECS. The decrease is attributed to a small increase in the proportion of sample households that did not sign authorization forms, an increase in the proportion of unusable LPG records, and an increase in the proportion of sample households whose energy bills are included in their rent. The latter condition was fostered by the intentional oversampling in the 1984 RECS of low-income households, which more often have energy costs included in their rent.

Data-Collection Dates

The first set of advance letters was mailed to utility companies in mid-April 1985. The cutoff date for receipt of usable information was November 30, 1985.

Fuel-Consumption Imputations

Not all the fuel records that were collected in the fuel-supplier survey could be used. For example, some records covered too few months of usage; other records were incomplete and it was not possible to determine exactly what information was missing. The extent of these unusable records is shown in Table A12. The problem of unusable records is small for the metered fuels. For electricity and natural gas, not even 2 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 9 percent of fuel-oil, 3 percent of kerosene, and 14 percent of LPG records were unusable. One reason for this is that partial-year records of electricity and natural consumption are considered usable, whereas a partial-year record for the storage fuels (fuel oil, kerosene, LPG) is not acceptable.[19]

A variety of information from household respondents as well as from suppliers is reviewed and used as a basis for declaring a fuel-oil, kerosene, or LPG record complete or incomplete. Questionnaire information from respondents includes the number of suppliers and an estimate of the annual number of deliveries. Suppliers provided dates of onset and termination of service to the household. In addition, follow-up contacts were made by telephone to some households to obtain estimates of cash-and-carry purchases of kerosene and fuel oil directly from respondents.

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

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

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

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

For the 1982 RECS, special adjustments were also made in consumption imputations for those respondents living in apartment buildings whose electricity and natural-gas usage was included in their rent. New imputation equations applied to the 1984 RECS appear to have eliminated the bias in consumption imputations for these households. No adjustment factors were applied to 1984 RECS imputations.

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, 1984, and March 31, 1985. For electricity and natural gas, an adjustment was made for records covering 330 days or more. For those covering fewer than 330 days and cases requiring regression imputations, the imputed quantity was for a 365-day period.

For a small proportion of households, 12-month fuel-consumption quantities were scaled down in accordance with respondent-supplied information as to the proportion of the fuel used for nonhousehold purposes such as for drying grain or operating a commercial welding shop. This adjustment was made to the consumption and expenditures for 2 percent of the households using electricity, 2 percent using LPG, 1 percent using natural gas, and 1 percent using fuel oil, and 1 percent using 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 equation, an error term was added to the predicted fuel consumption. This allowed estimates for sampling error to be calculated without separating imputed from unimputed data.

[19]The number of households with partial-year records, as a proportion of total households using the fuel, is 8.6 percent for electricity and 6.3 percent for natural gas.

Table A13 shows the availability of consumption records by the type of housing structure. Usable records were most often obtained for single-family units, more often for electricity (87.8 percent of the units) and natural gas (87.8 percent) than for fuel oil (66.1 percent), kerosene (62.4 percent) or LPG (65.7 percent). The problems inherent in collecting data for the storage fuels were described earlier: multiple suppliers, "cash-and-carry" customers, companies supplying purchase data instead of usage data, and economic instability of the supplying companies.

Table A13. Energy-Consumption Records and Missing Data for Surveyed Households, by Fuels Used and 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)	(5,677)	(362)	(3,706)	(753)	(856)
Usable Record	79.5	79.3	87.8	68.5	53.2
Unusable Record[a]	1.5	2.2	.7	2.1	3.9
Records Not Available	10.0	7.7	9.7	11.3	11.4
Fuel Used Is Included in Rent or Paid in Other Ways[b]	9.0	10.8	1.8	18.1	31.5
Natural Gas	100.0	100.0	100.0	100.0	100.0
(Sample Number)	(3,599)	(119)	(2,281)	(610)	(589)
Usable Record	70.0	77.3	87.8	52.5	17.8
Unusable Record[a]	1.0	1.7	1.1	1.3	.3
Records Not Available	8.0	9.2	9.2	7.4	3.8
Fuel Used Is Included in Rent or Paid in Other Ways[b]	21.0	11.8	1.9	38.8	78.1
Fuel Oil	100.0	100.0	100.0	100.0	100.0
(Sample Number)	(918)	(23)	(563)	(149)	(183)
Usable Record	44.2	39.1	66.1	14.1	1.6
Unusable Record[a]	8.9	13.1	11.0	11.4	[c]
Records Not Available	16.0	43.5	20.9	12.1	.6
Fuel Used Is Included in Rent or Paid in Other Ways[b]	30.9	4.3	2.0	62.4	97.8
Kerosene	100.0	100.0	100.0	100.0	100.0
(Sample Number)	(421)	(65)	(311)	(33)	(12)
Usable Record	58.7	60.0	62.4	27.3	(5)
Unusable Record[a]	3.3	13.8	1.6	[c]	[c]
Records Not Available	37.5	26.2	35.7	69.7	(7)
Fuel Used Is Included in Rent or Paid in Other Ways[b]	.5	[c]	.3	3.0	[c]
LPG	100.0	100.0	100.0	100.0	100.0
(Sample Number)	(525)	(137)	(367)	(14)	(7)
Usable Record	58.5	44.5	65.7	(5)	[c]
Unusable Record[a]	13.9	16.1	12.5	(5)	[c]
Records Not Available	21.3	27.0	19.6	(3)	[c]
Fuel Used Is Included in Rent or Paid in Other Ways[b]	6.3	12.4	2.2	(1)	(7)

[a] Data were unusable for electricity and natural gas if the records covered less than 5 months, and for fuel oil, kerosene, and LPG if the record covered less than 1 year.

[b] 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.

[c] Represents or rounds to zero.

Source: Energy Information Administration, Office of Energy Markets and End Use, The 1984 Residential Energy Consumption Survey.

Most of the consumption and expenditures data for large apartment buildings, especially natural gas and fuel oil, are imputed data. Usable records were obtained for only 17.8 percent of the apartments in large buildings that used natural gas and for only 1.6 percent of those using fuel oil. Liquefied petroleum gas and kerosene are infrequently used in large apartment buildings. Electricity data for these apartments were obtained in 53.2 percent of the cases.

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

Other segments of the data for which the lack of usable records may lead to an imputation bias include natural gas and fuel oil for apartments in smaller buildings (two to four units per building) and fuel oil and LPG used in mobile homes. Usable records in these segments were obtained for between 14.1 percent and 52.5 percent of the households.

Supplemental Data Collection

Portions of the 1984 RECS data set and analyses are based on three supplemental data collections carried out mainly by telephone between mid-1985 and early 1986. The primary purpose of one of these follow-up activities was to obtain estimates of kerosene use as a home heating fuel during the 1982-1983 heating season. The other two supplemental activities were designed primarily to collect additional information of interest to the Social Security Administration on government assistance to low-income households.

Follow-up Survey on Kerosene Consumption

A very large majority of households using kerosene as a supplemental home heating fuel made cash-and-carry purchases of kerosene in small quantities, usually less than 10 gallons at a time. Records of such purchases are generally not maintained by fuel suppliers. Thus, the normal procedure of obtaining delivery or sales records from fuel suppliers can be followed only for a small fraction of these households.

Use of kerosene as a supplemental home heating fuel increased in the period from 1982 to 1984. Follow-up telephone calls were made to households in the 1984 RECS sample to obtain estimates of kerosene used during the 1984-1985 heating season directly from a knowledgeable person in the household. Those who reported cash-and-carry purchases of fuel oil were also included in the follow-up survey.

Follow-up contacts were attempted in July and August 1985 for 438 households. This group included 422 households in the 1984 RECS who reported that they used a portable kerosene heater or did not report the name of their kerosene supplier, 14 households who reported cash-and-carry fuel-oil purchases, and 2 households who reported cash-and-carry purchases of both fuel oil and kerosene. Of those 438 households, 263 (60.0 percent) were interviewed by telephone. Nonrespondents included those who could not be reached by telephone and those who had refused to participate in earlier contacts. The 263 telephone interviews resulted in use of household-provided quantity estimates for 206 kerosene households and 9 fuel-oil households. Those interviews not used for quantity estimates included households for whom usable records were received from fuel suppliers and those who were unable to provide estimates.

If follow-up respondent estimates were not obtained, regression estimates were calculated and then adjusted in such a way that overall average imputations matched the average estimate of follow-up respondents.

Follow-up Data Collection for the Social Security Administration

The first of two supplemental data collections was carried out entirely by telephone in January 1986. Telephone contacts for this purpose were combined whenever possible with a portion of the data collection for the 1985 Residential Transportation Energy Consumption Survey (RTECS). Information was collected on government assistance to low-income households to pay heating or cooling costs for the 12-month period ending in September 1985, and on family income for 1985.

The population of interest for this supplemental data collection was defined as all households in the 1984 RECS with a reported or imputed annual family income of under $30,000 in the 12 months preceding the 1984 RECS interview. Of the total of 4,145 households included in this group, follow-up interviews were completed with 2,633, or 63.5 percent. Nonrespondents include those who could not be reached by telephone for this special purpose as well as households that had refused to participate in earlier transportation study contacts.

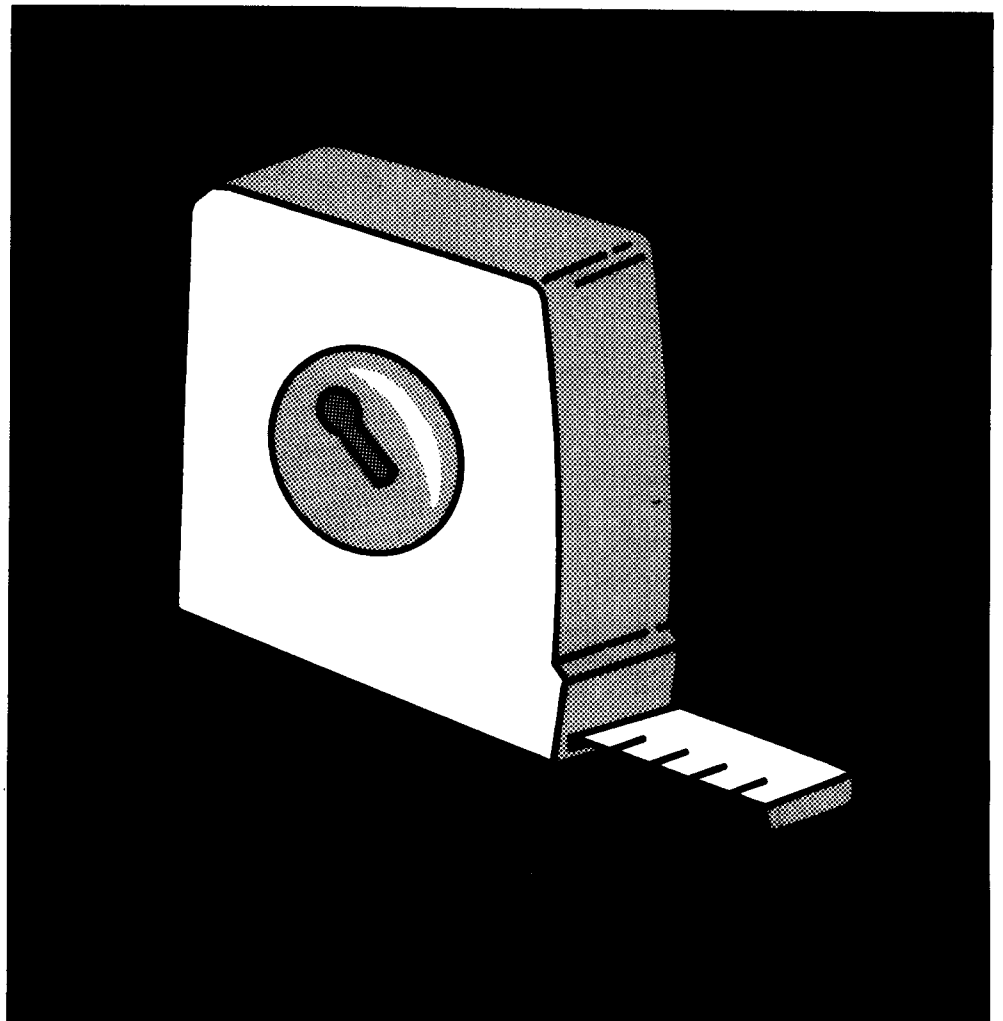
The second supplemental data collection was carried out by telephone in April 1986. Information was collected on government assistance to low-income households to pay heating costs during the period from October 1985 to April 1986, and on family income for the 12-month period ending in April 1986.

The population of interest for the April survey was similar to that for the January survey. Of the 4,145 households with reported or imputed income of under $30,000 for the 12 months preceding the 1984 RECS interview, 120 had reported 1985 income of $35,000 or more during the January 1986 data collection; these were removed from the sample. Another 120 households that had income of $30,000 or more for 1983 but reported income of less than $25,000 during the January 1986 RTECS data collection were added to the sample; these households had not been asked the home heating-assistance questions in January.

Of the total of 4,145 eligible households, follow-up interviews were completed in April with 2,483, or 59.9 percent. Nonrespondents included those who could not be reached by telephone as well as households that had refused to participate in earlier contacts.

Appendix B

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



Appendix B

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

Interviewers for the 1984 Residential Energy Consumption Survey were given 50-foot tape measures to ascertain the dimensions of housing units. The instructions were to measure the "area enclosed from the weather." This included garages attached to the house, attics either heated or finished, and basements enclosed from the weather (see **Square Feet** in Glossary for further definition). Interviewers also recorded the dimensions of areas that were heated and unheated. This finer breakdown into heated and unheated areas more closely measures 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.

Interviewers were instructed to measure all housing units in new Rotation Groups C and D. Housing units in the returning Rotation Groups E and F, which did not have complete measurements taken in the 1982 RECS, were also to be measured. Additionally, a subsample of one-fourth of the returning rotation groups, which were completely measured in the 1982 RECS, was selected to be measured again in the 1984 RECS. This subsample will serve as the basis for methodological analyses of differences between 1982 RECS and 1984 RECS measurements.

Interviewers were instructed to skip the measurement step for the remaining three-quarters of the returning rotation groups with complete measurements in the 1982 RECS, provided that the housing unit was occupied by the same family as in the 1982 RECS and that no changes had been made in the structure or in heated square feet. For these 584 households, measurements taken during the 1982 RECS are used in the 1984 RECS data file.

Interviewers attempted to measure the size of 4,895 housing units. In 94 percent of the cases, usable measurements were acquired. In 6 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:

HOME AREA	=	total square footage of area enclosed from the weather
HEATED	=	total square footage of heated area
UNHEATED	=	HOME AREA - 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 Inside Measurements

As shown in Table B1, 2,743 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 1,368 homes that were measured on the inside. The inside measurements were standardized to outside dimensions. The scaling value was determined for each housing unit as a quadratic function of outside HOME AREA for the housing unit.

$$SCALE = .980 + 1.017E\text{-}04 \times HOMEAREA - 1.532E\text{-}08 \times (HOMEAREA) \quad (3)$$

This formula indicates that the larger the HOME AREA, the larger the scaling-up value. These scale values, which increased the inside measurements, ranged from 7.16 to 14.91 percent, depending on the size of the INSIDE AREA. For any case in which INSIDE AREA was less than 1,000, SCALE was set to 1.07; for INSIDE AREA greater than 2,885, SCALE was set to 1.15.

The equation was developed in the following manner: Regression prediction equations were developed independently for homes measured from the inside and homes measured from the outside. Both equations were used to generate estimates of floor space for homes measured from the outside. The relationship between the ratio of predicted "outside" to "inside" floor space and the actual outside floor space for these homes was fitted in a quadratic equation.

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

Amount of Information Collected	Number of Households	Percent
Complete Set of Dimensions	2,743	56
Outside measurement of home	1,375	28
Inside measurement of home	1,368	28
Partial Information		
Information available on heated and unheated areas Unknown whether dimensions are for inside or outside of home	1,550	32
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	137	3
Basement dimensions missing	97	2
Complete set of dimensions for all floors except basement Basement total area known, but information on heated and unheated areas for basement is missing	54	1
All dimensions missing or unusable	314	6
Total	4,895	100

Note: The floor area for the 203 households responding by mail was imputed through a hot-deck procedure. The mail questionnaires are not included in this table. Also excluded from the table are 584 households for which measurements were taken from the 1982 RECS data file.
Source: Energy Information Administration, Office of Energy Markets and End Use, The 1984 Residential Energy Consumption Survey.

Treatment of Housing Units with Some Missing Data

The 1,550 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 as though measurements were outside. This was because average predictions based on regression equations using homes measured outside matched average totals for this group very closely, while predictions based on regression equations using homes measured inside were seriously biased on the low side.

The 137 cases lacking information on the ratio of heated to unheated space borrowed that ratio from housing units with complete data, on a PSU-by-PSU basis. For most of these cases, information was also lacking as to whether the measurements were inside or outside, and measurements were again assumed to be outside.

For the 97 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 54 cases in which the ratio of heated to unheated space for the basement was unknown. This ratio was imputed by using an appropriate empirical distribution of heated to unheated ratios. Three such distributions were used: one for single-family homes with basements only; one for homes with a basement plus crawl space and/or slab; and one for basements of homes in buildings with two to four units.

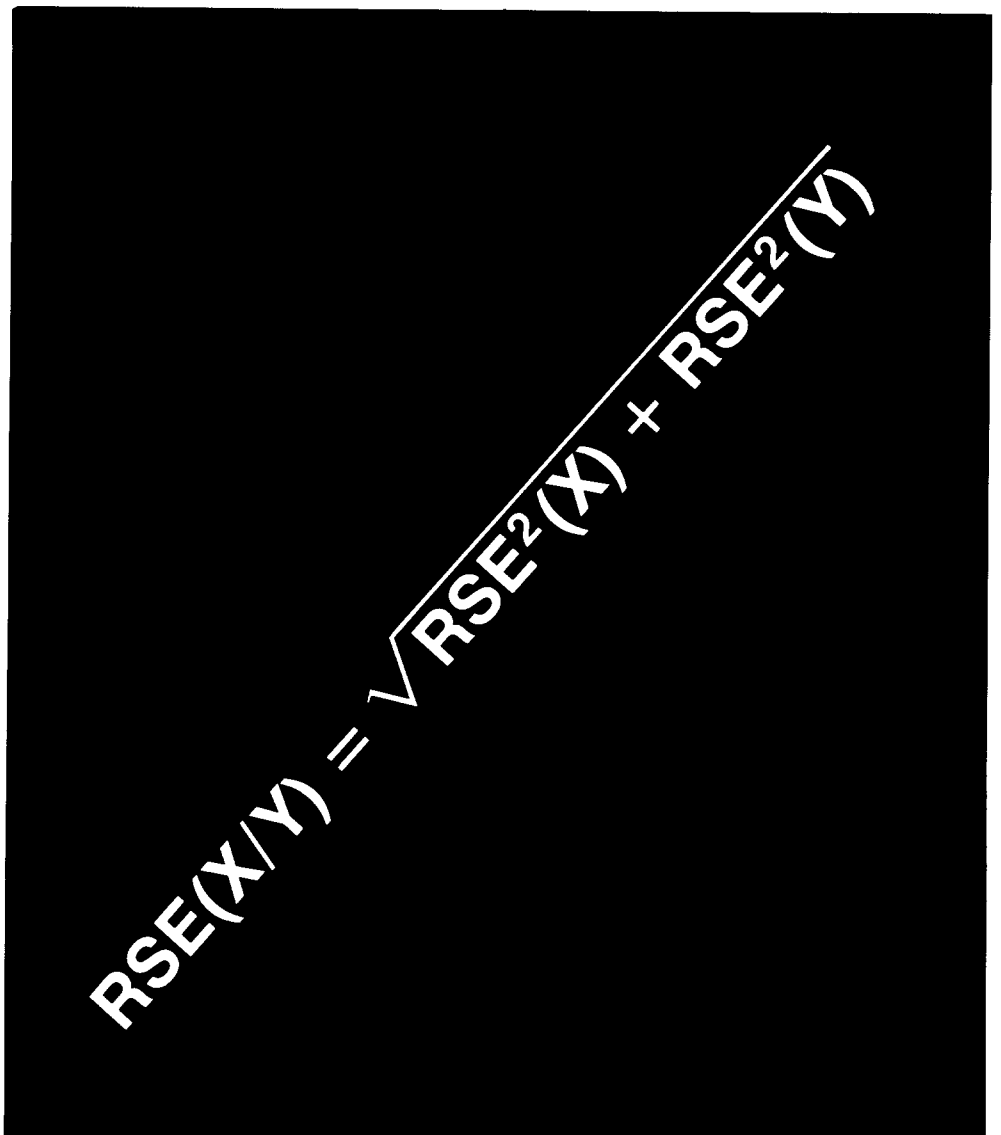
Regression Equation

A regression equation was used for the 314 cases with no usable data. After HOME AREA had been imputed by using the regression equation, the ratio of heated to unheated space was imputed using the same procedures described above for housing units for which that ratio was missing.

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

Appendix C

Quality of the Data



Appendix C

Quality of the Data

Data from the 1984 Residential Energy Consumption Survey (RECS) are subject to many sources of nonsampling error, bias, and sampling error. Nonsampling error and bias are measures of variability due to the way the survey was conducted. They can include population undercoverage during sampling, response bias and variance, interviewer error, coding and/or keypunching error, and nonresponse bias. The wording and format of survey questionnaires, the procedures used to select and train interviewers, and the quality control built into the data collection, receipt, and processing operations were all designed to minimize these sources of error (for discussion of these procedures, see Appendix A, "How the Survey Was Conducted"). In addition, response adjustments and ratio estimations were incorporated into the survey estimator to help reduce both sampling and nonsampling error. These procedures also are discussed in Appendix A.

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

Nonsampling Error

Completeness of Data

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

- Vacant housing units. These units may have minimal heating for protection from the weather and lighting for security. The American Housing Survey (AHS) conducted by the Bureau of the Census estimated that there were 5.5 million vacant, year-round housing units in 1983.
- Second homes for the owner's use. The AHS estimates there were 1.5 million homes "held for occasional use" in 1983.

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

Noncovered Energy. The following types of energy consumption are not included in the RECS reports:

- Energy used in the noncovered housing units.
- Energy used in common areas in multiple-unit buildings (heating, lighting, and air conditioning of lobbies, hallways and parking garages and energy used for elevators, etc.).
- Gasoline and other fuels used in household vehicles. The RECS collects and reports gasoline data separately from a subset of respondents.
- Wood used for heating. Consumption data on wood fuel are presented in Table 27 of *RECS: Consumption and Expenditures April 1984 Through March 1985, Part 1: National Data*, but are not included in other tables that

combine data for the four major fuels. An estimate of the amount of wood consumed for 1984 was 0.98 quadrillion Btu.

- LPG used in outdoor gas grills, for camping, or for other recreational activities occurring away from the home. An estimated 8.6 million households used LPG in 1984 in outdoor gas grills. If these households used an average of 5 gallons per year, this represents 43 million gallons of LPG that are not counted in RECS (or 0.004 quadrillion Btu)
- Coal, (statistics on the number of households using coal are presented) coke, corncobs, charcoal, alcohol, purchased steam, and solar energy used for household purposes.

The effect of these omissions is an underestimation of 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 11 million Btu averaged over all homes. If added to the average household energy use, the average would increase from 105 million to 116 million Btu. This estimate of wood fuel use is subject to the errors affecting data on wood fuel consumption (see **Wood Consumption** in the Glossary).

Overestimation of the amount of energy can occur when some household bills contain nonhousehold uses, such as for operating a welding shop or drying grain. Overestimation can also occur when owners' billing records contain consumption for a rental unit. The RECS respondents estimated the amount of this nonhousehold use that is included on their bills. Using these estimates, downward adjustments were made for individual households to subtract their nonhousehold uses from their consumption and expenditures data.

Other errors may occur because (1) the data for fuel oil, kerosene, and LPG are for fuel delivered to the household between April 1, 1984, and March 31, 1985, not for fuel consumed by the household, (2) attempts to acquire actual fuel bills for fuel oil and kerosene are more often unsuccessful and, consequently, these data should be viewed as less reliable than the electricity and natural gas data, and (3) 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.

Quality of Specific Data Items

Comparison of RECS and Edison Electric Institute (EEI) Data on Electricity Consumption. The EEI publishes a data series on residential electricity consumption. The EEI data series and the RECS data both agree that the average use of electricity per residential unit has not increased between 1978 and 1984. (Table C1). With the exception of the year following the Arab oil embargo, the EEI data show a steady increase up to 1978, after which small fluctuations occurred around the 1978 level. The two data series do not agree, however, as to whether consumption per unit has declined from 1978 to 1984, or remained on a relatively level pattern. RECS shows a decline; EEI shows a level pattern with small changes up and down.

The difference in consumption per unit figures may be due to the different universes covered by each data source. For example, the RECS is based on a sample of occupied housing units whereas EEI statistics are for residential customers. The number of EEI residential customers is larger than the number of households estimated by the Bureau of the Census and used in the estimation procedures for RECS. This occurs presumably because EEI counts vacation homes and vacant homes as separate customers. The Bureau of the Census counts only primary residences and occupied housing units in their estimates of households.[20]

Another major difference in the universes covered is the presence of master-metered apartment units which are counted as separate units in RECS but in EEI figures may be represented by fewer than one customer account per household. A ratio comparison of the RECS data and EEI data indicates a trend in the relationship between the two data series. Initially, RECS estimates were 10 percent higher than EEI estimates; the RECS estimate, however, in

[20]Estimates of the number of vacant homes and second homes are provided in the American Housing Survey conducted by the Bureau of the Census.

the last survey, was 10 percent lower than the EEI figure. This change in the relationship between the two data series that occurred sometime between 1979 and 1984 poses an interesting question that probably reflects a change in the universe of the counted units.

Table C1. Electricity Consumption per Residential Unit for Data from the Edison Electric Institute (EEI) and the Residential Energy Consumption Survey (RECS)

Year	EEI (kWh per customer)	RECS (kWh per household)	Ratio of RECS/EEI
1970	7,066		
1971	7,380		
1972	7,691		
1973	8,079	[a] 8,530	1.1
1974	7,907		
1975	8,176	[a] 8,630	1.1
1976	8,360		
1977	8,693		
1978	8,849	9,450	1.1
1979	8,843	9,150	1.0
1980	9,025	8,840	1.0
1981	8,825	8,750	1.0
1982	8,743	8,480	1.0
1983	8,814		
1984	8,978	8,440	.9

[a] Data are from predecessor surveys to the RECS that were conducted by the Washington Center for Metropolitan Studies. As in RECS, these national surveys of U.S. households included a followup survey to collect actual billing records from the households electric utility supplier.

Source: EEI data are from the *Statistical Yearbook of the Electric Utility Industry.* RECS data are from unpublished results of surveys conducted in 1978 through 1982 and 1984.

Square Feet of Floor Space. The longitudinal design of the RECS made it possible to measure a subsample of the housing units twice. Analysis of 300 housing units measured in 1980 and 1982 showed a median percentage difference of 11.7 percent for total square feet (heated and unheated). The difference for heated square feet was 15.6 percent. The percentage difference was the absolute value of the difference between the two measurements as a percentage of the average of the two measurements. The comparison is described in Appendix C of the reports on the 1982 Residential Energy Consumption Survey--(DOE/EIA-0314(82), DOE/EIA-0321/1(82), or DOE/EIA-0321/2(82)).

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.

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

Expenditures as a Percentage of Income. The 1984 RECS is the third RECS for which expenditures for energy are shown as a percentage of the family's income. RECS collects income data in categories, so that a family's income is known only by a range. (For example, $3,000 to $3,999). The problem of not having a precise value was resolved in most cases 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. The value of $99,633 was assigned to households reporting an income of $75,000 or more for 1984.

Poverty. The United States Bureau of the Census provides a threshold of poverty which is based on family income and the number of household members (Table C2). Households with incomes below the poverty threshold are defined as "Below 100 Percent of Poverty." Households with income below 125 percent of the poverty threshold are defined as "Below 125 Percent of Poverty."

Because the RECS income data were collected using categories of income, an exact match of Census thresholds could not be made. Furthermore, underreporting of income is often a problem in surveys similar to the RECS (cf. reference in Table C2). Underreporting may be exacerbated in the RECS, which measures income by only one question. In comparison, the Current Population Survey (CPS) collected by the Bureau of the Census measures income by several questions. Income questions are asked separately for each source of income and each household member. The CPS estimate for households below 100 percent of poverty was 13,886,000 for March 1984. The RECS estimate was 13,680,000 households below 100 percent of poverty.

Table C2. Definition of Poverty

Number of Persons per Family	Below 100 Percent of Poverty		Below 125 Percent of Poverty	
	1984 RECS Income Range Less Than:[a]	Census Threshold[b]	1984 RECS Income Range Less Than:[a]	125 Percent Threshold
1 and--				
respondent is younger than 65	$5,000	$5,400	$7,500	$6,750
respondent is older than 64	5,000	4,979	6,000	6,224
2 and--				
householder is younger than 65	7,500	6,983	9,000	8,729
householder is older than 64	6,000	6,282	7,500	7,853
3	9,000	8,277	10,000	10,346
4	11,000	10,609	14,000	13,261
5	12,500	12,566	15,000	15,708
6	14,000	14,207	17,500	17,759
7	15,000	16,096	20,000	20,120
8	17,500	17,961	22,500	22,451
9 or more	20,000	21,247	27,500	26,559

[a] The income category that contained the Census threshold was taken as the upper limit in defining poverty when the Census threshold was equal to or above the midpoint of the income category. For example, since the threshold of $5,400 was not above the midpoint of the category $5,000 to $5,999, the next lower income category was used.

[b] Figures from the U.S. Bureau of the Census, *Money Income and Poverty Status of Families and Persons in the United States: 1984* (Advance Data from the March 1985 Current Population Survey) *(Current Population Reports,* Series P-60, No. 149, August 1985), Table A1, p. 31.

Source: Energy Information Administration, Office of Energy Markets and End Use, The 1984 Residential Energy Consumption Survey.

Recent Conservation Improvements. The household interview questionnaire covered recent conservation improvements made to the housing unit. Most of the improvements mentioned in the questions were those covered by the Federal legislation providing residential energy-conservation tax credits. Questions in the interview were asked about each conservation improvement--had it been installed since September 1, 1982, and if so, in what month and year was the work completed. The household interview was conducted in the fall of 1984, so the recall period was about 2 years. (See Questions 49a, 49b, 53, 61, 64, 67a-67f, 69a-69d, and 69f of the household questionnaire in Appendix D for the exact wording and the item covered.)

The 1984 RECS included a question on whether any conservation improvements had been made and paid for in 1983 (Question 72 in the household questionnaire in Appendix D). The improvements were the same ones asked about in the detailed questions listed above. Question 72 was included as a filter question to identify households that would be asked several specific follow-up questions on Federal tax credits for energy-conservation improvements. A comparison between the results of Question 72 and the detailed questions should show consistency, since similar phenomena were measured. However, when answers to Question 72 were compared with answers from the earlier questions, considerable inconsistencies appeared (Table C3).

Table C3. Consistency of Responses to Question 72 and Detailed Questions on Individual Conservation Improvements
(Unweighted Households)

Consistency with Detailed Questions	Number	Percent
Consistent	761	57.3
Inconsistent	567	42.7
Total	1,328	100.0

Note: The inconsistent cases were those not answering "1983" to Questions 49a, 49b, 53, 61, 64, 67a-67f, 69a-69d, and 69f.
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Form EIA-457, The 1984 Residential Energy Consumption Survey.

About 43 percent of households responding "Yes" to Question 72 did not give 1983 as an answer to any of the detailed questions on individual conservation improvements. The problem appears to be the way Question 72 was designed. Question 72 was complex, with a number of subquestions imbedded in it, and interviewers noted difficulties in administering it. Although the detailed questions were simpler in form, they may also have contributed to the inconsistencies due to the unreliability of the responses for the time period when the improvements were made.

In some cases, the inconsistencies may have occurred because only the most recent date was recorded for improvements done more than once between September 1, 1982 and the date of the interview. For example, if caulking had been installed in 1983 and in 1984, only 1984 was recorded, but Question 72 could be answered "Yes" on the basis of the unrecorded installation of caulking in 1983.

The problems of accurately identifying which households made a conservation improvement that may have been eligible for a Federal tax credit in 1983 could affect the data in unknown ways.

Sampling Errors

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

$$RSE(Y) = (S_Y / Y) \times 100. \quad (4)$$

Thus the standard error of Y is given by

$$S_Y = RSE(Y) \times Y / 100. \quad (5)$$

This section provides an explanation and example of the procedures used to calculate approximate RSE's for each statistic shown in Tables 10 through 27 of the *RECS: Consumption and Expenditures April 1984 Through March 1985, Part 1 National Data*. This section also includes a discussion of the derivation of the procedures used to calculate the approximate RSE's; a brief discussion on the generalized variance equations; and explanations of the procedures used to calculate the RSE for percentages, the RSE for ratios, and the RSE for medians.

For some surveys, a convenient algebraic formula for computing variances can be obtained. However, the RECS used a multistage area sample design of such complexity (see Appendix A: "How the Survey Was Conducted") that it is virtually impossible to construct an exact algebraic expression for estimating variances. Instead, the method used to estimate sampling variances for this survey was balanced half-sample replication. This numerical method involves pairing primary sampling units (PSU's) in strata so that differences between the members of each pair can be used to build an estimate of sampling variance. The strata were collapsed to 92 new strata to achieve this pairing of PSU's. Forty-seven of these 92 strata consisted of two non-self-representing PSU's belonging to the same Census divisions, with one PSU constituting each member of a pair. Thirty-four of the remaining 45 strata were each composed of one self-representing PSU; that is, they consisted of large metropolitan areas that came into the sample with certainty. In each of the latter strata, all of the PSU's were treated as a composite PSU, while the segments within the composite PSU were segregated into two groups representing the two members of a pair. There was no between-PSU component of variance for self-representing PSU's. The 11 remaining strata consisted of a non-self-representing PSU that was treated as if it were a self-representing PSU. These 11 unmatched non-self-representing PSU's were not matched due to a desire to match within the 9 Census divisions and constraints caused by the use of PSU's from both the original design and the revised design. (See Appendix A).

Half-sample replication involved repeatedly drawing pair members from the 92 strata. Each replication is called a "half-sample" because only one member of the pair within each of the 92 strata is selected. For each half-sample, the sampling weights were ratio adjusted upward. The result of the adjustment is that the sum of the weights for each of the 12 cells (four Census regions by three types of Metropolitan Statistical Area (MSA)) equals the appropriate control total. (See Appendix A, Table A6). In this way, each half-sample can produce unbiased survey statistics based on roughly one-half of the data. Using different combinations of members from the 92 pairs, it is possible to produce a total of 4.9 billion unique half-samples. Although desirable for good variance estimation, a large number of half-samples would be computationally infeasible. However, the method of balanced half-sample replication allows a small number of half-samples (approximately equal to the number of strata) to produce estimates of variance that are identical to estimates based on all possible unique half-samples for linear survey statistics. The use of ratio adjustments means that even a statistic giving the number of households in a cateogry is not a linear statistic. For nonlinear survey statistics, the variance estimate computed using the method of balanced half-samples is approximately equal to the variance estimate computed using all possible half-samples. With this balancing method, each half-sample is constructed by using an orthogonal matrix to control the selection of pair members from strata. For the RECS, 128 balanced half-samples were used in variance estimation.

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

$$S^2_{Y'} = (1/128) \sum_{i=1}^{128} (Y'_i - Y')^2, \tag{6}$$

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

$$S_{Y'} = \sqrt{S^2_{Y'}}. \tag{7}$$

Two methods of presenting the RSE's of a statistic were used in this report. Method 1, which is used for the majority of tables, calculates an approximate RSE for each statistic. Method 2 is used for tables which contain medians as the measure of central tendency. For these tables, generalized variance equations are provided, that allow the reader to calculate the RSE for the statistics presented in the tables.

Method 1. Row and Column Factors

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

$$RSEA(i, j) = R(i)\, C(j) \tag{8}$$

where:

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

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

The following example illustrates this procedure.

Using the second row of the table (Figure C1) labeled "Northeast" and the second column labeled "Total Amount Consumed," gives an estimate of 2.29 quadrillion Btu for the total energy consumed in households in the Northeast. The RSE row factor is R(2) = 6.00. The RSE column factor is C(2) = 0.60. The approximate RSE for the estimate is, therefore,

$$RSEA(2, 2) = (6.00)\,(0.60) = 3.60 \text{ percent} \tag{9}$$

Figure C1. Use of RSE Row and Column Factors

Table 10. U.S. Residential Energy Consumption and Expenditures--April 1984 Through March 1985

Household Characteristics	All Major Fuels			Natural Gas		Electricity		Fuel Oil or Kerosene		Liquefied Petroleum Gas		RSE Row Factors	
	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)		
RSE Column Factors:	0.54	0.60	0.59	0.92	0.89	0.71	0.69	1.49	1.48	2.50	2.37		
Total Households	86.3	9.04	97.0	4.98	29.8	2.48	54.5	1.26	9.6	0.31	3.1	3.00	1
Census Region and Division													
Northeast	18.3	2.29	26.4	.93	6.9	.41	12.2	.93	7.0	.03	.4	6.00	2
New England	4.3	.54	6.3	.16	1.3	.10	2.7	.27	2.1	.01	.2	11.32	3
Middle Atlantic	14.0	1.75	20.1	.77	5.6	.31	9.5	.65	4.8	.01	.2	7.68	4
North Central	21.6	2.80	25.1	1.99	11.1	.55	11.8	.13	1.0	.13	1.2	5.12	5
East North Central	15.2	1.97	17.8	1.43	8.3	.37	8.1	.10	.7	.08	.7	7.16	6
West North Central	6.4	.82	7.3	.55	2.9	.18	3.7	.03	.2	.06	.5	10.97	7
South	29.3	2.50	30.9	1.15	6.7	1.06	21.7	.16	1.3	.12	1.2	7.19	8
South Atlantic	14.8	1.18	15.9	.47	3.2	.50	10.8	.15	1.2	.06	.7	10.54	9
East South Central	5.8	.48	5.4	.19	1.0	.25	4.1	.01	.1	.02	.2	12.25	10
West South Central	8.8	.84	9.7	.49	2.5	.31	6.8	Q	Q	.04	.4	15.02	11
West	17.1	1.45	14.6	.91	5.1	.47	8.8	.04	.3	.03	.4	7.36	12
Mountain	4.5	.47	4.3	.32	1.6	.12	2.4	Q	Q	.01	.1	16.88	13
Pacific	12.6	.99	10.3	.59	3.4	.34	6.4	.03	.2	.02	.2	8.64	14
	1	2	3	4	5	6	7	8	9	10	11		

$$RSEA(2, 2) = (6.00)(0.60) = 3.60 \text{ percent}$$

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

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

$$\log RSEA(i, j) = m + a(i) + b(j). \quad (10)$$

The least squares estimates for this equation are given by

$$m = \overline{(\log RSE)} \quad (11)$$

$$a(i) = \overline{(\log RSE)}_i - \overline{(\log RSE)} \quad (12)$$

$$b(j) = \overline{(\log RSE)}_j - \overline{(\log RSE)} \quad (13)$$

where:

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

The row and column RSE factors are then computed as:

$$R(i) = \text{antilog}\,(m + a(i)) = \text{antilog}\,\overline{(\log RSE)}_i \quad (14)$$

$$C(j) = \text{antilog}\; b(j) = \text{antilog}\left(\overline{(\log RSE)}_j - \overline{(\log RSE)}\right) \quad (15)$$

The RSE row factor, R *(i)*, is the geometric mean of the RSE's in row i. The RSE column factor, C *(j)*, is an adjustment factor with geometric mean equal to 1.0.[21]

Method 2. Generalized Variance Equations

The reader may want to observe statistics other than those presented in the tables in this report by either collapsing some cells or combining cells. In these instances, the Tables C4 through C8 can be used to approximate the RSE of a statistic. 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 a complete discussion on the general variance procedure and the determination of relative sampling errors for household counts, see *RECS: Housing Characteristics 1984*, October 1986.

Currently, the row and column factor method of calculating RSE's is not carried out for statistics where medians are the measure of central tendency. Thus, the generalized procedures for medians involve the use of regression equations developed using RSE's computed by a half-sample replication procedure. Generalized variance equations are produced for household counts, percentages based on counts, aggregate totals and averages (Table C9).[22] Equations 1A, 2A, 2G, 3A and 3B in Table C9 refer specifically to Tables 15 and 27 of the *RECS: Consumption and Expenditures April 1984 Through March 1985, Part I, National Data*. The regression Equations 2A and 3B should be used to calculate the RSE's for statistics in Table 15, and Equations 1A, 2G, and 3A should be used for Table 27.

Table C4. RSE's for Aggregate Statistics of Total Consumption or Expenditures for All Major Fuels, Electricity, Natural Gas, Fuel Oil or Kerosene, LPG, Kerosene, and Consumption of Wood

	One Relative Standard Error (percent)						
Million Households	All Major Fuels	Electricity	Natural Gas	Fuel Oil or Kerosene	LPG	Kerosene	Wood
0.1	54.8	55.0	51.9	63.8	54.8	59.0	55.5
0.2	39.7	40.5	38.3	45.1	42.2	45.9	43.1
0.3	32.9	33.8	32.1	36.8	36.2	39.6	37.2
0.4	28.8	29.8	28.3	31.9	32.5	35.6	33.5
0.5	26.0	27.0	25.7	28.5	29.9	32.9	30.9
0.6	23.9	24.9	23.7	26.0	27.9	30.7	28.9
0.7	22.2	23.3	22.2	24.1	26.3	29.1	27.3
0.8	20.9	21.9	20.9	22.5	25.0	27.7	26.0
0.9	19.8	20.8	19.9	21.2	23.9	26.5	24.9
1.0	18.8	19.9	19.0	20.1	23.0	25.5	24.0
1.5	15.6	16.6	15.9	16.4	19.8	22.0	20.7
2.0	13.7	14.6	14.0	14.2	17.7	19.8	18.6
3.0	11.3	12.2	11.7	11.6	15.2	17.1	16.1
4.0	9.9	10.8	10.3	10.1	13.6	15.4	14.5
5.0	8.9	9.8	9.4	9.0	12.5	14.2	13.4
10.0	6.5	7.2	6.9	6.4	9.7	11.0	10.4
20.0	4.7	5.3	5.1	4.5	[a]	[a]	8.1
40.0	3.4	3.9	3.8	[a]	[a]	[a]	6.3
86.3	2.4	2.8	2.7	[a]	[a]	[a]	[a]

[a] Exceeds maximum number of households for this statistic.
Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

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

[22]For a detailed discussion of the determination of sampling errors for household counts, see *RECS: Housing Characteristics 1984*, October 1986.

Table C5. RSE's for Statistics of Average (Mean) Consumption or Expenditures for All Major Fuels, Electricity, Natural Gas, Fuel Oil or Kerosene, LPG, Kerosene, and Consumption of Wood

Million Households	One Relative Standard Error (percent)						
	All Major Fuels	Electricity	Natural Gas	Fuel Oil or Kerosene	LPG	Kerosene	Wood
0.1	18.8	20.5	26.4	39.6	31.5	41.7	26.5
0.2	14.3	16.1	19.4	26.9	23.7	33.0	21.6
0.3	12.1	14.0	16.2	21.5	20.1	28.7	19.2
0.4	10.8	12.7	14.2	18.3	17.9	26.1	17.6
0.5	9.9	11.7	12.8	16.1	16.3	24.2	16.5
0.6	9.2	11.0	11.8	14.6	15.2	22.7	15.7
0.7	8.6	10.4	11.1	13.4	14.2	21.6	15.0
0.8	8.2	9.9	10.4	12.4	13.5	20.6	14.4
0.9	7.8	9.5	9.9	11.6	12.8	19.8	13.9
1.0	7.5	9.2	9.4	11.0	12.3	19.1	13.5
1.5	6.4	8.0	7.9	8.7	10.4	16.6	12.0
2.0	5.7	7.2	6.9	7.4	9.3	15.1	11.0
3.0	4.8	6.3	5.8	5.9	7.9	13.2	9.8
4.0	4.3	5.7	5.1	5.1	7.0	11.9	9.0
5.0	3.9	5.3	4.6	4.5	6.4	11.1	8.4
10.0	3.0	4.1	3.4	3.0	4.8	8.7	6.9
20.0	2.3	3.2	2.5	2.1	[a]	[a]	5.6
40.0	1.7	2.5	1.8	[a]	[a]	[a]	4.6
86.3	1.3	2.0	1.3	[a]	[a]	[a]	[a]

[a] Exceeds maximum number of households for this statistic.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Table C6. RSE's for Median Cords of Wood Consumed and Median Percent of Income Spent of Energy

Million Households	One Relative Standard Error (percent)	
	Median Cords of Wood Consumed per Household	Median Percent of Income Spent on Energy
0.1	96.2	34.4
0.2	74.2	26.6
0.3	63.8	22.8
0.4	57.3	20.5
0.5	52.7	18.9
0.6	49.2	17.6
0.7	46.4	16.6
0.8	44.2	15.8
0.9	42.3	15.1
1.0	40.6	14.6
1.5	34.9	12.5
2.0	31.4	11.2
3.0	26.9	9.7
4.0	24.2	8.7
5.0	22.3	8.0
10.0	17.2	6.2
20.0	13.3	4.7
40.0	10.2	3.7
86.3	[a]	2.7

[a] Exceeds maximum number of households for this statistic.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Table C7. RSE's for Statistics of Energy Price's for All Major Fuels, Electricity, Natural Gas, Fuel Oil or Kerosene, LPG, Kerosene

Million Households	One Relative Standard Error (percent)					
	All Major Fuels	Electricity	Natural Gas	Fuel Oil or Kerosene	LPG	Kerosene
0.1	10.9	8.7	9.5	5.5	12.0	4.3
0.2	8.7	7.2	7.4	4.0	8.7	3.3
0.3	7.6	6.5	6.4	3.3	7.3	2.8
0.4	6.9	6.0	5.7	2.9	6.4	2.5
0.5	6.4	5.6	5.3	2.6	5.8	2.2
0.6	6.0	5.4	5.0	2.4	5.3	2.1
0.7	5.7	5.1	4.7	2.2	4.9	1.9
0.8	5.5	5.0	4.5	2.1	4.6	1.8
0.9	5.3	4.8	4.3	2.0	4.4	1.8
1.0	5.1	4.7	4.1	1.9	4.2	1.7
1.5	4.5	4.2	3.5	1.6	3.5	1.4
2.0	4.1	3.9	3.2	1.4	3.1	1.3
3.0	3.6	3.5	2.8	1.1	2.5	1.1
4.0	3.2	3.2	2.5	1.0	2.2	1.0
5.0	3.0	3.0	2.3	.9	2.0	.9
10.0	2.4	2.5	1.8	.7	1.5	.7
20.0	1.9	2.1	1.4	.5	[a]	[a]
40.0	1.5	1.7	1.1	[a]	[a]	[a]
86.3	1.2	1.4	.8	[a]	[a]	[a]

[a] Exceeds maximum number of households for this statistic.
Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Table C8. RSE's for Percentages of Aggregate Consumption or Expenditures for Electricity, Natural Gas, Fuel Oil or Kerosene, LPG, and Kerosene

Million Households	One Relative Standard Error (percent)				
	Electricity	Natural Gas	Fuel Oil or Kerosene	LPG	Kerosene
0.1	17.4	17.1	30.5	44.5	39.4
0.2	13.7	12.3	21.0	31.1	31.4
0.3	11.9	10.2	16.8	25.2	27.5
0.4	10.8	8.9	14.4	21.7	25.1
0.5	10.0	8.0	12.7	19.3	23.3
0.6	9.4	7.3	11.5	17.6	22.0
0.7	8.9	6.8	10.6	16.3	20.9
0.8	8.5	6.4	9.9	15.2	20.0
0.9	8.2	6.1	9.2	14.3	19.2
1.0	7.9	5.8	8.7	13.5	18.6
1.5	6.8	4.8	7.0	11.0	16.3
2.0	6.2	4.2	6.0	9.4	14.8
3.0	5.4	3.4	4.8	7.7	13.0
4.0	4.9	3.0	4.1	6.6	11.8
5.0	4.5	2.7	3.6	5.9	11.0
10.0	3.6	1.9	2.5	4.1	8.7
20.0	2.8	1.4	1.7	[a]	[a]
40.0	2.2	1.0	[a]	[a]	[a]
86.3	1.7	.7	[a]	[a]	[a]

[a] Exceeds maximum number of households for this statistic.
Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Table C9. Generalized Variance Equations for Selected Items--1984

Equation 1.	Total Consumption or Expenditures:		
	A.	All Major Fuels	LOG(RSE) = 1.275 - .464*LOG(NHSLD)
	B.	Electricity	LOG(RSE) = 1.298 - .442*LOG(NHSLD)
	C.	Natural Gas	LOG(RSE) = 1.278 - .437*LOG(NHSLD)
	D.	Fuel Oil and Kerosene	LOG(RSE) = 1.304 - .501*LOG(NHSLD)
	E.	LPG	LOG(RSE) = 1.362 - .377*LOG(NHSLD)
	F.	Kerosene	LOG(RSE) = 1.407 - .364*LOG(NHSLD)
	G.	Wood Consumption	LOG(RSE) = 1.380 - .364*LOG(NHSLD)
Equation 2.	Average Consumption or Expenditures:		
	A.	All Major Fuels	LOG(RSE) = .875 - .399*LOG(NHSLD)
	B.	Electricity	LOG(RSE) = .964 - .348*LOG(NHSLD)
	C.	Natural Gas	LOG(RSE) = .974 - .448*LOG(NHSLD)
	D.	Fuel Oil and Kerosene	LOG(RSE) = 1.040 - .558*LOG(NHSLD)
	E.	LPG	LOG(RSE) = 1.090 - .408*LOG(NHSLD)
	F.	Kerosene	LOG(RSE) = 1.281 - .339*LOG(NHSLD)
	G.	Wood Consumption	LOG(RSE) = 1.130 - .293*LOG(NHSLD)
Equation 3.	Average (Median):		
	A.	Wood Consumed	LOG(RSE) = 1.609 - .380*LOG(NHSLD)
	B.	Percent of Income Spent on Energy	LOG(RSE) = 1.163 - .374*LOG(NHSLD)
Equation 4.	Energy Prices:		
	A.	All Major Fuels	LOG(RSE) = .708 - .329*LOG(NHSLD)
	B.	Electricity	LOG(RSE) = .670 - .269*LOG(NHSLD)
	C.	Natural Gas	LOG(RSE) = .614 - .364*LOG(NHSLD)
	D.	Fuel Oil and Kerosene	LOG(RSE) = .280 - .460*LOG(NHSLD)
	E.	LPG	LOG(RSE) = .623 - .456*LOG(NHSLD)
	F.	Kerosene	LOG(RSE) = .226 - .412*LOG(NHSLD)
Equation 5.	Proportionate:		
	A.	Electricity	LOG(RSE) = .896 - .344*LOG(NHSLD)
	B.	Natural Gas	LOG(RSE) = .761 - .471*LOG(NHSLD)
	C.	Fuel Oil and Kerosene	LOG(RSE) = .941 - .544*LOG(NHSLD)
	D.	LPG	LOG(RSE) = 1.131 - .517*LOG(NHSLD)
	E.	Kerosene	LOG(RSE) = 1.269 - .327*LOG(NHSLD)

Notes: NHSLD is the number of households in millions. Logarithms are calculated to the Base 10. Equation 3A applies to number of cords of wood or to Btu.
Source: Energy Information Administration, Office of Energy Markets and End Use, Energy End Use Division, Form EIA-457, The 1984 Residential Energy Consumption Survey.

Derivation of Generalized Variance Equations for Medians

The generalized variance equations used to compute the RSE's of the medians were obtained using a least squares regression. The dependent variable was the logarithm of the RSE and the independent variable was the logarithm of the number of households in million of households. The RSE's used as input data in the regression procedure were obtained using a half-sample variance estimating procedure.

Determination of Relative Standard Errors for Percentages Based on Household Counts

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

$$RSE(p) = \sqrt{RSE^2(X) - RSE^2(Y)}. \quad (16)$$

The following example illustrates this equation. Among the 55.4 million households that used natural gas, 61 percent owned their housing unit. The approximate RSE for 55.4 million households was 2.82. The approximate RSE of the 34.0 million households that owned their housing unit was 3.08.

Using the above equation the RSE of the percent is:

$$RSE(p)\sqrt{3.08^2 - 2.8^2} = 1.24 \quad (17)$$

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 described above.

Determination of the Relative Standard Error for Ratios

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

$$RSE\,(X/Y) = \sqrt{[RSE(X)]^2 + [RSE(Y)]^2} \quad (18)$$

The following example illustrates this equation. The average consumption of natural gas in the Northeast Region was 79 million Btu. The approximate RSE was 3.0 percent. The average consumption of natural gas in the North Central Region was 118 million Btu, with an approximate RSE of 2.0 percent. The ratio of these estimates shows that the natural gas consumption was 1.5 times greater in the North Central Region than in the Northeast Region. (118/79 = 1.5). The RSE of this ratio is

$$RSE\,(X/Y) = \sqrt{(2.20)^2 + (4.30)^2} = 4.83. \quad (19)$$

The half-width for the 95 percent confidence interval is

$$1.96 \times .048 \times 1.5 = 0.14. \quad (20)$$

The confidence interval for the ratio is 1.5 ($\pm$0.1).

Determination of the Standard Error of the Difference Between Two Statistics

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

$$SE_{x1-x2} = \sqrt{SE_{x1}{}^2 + SE_{x2}{}^2}. \quad (21)$$

This procedure assumes the two statistics are not correlated. The example of average consumptions of natural gas in the Northeast Region and in the North Central Region can be used to illustrate the procedure. The difference between the average consumption in the Northeast Region and the North Central Region is 39 million Btu. The standard error of this difference is

$$SE_{x1-x2} = \sqrt{2.60^2 + 3.40^2} = 4.28 \quad (22)$$

If 1.96 times the standard error is greater than the difference between the statistics, the difference is not statistically significant.

Multiple Comparisons of RECS Estimates of Electricity Consumption

RECS has produced six estimates for the average consumption of electricity per household per year--one for each year from 1978 through 1982 and for 1984. The estimates have sampling errors attached to them since they are derived from a sample survey of U.S. households. The issue of concern is determining which decreases, if any, are statistically significant.

To start with, a statistical test for the presence of a trend over the six data points supports a conclusion that electricity consumption per household has declined over the period being considered (critical value of 3.26 is larger than 1.96 for a test at the 95 percent confidence level).[23]

Among all the possible comparisons of the six data points, a significant difference occurred between 1980 and 1982 and between 1980 and 1984 (Table C10). The size of the decrease from 1980 to 1982 is 360 ($\pm$240) kWh. Thus the true size difference may be as small as 120 kWh per household or as large as 600 kWh. That is a rather wide range, which indicates that the size of the decrease could be small or large. Nevertheless, with a high degree of certainty, a decrease in electricity consumption did occur.

Table C10. Differences for All Possible Comparisons of the Annual Per-Household Consumption of Electricity from RECS

(kWh)

Survey Year	1978	1979	1980	1981	1982
1979	300				
1980	610	310			
1981	700	400	90		
1982	970	670	[a] 360	270	
1984	1,010	710	[a] 400	310	40

[a] The difference is statistically significant--the difference is greater than the critical value shown in Table C11.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1978 to 1982 and 1984 Residential Energy Consumption Survey.

The reader may notice that the critical values (sampling error of the difference times 2.94) are noticeably smaller in some cells than in others (Table C11). Estimates of sampling error for comparisons among the 1980 through 1984 surveys and between the 1978 and 1979 surveys are lower, for they make use of the fact that the selection of PSU's remained the same among these surveys. The PSU's were the same for the 1980, 1981, and 1982 surveys. The PSU's for 1984 were the same as those for the 1980-1982 surveys, except for a few PSU's that were changed when the sample was redesigned in 1983.

A different set of PSU's was used for the earlier surveys, but this set was the same for both the 1978 and 1979 surveys. Thus, between-PSU variance has been removed from the estimates of the sampling error of the differences between the surveys noted. Removal of this component of the variance reduced the estimates considerably.

Table C11. Critical Values for Statistical Tests of All Possible Comparisons of the Annual Per-Household Consumption of Electricity from RECS

(kWh)

Survey Year	1978	1979	1980	1981	1982
1979	460				
1980	1,090	950			
1981	1,080	940	490		
1982	1,140	1,010	350	470	
1984	1,090	940	390	390	360

Note: The critical value is 2.94 times the standard error of the difference. This value was selected to keep the overall error probability at the .05 level while making multiple comparisons (15 in this case).

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1978 to 1982 and 1984 Residential Energy Consumption Survey.

[23]The test for a trend takes account of each of the six data points by testing the significance of an estimate of the beta coefficient. The test is described in: National Center for Health Statistics, *Manual on Standards and Procedures for Reviewing Statistical Reports.* Washington, D.C., 1974. Internal document.

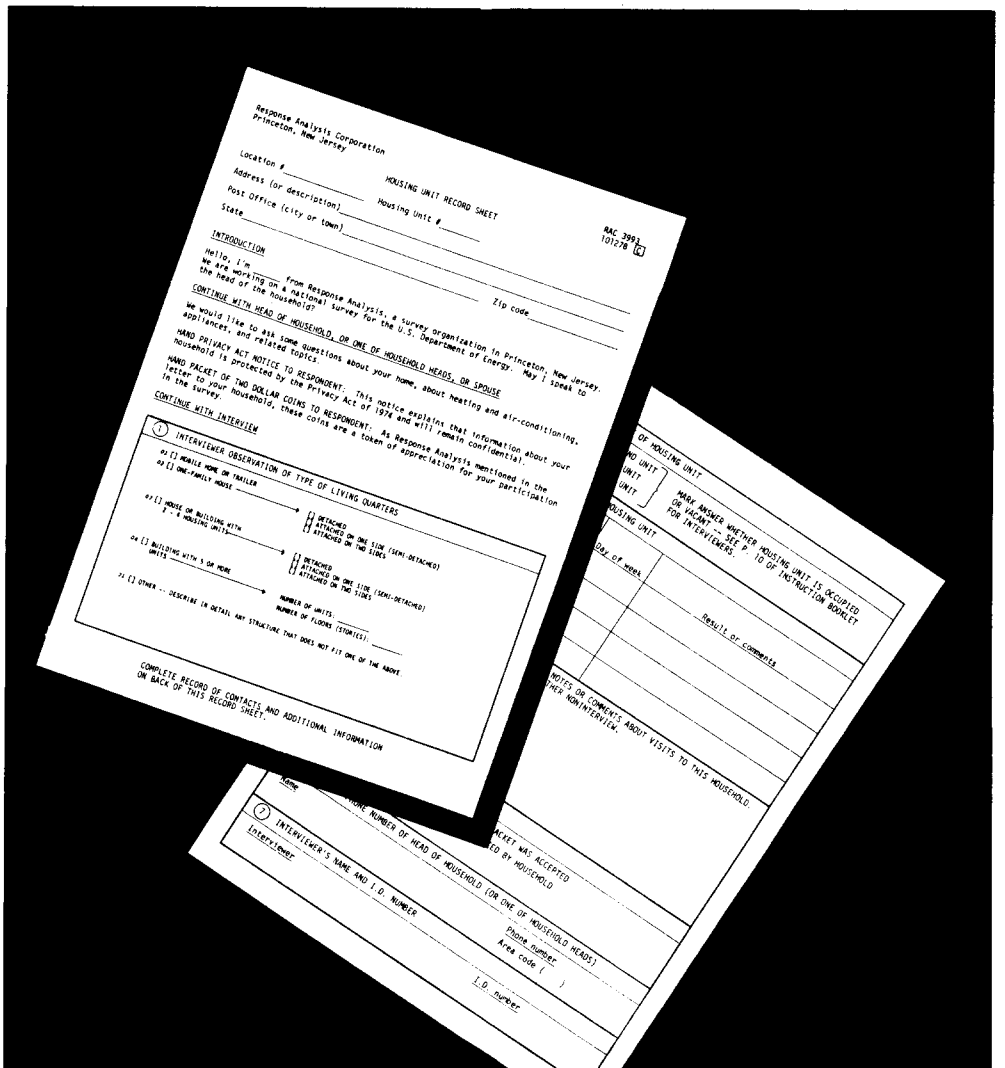
The average consumption per household is one of the most stable statistics from the RECS. It is a ratio estimate in which both the numerator and denominator are derived from the same units, and the numerator (amount of consumption) is highly correlated with the denominator (number of households). Thus, an undercount of households would result in a corresponding undercount of consumption, with the ratio staying relatively constant. The ratio is a better statistic for observing trends than the RECS estimates of aggregate consumption, which are, for the early years 1978 to 1980, biased by the underestimate in the Bureau of the Census figures for the total number of households in the United States. The RECS estimates for total consumption of electricity have remained essentially constant, being either 2.4 or 2.5 quadrillion Btu in each survey. The Energy Information Administration publishes statistics on aggregate sales of electricity to residential customers that are based on aggregate data provided by utilities. These aggregate data, not biased by the Census underestimate, have shown a steady but changing increase each year from 1978 to 1984.[24]

The implication of the positive growth in aggregate sales and the negative change in per-household consumption is that the growth in sales from 1978 to 1984 is due largely to the fact that the number of households was increasing during this period of time.

[24]See Energy Information Administration, *Electric Power Annual,* (DOE/EIA-0348).

Appendix D

Survey Forms



Appendix D

Survey Forms

This Appendix contains copies of the survey forms used in the 1984 Residential Energy Consumption Survey.

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

Response Analysis Corporation
Princeton, New Jersey
RAC 4454-07 090484

Form Approved
OMB No. 1905-0092 • EIA 457A
(Expires August 31, 1986)

HOUSING UNIT RECORD SHEET

Use questionnaire that does not have a red dot on the cover for this housing unit.

Address (or description) _____

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

INTRODUCTION

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

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

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

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

CONTINUE WITH INTERVIEW

(1) INTERVIEWER OBSERVATION OF TYPE OF LIVING QUARTERS

MARK BOX BELOW:

11 [] MOBILE HOME OR TRAILER

21 [] ONE-FAMILY HOUSE--DETACHED
22 [] ONE-FAMILY HOUSE--ATTACHED ON ONE SIDE (SEMI-DETACHED)
23 [] ONE-FAMILY HOUSE--ATTACHED ON TWO SIDES

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

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

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

_____

_____

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

(2) TYPE OF OCCUPANCY OF HOUSING UNIT

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

MARK ANSWER WHETHER HOUSING UNIT IS OCCUPIED OR VACANT -- SEE P.13 OF INSTRUCTION BOOKLET FOR INTERVIEWERS.

(3) RECORD OF VISITS TO HOUSING UNIT

Visit number	Time of day (include AM or PM	Date	Day of Week	Result or Comments

(4) USE THIS SPACE FOR ADDITIONAL NOTES OR COMMENTS ABOUT VISITS TO THIS HOUSEHOLD. DESCRIBE FULLY IF REFUSAL OR OTHER NONINTERVIEW.

(5) NAME AND PHONE NUMBER OF HOUSEHOLDER (OR ONE OF HOUSEHOLDERS)

Name

Phone number

Area Code ( )

(6) INTERVIEWER'S NAME AND I.D. NUMBER

Interviewer

I.D. number

Form Approved
OMB No. 1905-0092 - EIA 457B
(Expires August 31, 1986)

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

Residential Energy Consumption Survey

Fall-Winter • 1984-1985

Energy Information Administration

U.S. Department of Energy

TIME INTERVIEW STARTED [ ] AM [ ] PM

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

01 [ ] BEFORE 1940	08 [ ] 1977-1979		
02 [ ] 1940-1949	09 [ ] 1980		
03 [ ] 1950-1959	10 [ ] 1981		121-122
04 [ ] 1960-1964	11 [ ] 1982		
05 [ ] 1965-1969	12 [ ] 1983		
06 [ ] 1970-1974	13 [ ] 1984	-- ASK Q. 2	
07 [ ] 1975-1976	14 [ ] 1985		

IF "1984" OR "1985", ASK:

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

MONTH: [ ] 123-124

YEAR: 198 [ ]

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

01 [ ] BEFORE 1940	08 [ ] 1977-1979		
02 [ ] 1940-1949	09 [ ] 1980		
03 [ ] 1950-1959	10 [ ] 1981		
04 [ ] 1960-1964	11 [ ] 1982		125-126
05 [ ] 1965-1969	12 [ ] 1983		
06 [ ] 1970-1974	13 [ ] 1984		
07 [ ] 1975-1976	14 [ ] 1985		

4. Altogether (counting all areas that are used as year-round living space), how many rooms do you have in your living quarters? Do not count bathrooms, unheated porches, foyers, or hallways. (SEE INSTRUCTION BELOW.)

NUMBER OF ROOMS: [ ] 127-128

5. How many complete bathrooms and how many half-bathrooms do you have? (A complete bathroom is a room with a flush toilet, bathtub or shower, and a sink/washbasin with running water. A half-bath has at least a flush toilet or bathtub or shower, but does not have all the facilities for a complete bathroom.)

NUMBER OF COMPLETE BATHROOMS: [ ] [ ] NONE 129

NUMBER OF HALF BATHROOMS: [ ] [ ] NONE 130

INTERVIEWER INSTRUCTIONS:

Q. 4 -- Generally count any room as long as it is a comfortable place to rest, read, study, etc., year-round.

Do not count laundry rooms, unfinished attics or basements, open porches, or unfinished space used for storage.

HAND RESPONDENT EXHIBIT 5/7/10

6. What is the main fuel used for heating your home? (SEE INSTRUCTIONS BELOW.)

	Q. 6 MAIN FUEL (MARK ONLY ONE)	Q. 7 MARK ALL THAT APPLY	
			131-132
GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD	01 []	[]	133
LPG GAS (BOTTLED OR TANK GAS)	02 []	[]	134
FUEL OIL	03 []	[]	135
KEROSENE OR COAL OIL	04 []	[]	136
ELECTRICITY	05 []	[]	137
COAL OR COKE	06 []	[]	138
WOOD	07 []	[]	139
SOLAR COLLECTORS	08 []	[]	140
OTHER (SPECIFY): _____	21 []	[]	141
DON'T KNOW	96 []	[]	142
NO HEATING FUEL USED -- TAKE BACK EXHIBIT 6/7/10; SKIP TO Q. 32	00 []		
NO ADDITIONAL FUEL -- SKIP TO Q. 9		[]	143

7. What other fuels, if any, are used to heat your home -- including those that are used to provide heat just occasionally?

MARK ALL THAT APPLY
(IF NONE, MARK "NO ADDITIONAL FUEL")

IF ONE OR MORE ADDITIONAL FUELS MENTIONED IN Q. 7, ASK:

8. Does your main heating fuel -- (FUEL NAMED IN Q. 6) -- provide almost all of the heat for your home, about three-fourths, or closer to half of the heat for your home?

1 [] ALMOST ALL (MORE THAN 95%)
2 [] ABOUT THREE-FOURTHS (67-94%) 144
3 [] CLOSER TO HALF (66% OR LESS)

INTERVIEWER INSTRUCTIONS:

Q. 6 -- If two or more heating fuels are used, the main heating fuel is one that provides most of the heat for the home.

Q. 6-7 -- If household recently converted to a different fuel, or is in the process of conversion, mark answer for fuel(s) in use for winter of 1984-1985.

9. In November of 1982 was the main fuel used to heat this (house/apartment) the same as it is now?

1 [] YES -- SKIP TO Q. 12 145
0 [] NO -- ASK Q. 10
5 [] NO FUEL USED IN 1982 -- SKIP TO Q. 12
6 [] DON'T KNOW -- SKIP TO Q. 12

IF "NO," ASK:

10. What was the main fuel used to heat this (house/apartment) in November of 1982?

01 [] GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
02 [] LPG GAS (BOTTLED OR TANK GAS)
03 [] FUEL OIL
04 [] KEROSENE OR COAL OIL
05 [] ELECTRICITY 146-147
06 [] COAL OR COKE
07 [] WOOD
08 [] SOLAR COLLECTORS
21 [] OTHER (SPECIFY): _____
95 [] NO FUEL USED
96 [] DON'T KNOW

11. In what month and year was the main heating fuel changed?

MONTH: _____ 148-149
YEAR: 198 _____ 150-151

TURN TO EXHIBIT 12/13

12. What is the main heating equipment used with your main heating fuel?	Q.12 MAIN EQUIPMENT (MARK ONLY ONE)	Q. 13 MARK ALL THAT APPLY	
HOT WATER PIPES RUNNING THROUGH A SLAB FLOOR (RADIANT HEATING)	01 []	[]	152-153 / 154
STEAM OR HOT WATER SYSTEM WITH RADIATORS OR CONVECTORS	02 []	[]	155
CENTRAL WARM-AIR FURNACE WITH DUCTS TO INDIVIDUAL ROOMS (DO NOT COUNT HEAT PUMP HERE)	03 []	[]	156
HEAT PUMP	04 []	[]	157
BUILT-IN ELECTRIC UNITS (PERMANENTLY INSTALLED IN WALL, CEILING, OR BASEBOARD)	05 []	[]	158
FLOOR, WALL, OR PIPELESS FURNACE	06 []	[]	159
ROOM HEATER BURNING GAS, OIL, KEROSENE (NOT PORTABLE)	07 []	[]	160
HEATING STOVE BURNING WOOD, COAL, COKE	08 []	[]	161
FIREPLACE(S)	09 []	[]	162
PORTABLE ELECTRIC HEATER(S)	10 []	[]	163
PORTABLE KEROSENE HEATER(S)	11 []	[]	164
COOKING STOVE, RANGE, OR OVEN (USED TO HEAT HOME, AS WELL AS FOR COOKING)	12 []	[]	165
OTHER (SPECIFY): _____	21 []	[]	166
DON'T KNOW	96 []	[]	167
NO ADDITIONAL EQUIPMENT		[]	168

13. What other types of equipment, if any, are used to heat your home -- including those that are used to provide heat just occasionally? MARK ALL THAT APPLY (IF NONE, MARK "NO ADDITIONAL EQUIPMENT".)

TAKE BACK EXHIBIT 12/13

IF "CENTRAL WARM-AIR FURNACE" MENTIONED IN Q. 12 OR Q. 13, ASK:

14. For the central warm-air furnace, is the warm air forced through the ducts by a fan? — 1 [] YES; 0 [] NO; 6 [] DON'T KNOW — 169

IF "HEATING STOVE BURNING WOOD, COAL, COKE" MENTIONED IN Q. 12 OR Q. 13, ASK:

15. Is the heating stove airtight? — 1 [] YES; 0 [] NO; 6 [] DON'T KNOW — 170

IF SINGLE FAMILY HOME OR MOBILE HOME, ASK Q. 16. OTHERWISE SKIP TO Q. 17

16. How old is your main heating equipment, just approximately? (INTERVIEWER: PROBE FOR BEST GUESS.) — 1 [] LESS THAN 2 YEARS OLD; 2 [] 2-4 YEARS OLD; 3 [] 5-9 YEARS OLD; 4 [] 10-14 YEARS OLD; 5 [] 15 YEARS OLD OR OLDER; 6 [] DON'T KNOW — 171

IF 2 OR MORE HOUSING UNITS IN BUILDING, ASK Q. 17. OTHERWISE SKIP TO Q. 18

17. Does the main equipment for heating your home also heat one or more other apartments, households or businesses? — 0 [] NO, HOME HEATING EQUIPMENT IS FOR RESPONDENT'S HOME ONLY; 1 [] YES, HOME HEATING EQUIPMENT IS FOR ONE OR MORE OTHER APARTMENTS, HOUSES, OR BUSINESSES; 6 [] DON'T KNOW — 172

18. At what temperature do you usually keep your home during the day in the wintertime when someone is at home? (SEE INSTRUCTION BELOW.) — DEGREES FAHRENHEIT: [ ] — 173-174
[] HEAT TURNED OFF

19. At what temperature do you usually keep your home during the day in the wintertime when no one is at home? (SEE INSTRUCTION BELOW.) — DEGREES FAHRENHEIT: [ ] — 175-176
[] HEAT TURNED OFF

20. At what temperature do you usually keep your home during sleeping hours in the wintertime? (SEE INSTRUCTION BELOW.) — DEGREES FAHRENHEIT: [ ] — 177-178
[] HEAT TURNED OFF

HAND RESPONDENT EXHIBIT 21

21. Please look at this list and tell me the ways, if any, you use to adjust the temperature in your home during the heating season. (MARK ALL THAT APPLY.) — 207-208:02

THERMOSTAT FOR MAIN HEATING EQUIPMENT	[]	211
THERMOSTAT FOR SUPPLEMENTAL HEATING EQUIPMENT	[]	212
OPENING AND CLOSING WINDOWS OR DOORS	[]	213
OPENING AND CLOSING HOT AIR VENTS	[]	214
TURN HEATER ON OR OFF (UP OR DOWN)	[]	215
TURN RADIATORS OR CONVECTORS ON OR OFF	[]	216
ADJUST DRAFT OR AMOUNT OF FUEL FOR WOOD OR COAL FIRE	[]	217
USE COOKING STOVE, OVEN, OR RANGE TO HEAT HOME	[]	218
OTHER (SPECIFY): _____	[]	219
NO WAY TO ADJUST THE TEMPERATURE	[]	220

INTERVIEWER INSTRUCTIONS:

Q. 18-20 -- If respondent keeps different sections of the house at different temperatures, we want to know the temperature in the part of the house where the people are. If, for example, the heat is turned off upstairs during the day because the family is downstairs, we want the downstairs temperature.

If the respondent doesn't know temperature, but does know thermostat setting, record thermostat setting. Otherwise, probe for best estimate.

TURN TO EXHIBIT 22/23

22.. During the last winter -- from October 1983 to April 1984 -- was there any period of 2 hours or more when you wanted to use your main source of heat but could not use it for any of these reasons? (INTERVIEWER: READ AND MARK "YES" OR "NO" FOR EACH ITEM. SEE INSTRUCTION BELOW IF RESPONDENT REPORTS LIVING AT ANOTHER ADDRESS DURING ALL OR PART OF THE OCTOBER 1983 TO APRIL 1984 PERIOD.)

a. Unable to pay for heating fuel . . .	1 [] YES	0 [] NO	_____ HOURS OR _____ DAYS
b. Unable to pay for electricity to start main heating equipment	1 [] YES	0 [] NO	_____ HOURS OR _____ DAYS
c. Landlord did not provide heat . . .	1 [] YES	0 [] NO	_____ HOURS OR _____ DAYS
d. Heating system was broken or under repair	1 [] YES	0 [] NO	_____ HOURS OR _____ DAYS
e. Fuel shortage in your area (company had no fuel to sell) . . .	1 [] YES	0 [] NO	_____ HOURS OR _____ DAYS
f. Power outage	1 [] YES	0 [] NO	_____ HOURS OR _____ DAYS
g. Gas line was broken.	1 [] YES	0 [] NO	_____ HOURS OR _____ DAYS
h. Other reason (Specify): _____	1 [] YES	0 [] NO	_____ HOURS OR _____ DAYS

221-244

FOR EACH "YES" MARKED ABOVE, ASK:

23. Now think of all the times you were without your main source of heat because (REPEAT ITEM FROM Q. 22). Altogether, about how many hours or days were you without heat for that reason? _____

TAKE BACK EXHIBIT 22/23

IF ONE OR MORE ITEMS MARKED "YES" IN Q. 22, ASK:

24. How many different times were you without your main source of heat during the last winter -- from October 1983 to April 1984?

TIMES WITHOUT MAIN SOURCE OF HEAT: [ ]

245-246

25. During the time your home was without your main source of heat, were you able to heat your home in some other way?

1 [] YES
0 [] NO -- SKIP TO Q. 27
5 [] OTHER ANSWER (SPECIFY): _____

247

IF "YES" OR "OTHER ANSWER", ASK:

26. How were you able to heat your home? (INTERVIEWER, WRITE DOWN WHATEVER RESPONDENT REPORTS.)

INTERVIEWER INSTRUCTIONS:

All questions on this page -- Assure the respondent that these questions apply to all permanent residences of the household from October 1983 to April 1984.

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

1 [] YES
0 [] NO -- SKIP TO Q. 32

248

IF "YES" HAND RESPONDENT EXHIBIT 28, AND ASK:

28. This exhibit illustrates about one cord of wood. Did your household burn less than this amount, or about this amount or more?

249

1 [] LESS THAN ONE CORD -- ASK Q. 29
2 [] ONE CORD OR MORE -- SKIP TO Q. 30

IF "LESS THAN ONE CORD," ON Q. 28, TURN TO EXHIBIT 29 AND ASK:

29. Which of these is most nearly the amount of wood burned in your household in the past 12 months?

250

1 [] A FEW LOGS OR SCRAPS OF WOOD
2 [] 1/4 TO 1/3 OF A CORD
3 [] 1/2 CORD (ABOUT ONE PICK-UP TRUCK OF WOOD)
4 [] OVER 1/2 CORD BUT LESS THAN A FULL CORD

TAKE BACK EXHIBIT 29; SKIP TO Q. 31

IF "ONE CORD OR MORE" ON Q. 28, TURN TO EXHIBIT 30 AND ASK:

30. This exhibit shows wood piles of different sizes. Just using these as general reference points, about how many cords of wood did you burn in your household in the past 12 months? (SEE INSTRUCTION BELOW.)

NUMBER OF CORDS: [ ]

251-253

TAKE BACK EXHIBIT 30; ASK Q. 31

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

1 [] YES
0 [] NO

254

INTERVIEWER INSTRUCTIONS:

Q. 30 -- Exhibit 30 is intended only for general reference. Probe for respondent's best estimate of number of cords burned -- this, of course, will ordinarily be a number different from the specific quantities shown on the exhibit. Record answer to nearest cord, or cord plus fraction, as given by respondent (for example: 1, 1-1/2, 4, 10, 12, and so on).

HAND RESPONDENT EXHIBIT 32/34

32. Which fuel is used most for heating water (other than just for cooking purposes)?

01 [ ] GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
02 [ ] LPG GAS (BOTTLED OR TANK GAS)
03 [ ] FUEL OIL
04 [ ] KEROSENE OR COAL OIL
05 [ ] ELECTRICITY
06 [ ] COAL OR COKE
07 [ ] WOOD
08 [ ] SOLAR COLLECTORS
21 [ ] OTHER (SPECIFY): _____

255-256

00 [ ] NO FUEL USED -- TAKE BACK EXHIBIT 32/34 SKIP TO Q. 38
96 [ ] DON'T KNOW

33. In addition to your main fuel, do you use any other fuel for heating water (other than just for cooking purposes)?

1 [ ] YES
0 [ ] NO -- TAKE BACK EXHIBIT 32/34 SKIP TO Q. 35

257

IF "YES," ASK:

34. What is the additional fuel?

01 [ ] GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
02 [ ] LPG GAS (BOTTLED OR TANK GAS)
03 [ ] FUEL OIL
04 [ ] KEROSENE OR COAL OIL
05 [ ] ELECTRICITY
06 [ ] COAL OR COKE
07 [ ] WOOD
08 [ ] SOLAR COLLECTORS
21 [ ] OTHER (SPECIFY): _____

258-259

96 [ ] DON'T KNOW

TAKE BACK EXHIBIT 32/34

35. Do you have hot running water in your home?

1 [ ] YES
0 [ ] NO

260

IF ONE-FAMILY HOUSE OR MOBILE HOME, ASK:

36. About how old is your water heater, just approximately? (INTERVIEWER: PROBE FOR BEST GUESS.)

1 [ ] LESS THAN 2 YEARS
2 [ ] 2 - 4 YEARS
3 [ ] 5 - 9 YEARS
4 [ ] 10 - 14 YEARS
5 [ ] 15 YEARS OR MORE
6 [ ] DON'T KNOW
0 [ ] DO NOT HAVE A HOT WATER HEATER

261

262

IF 2 OR MORE UNITS IN BUILDING, ASK Q. 37.
OTHERWISE SKIP TO Q. 38

37. Does the equipment for heating water for your home also heat water for one or more other apartments, houses, or businesses?

0 [ ] NO, HOT WATER EQUIPMENT IS FOR RESPONDENT'S HOME ONLY
1 [ ] YES, HOT WATER EQUIPMENT HEATS WATER FOR ONE OR MORE OTHER APARTMENTS, HOUSES, OR BUSINESSES
6 [ ] DON'T KNOW

38. Do you have air-conditioning equipment, either a central system or individual window or wall units? (MARK ALL THAT APPLY.)

[] YES, CENTRAL SYSTEM 263
[] YES, INDIVIDUAL (WINDOW/WALL) UNITS 264
[] NO -- SKIP TO Q. 45

IF "INDIVIDUAL (WINDOW/WALL) UNITS" ON Q. 38, ASK:

39. How many individual window or wall units do you have?

NUMBER OF UNITS: [ ] 265-266

IF "CENTRAL SYSTEM" ON Q. 38, ASK:

40. Does the central air-conditioning system use electricity, gas from underground pipes, or LPG?

3 [] ELECTRICITY 267
1 [] GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
2 [] LPG GAS (BOTTLED OR TANK GAS)
6 [] DON'T KNOW

IF 2 OR MORE HOUSING UNITS IN BUILDING, ASK Q. 41, OTHERWISE SKIP TO Q. 42

41. Does the air conditioning equipment that cools your home also cool other apartments, houses, or businesses?

0 [] NO, A/C IS FOR RESPONDENT'S HOME ONLY
1 [] YES, A/C COOLS ONE OR MORE OTHER APARTMENTS, HOUSES, OR BUSINESSES
6 [] DON'T KNOW 268

42. How many rooms in your (house/apartment) can be cooled by your air-conditioning? Do not count bathrooms, hallways, foyers, or enclosed porches.

NUMBER OF ROOMS: [ ] 269-270
95 [] ENTIRE HOUSE OR APARTMENT

HAND RESPONDENT EXHIBIT 43

43. Which of the statements on this exhibit best describes the way you used your air conditioner(s) last summer? (MARK ONLY ONE.)

0 [] DID NOT USE AT ALL 271
1 [] TURNED ON ONLY A FEW DAYS OR NIGHTS WHEN REALLY NEEDED
2 [] TURNED ON QUITE A BIT
3 [] TURNED ON JUST ABOUT ALL SUMMER
5 [] OTHER (SPECIFY): _____

TAKE BACK EXHIBIT 43

44. When you are using your air conditioning, about what temperature do you usually keep the cooled area? (SEE INSTRUCTION BELOW.)

DEGREES FAHRENHEIT: [ ] 272-273

INTERVIEWER INSTRUCTIONS:

Q. 44 -- If respondent keeps different sections of the house at different temperatures, we want to know the temperature in the part of the house where the people are. If, for example, the air conditioning is turned off upstairs during the day because the family is downstairs, we want the downstairs temperature.

If the respondent doesn't know temperature, but does know thermostat setting, record thermostat setting. Otherwise, probe for best estimate.

307-308:03

45. How many doors do you have in your home that go from a heated area to the outside or to an unheated area? (SEE INSTRUCTION BELOW.)

NUMBER OF DOORS: [ ] 311-312
[] NONE -- SKIP TO Q. 50

HAND RESPONDENT EXHIBIT 46

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

	Q. 46 NUMBER OF DOORS	Q. 47 NUMBER WITH STORM DOOR OR INSULATING GLASS	Q. 48 NUMBER OF STORM/ INSULATING DOORS PUT IN SINCE SEPT. 1, 1982	Q. 49
a.	Sliding glass doors _____ [] NONE 313	_____ [] NONE 314	_____ [] NONE 315	MONTH: _____ YEAR: 198 ____ [] IN PROCESS 316-319
b.	Other doors to the outside _____ [] NONE 320	_____ [] NONE 321	_____ [] NONE 322	MONTH: _____ YEAR: 198 ____ [] IN PROCESS 323-326

TAKE BACK EXHIBIT 46

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

47. (Does/How many of) the door(s) have (a storm door/ storm doors) or insulating glass?

FOR EACH TYPE OF STORM DOOR OR DOOR WITH INSULATING GLASS, ASK:

48. How many of the (storm/insulated glass) doors were put in your home since September 1, 1982?

IF ONE OR MORE, ASK:

49. In what month and year (was it/were they) installed?

INTERVIEWER INSTRUCTIONS:

Q. 45-46 -- Count each pair of sliding glass doors as one door. Include doors that go to an unheated porch or garage. Do not include doors to a heated hallway in an apartment building, doors that are permanently sealed shut, or doors to an unheated attic or basement.

Q. 48 -- Count as "In Process" any work started but not yet completed. Do not count work done before this household moved in.

50. How many windows do you have in your home? Please include basement, attic, garage, and porch windows only if these areas are heated. (SEE INSTRUCTION BELOW.)

Q. 50 NUMBER OF WINDOWS	Q. 51 NUMBER WITH STORM WINDOWS OR INSULATING GLASS	Q. 52 NUMBER STORM WINDOWS PUT IN SINCE SEPT. 1, 1982	Q. 53
_____	_____	_____	MONTH: _____
[] NONE 327-328	[] NONE 329-330	[] NONE 331-332	YEAR: 198 ____
			[] IN PROCESS 333-336

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

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

52. How many of the storm windows or windows with insulating glass were put in your home since September 1, 1982?

IF ONE OR MORE ASK:

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

IF THE NUMBER OF WINDOWS IN Q. 50 IS GREATER THAN THE NUMBER OF WINDOWS WITH STORM WINDOWS OR INSULATING GLASS IN Q. 51, ASK: 337

54. You have mentioned that one or more of your windows does not have a storm window or insulating glass. For any of these windows without storm windows or insulating glass, do you use insulating drapes, plastic sheets or other protection?

1[] YES
0[] NO -- SKIP TO Q. 56

IF "YES," ASK:

55. Thinking now only of your windows without storm windows or insulating glass, about how many windows have insulating drapes, plastic sheets or other protection?

NUMBER WITH PROTECTION: [ ] 338-339

INTERVIEWER INSTRUCTIONS:

Q. 50 -- Each window that opens separately should be counted as one window. Also count windows that are fixed in place. Do not include windows (glass panels) in doors.

Q. 51 -- Windows made of double glass and other types of insulating glass count the same as storm windows.

Q. 52 -- Count as "In Process" any work started but not yet completed. Do not count work done before this household moved in.

IF ONE-FAMILY HOUSE OR MOBILE HOME, ASK Q. 56ff. IF 2 OR MORE UNITS IN BUILDING, SKIP TO Q. 72 ON PAGE 17.

56. Do you have roof or ceiling insulation in your home?

1[] YES
0[] NO -- SKIP TO Q. 62 340
6[] DON'T KNOW -- SKIP TO Q. 62

IF "YES," HAND RESPONDENT EXHIBIT 57 AND ASK:

57. About how much of the roof or ceiling area is insulated?

0[] VERY LITTLE (LESS THAN 5%)
1[] 1/4 (5 - 33%)
2[] 1/2 (34 - 66%) 341
3[] 3/4 (67 - 95%)
4[] ALL (96 - 100%)

TURN TO EXHIBIT 58

58. This exhibit shows different kinds of insulation. Please tell me whether or not you have each one in your roof or ceiling area.

a. BATT/BLANKET	1[] YES 0[] NO 6[] DON'T KNOW 342	_____ INCHES [] DON'T KNOW 343-344
b. LOOSE PARTICLES/ LOOSE FILL	1[] YES 0[] NO 6[] DON'T KNOW 345	_____ INCHES [] DON'T KNOW 346-347
c. FIRM FOAM/ FIRM PLASTIC	1[] YES 0[] NO 6[] DON'T KNOW 348	_____ INCHES [] DON'T KNOW 349-350
d. SPRAYED-IN FOAM	1[] YES 0[] NO 6[] DON'T KNOW 351	_____ INCHES [] DON'T KNOW 352-353
e. OTHER (SPECIFY): _____ _____	1[] YES 0[] NO 6[] DON'T KNOW 354	_____ INCHES [] DON'T KNOW 355-356

FOR EACH "YES," ASK:

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

TAKE BACK EXHIBIT 58

60. Was any of the roof or ceiling insulation added or installed in your home since September 1, 1982?

INTERVIEWER: COUNT AS "IN PROCESS" ANY WORK STARTED BUT NOT YET COMPLETED. DO NOT COUNT ANY CHANGES MADE BEFORE THIS HOUSEHOLD MOVED IN.

1 [] YES
0 [] NO -- SKIP TO Q. 62 357
2 [] IN PROCESS -- SKIP TO Q. 62

IF "YES," ASK:

61. In what month and year was the work completed?

MONTH: _____
YEAR: 198 358-361
[] IN PROCESS

CONTINUE IF ONE-FAMILY HOUSE OR MOBILE HOME. IF 2 OR MORE UNITS IN BUILDING, SKIP TO Q. 72

62. Do you have insulation in all, some, or none of the outside walls of your home?
1 [] ALL
2 [] SOME
0 [] NONE -- SKIP TO Q. 65
6 [] DON'T KNOW -- SKIP TO Q. 65
362

IF "ALL" OR "SOME," ASK:

63. Was any of the insulation in the outside walls added or installed in your home since September 1, 1982? (SEE INSTRUCTION AT BOTTOM OF FACING PAGE.)
1 [] YES
0 [] NO -- SKIP TO Q. 65
2 [] IN PROCESS -- SKIP TO Q. 65
363

IF "YES," ASK:

64. In what month and year was the work completed? (SEE INSTRUCTION AT BOTTOM OF FACING PAGE.)
MONTH: ____
YEAR: 198__
[] IN PROCESS
364-367

HAND RESPONDENT EXHIBIT 65

65. Please look at this list and as I read each item, tell me which, if any, you have in your home:

	Q. 65 HAVE SOME IN HOME	Q. 66 INSTALLED SINCE SEPTEMBER 1, 1982	Q. 67 MONTH/YEAR INSTALLED
a. Insulation in the basement or crawl space below the floor of your home	1 [] YES 0 [] NO 6 [] DON'T KNOW 368	1 [] YES 0 [] NO 2 [] IN PROCESS 369	MONTH: ____ YEAR: 198__ [] IN PROCESS 370-373
b. Insulation around heating and/or cooling ducts	1 [] YES 0 [] NO 6 [] DON'T KNOW 374	1 [] YES 0 [] NO 2 [] IN PROCESS 375	MONTH: ____ YEAR: 198__ [] IN PROCESS 376-379
c. Insulation around the hot water and/or cooling pipes	1 [] YES 0 [] NO 6 [] DON'T KNOW 411	1 [] YES 0 [] NO 2 [] IN PROCESS 412	MONTH: ____ YEAR: 198__ [] IN PROCESS 413-416
d. Insulation around the hot water heater	1 [] YES 0 [] NO 6 [] DON'T KNOW 417	1 [] YES 0 [] NO 2 [] IN PROCESS 418	MONTH: ____ YEAR: 198__ [] IN PROCESS 419-422
e. Caulking	1 [] YES 0 [] NO 6 [] DON'T KNOW 423	1 [] YES 0 [] NO 2 [] IN PROCESS 424	MONTH: ____ YEAR: 198__ [] IN PROCESS 425-428
f. Weather stripping around any windows or doors to the outside	1 [] YES 0 [] NO 6 [] DON'T KNOW 429	1 [] YES 0 [] NO 2 [] IN PROCESS 430	MONTH: ____ YEAR: 198__ [] IN PROCESS 431-434

407-408: 04

FOR EACH "YES" ON Q. 65, ASK:

66. Was any of the -- (SPECIFIED ITEM) -- added or installed since September 1, 1982? (SEE INSTRUCTION AT BOTTOM OF FACING PAGE.)

IF "YES, ADDED OR INSTALLED SINCE SEPTEMBER 1, 1982", ASK:

67. In what month and year was the work completed? (SEE INSTRUCTION AT BOTTOM OF FACING PAGE.)

CONTINUE IF ONE-FAMILY HOUSE OR MOBILE HOME. IF 2 OR MORE UNITS IN BUILDING, SKIP TO Q. 72

TURN TO EXHIBIT 68

68. Please look at this list and as I read each item tell me which, if any, have been added or installed in your home since September 1, 1982. (SEE INSTRUCTION AT BOTTOM OF PAGE.)

	Q. 68	Q. 69
a. An automatic set-back or clock thermostat	1 [] YES 0 [] NO 2 [] IN PROCESS 435	MONTH: ____ YEAR: 198__ [] IN PROCESS 436-439
b. Flame retention head burner for furnace (fuel oil)	1 [] YES 0 [] NO 2 [] IN PROCESS 440	MONTH: ____ YEAR: 198__ [] IN PROCESS 441-444
c. Automatic flue door (vent damper)	1 [] YES 0 [] NO 2 [] IN PROCESS 445	MONTH: ____ YEAR: 198__ [] IN PROCESS 446-449
d. Electrical or mechanical furnace ignition system (spark ignition)	1 [] YES 0 [] NO 2 [] IN PROCESS 450	MONTH: ____ YEAR: 198__ [] IN PROCESS 451-454
e. Closeable shutters, insulating drapes, reflective film	1 [] YES 0 [] NO 2 [] IN PROCESS 455	MONTH: ____ YEAR: 198__ [] IN PROCESS 456-459
f. Plastic sheets (over windows or other openings)	1 [] YES 0 [] NO 2 [] IN PROCESS 460	MONTH: ____ YEAR: 198__ [] IN PROCESS 461-464
g. Heat pump	1 [] YES 0 [] NO 2 [] IN PROCESS 465	MONTH: ____ YEAR: 198__ [] IN PROCESS 466-469
h. Wood-burning stove	1 [] YES 0 [] NO 2 [] IN PROCESS 470	MONTH: ____ YEAR: 198__ [] IN PROCESS 471-474

FOR EACH "YES," ASK:

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

TAKE BACK EXHIBIT 68

INTERVIEWER INSTRUCTIONS:

Was item added or installed since September 1, 1982 (Q. 63,66,68) -- Mark "Yes," "No," or "In Process" for each item. Count as "In Process" any work started but not yet completed. Do not count any changes made before this household moved in.

Month/year installed (Q. 64,67,69)-- If household has done item more than once, write down the most recent date.

507-508:05

CONTINUE IF ONE-FAMILY HOUSE OR MOBILE HOME. IF 2 OR MORE UNITS IN BUILDING, SKIP TO Q. 72

511-513

70. Do you have a heated swimming pool, hot tub or jacuzzi? (DO NOT COUNT A CHILDREN'S WADING POOL AS A SWIMMING POOL.)

HEATED SWIMMING POOL 1 [] YES 0 [] NO
HOT TUB 1 [] YES 0 [] NO
JACUZZI 1 [] YES 0 [] NO

IF "YES" ON HEATED SWIMMING POOL, HOT TUB OR JACUZZI, ASK:

HAND RESPONDENT EXHIBIT 71

71. What fuel is used to heat the water? (IF MORE THAN ONE FUEL IS USED, CHECK FUEL USED MOST.)

01 [] GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
02 [] LPG GAS (BOTTLED OR TANK GAS)
03 [] FUEL OIL
04 [] KEROSENE OR COAL OIL
05 [] ELECTRICITY
06 [] COAL OR COKE
07 [] WOOD
08 [] SOLAR COLLECTORS
21 [] OTHER (SPECIFY): _____
96 [] DON'T KNOW

514-515

TAKE BACK EXHIBIT 71

ASK EVERYONE

HAND RESPONDENT EXHIBIT 72

72. This next question is a summary for calendar year 1983 only -- I have asked about some of this in the last few questions, but just to sum up, did your household pay for the costs of any of these items that were added or installed in your home between January and December 1983? (MARK "YES" IF HOUSEHOLD PAID FOR EITHER MATERIALS OR LABOR.)

ITEMS ADDED OR INSTALLED

STORM WINDOWS/DOORS
INSULATION IN OUTSIDE WALLS
ROOF OR CEILING INSULATION
INSULATION IN BASEMENT OR CRAWL SPACE BELOW FLOOR
INSULATION AROUND WATER HEATER OR AROUND HEATING/COOLING DUCTS OR WATER PIPES
CAULKING
WEATHERSTRIPPING
AUTOMATIC SET-BACK OR CLOCK THERMOSTAT
FLAME RETENTION HEAD BURNER
AUTOMATIC FLUE DOOR
ELECTRICAL OR MECHANICAL FURNACE IGNITION SYSTEM
PLASTIC SHEETS OVER WINDOWS OR OTHER OPENINGS

1 [] YES
0 [] NO (NONE PAID FOR, OR NONE INSTALLED) -- TAKE BACK EXHIBIT 72 AND SKIP TO Q. 76

516

IF "YES" ON Q. 72, TAKE BACK EXHIBIT 72 AND ASK:

73. Did you or another member of your household take the energy tax credit on the 1983 Federal income tax form for the money spent on these improvements?

1 [] YES -- ASK Q. 74
0 [] NO -- SKIP TO Q. 75

517

518

IF "YES" ON Q. 73, ASK:

74. Would you have made these improvements if the energy tax credit had not been available?

1 [] YES, ALL THE SAME IMPROVEMENTS
2 [] YES, BUT ONLY SOME OF THE IMPROVEMENTS
0 [] NO
6 [] DON'T KNOW

SKIP TO Q. 76

IF "NO" ON Q. 73, HAND RESPONDENT EXHIBIT 75 AND ASK:

75. Here are some reasons why people have not taken energy tax credits. For each one, please tell me whether or not it applies to your household.

(MARK "APPLIES" OR "DOESN'T APPLY" FOR EACH REASON.)

a. Didn't know about the energy tax credit . .	1 [] APPLIES	0 [] DOESN'T APPLY
b. Didn't file the long form for federal income taxes.	1 [] APPLIES	0 [] DOESN'T APPLY
c. Already took the maximum credit for this residence in a previous year	1 [] APPLIES	0 [] DOESN'T APPLY
d. Too much trouble to file the energy tax credit forms	1 [] APPLIES	0 [] DOESN'T APPLY
e. Ineligible because house was built after April 1977	1 [] APPLIES	0 [] DOESN'T APPLY
f. Other answer (Specify): _____	1 [] APPLIES	0 [] DOESN'T APPLY

519-524

TAKE BACK EXHIBIT 75

ASK EVERYONE

Now some questions about cars.

76. How many members of your household can drive a car?

NUMBER OF DRIVERS: [ ] *525-526*

[ ] NONE

HAND RESPONDENT EXHIBIT 77

77. Do you or other members of your household own or have the regular use of any cars, trucks, vans, or similar vehicles? (DO NOT INCLUDE MOTORCYCLES OR MOPEDS. SEE INSTRUCTION BELOW.)

1 [ ] YES *527*

0 [ ] NO -- TAKE BACK EXHIBIT 77 AND SKIP TO Q. 86

IF "YES," ASK:

78. How many do you have?

NUMBER OF VEHICLES: [ ] *528-529*

ASK ABOUT EACH VEHICLE.

607-608:06

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

	VEHICLE NUMBER 1	2	3	4
STATION WAGON	*01* [ ] *530-531*	*01* [ ] *553-554*	*01* [ ] *611-612*	*01* [ ] *634-635*
AUTOMOBILE	*02* [ ]	*02* [ ]	*02* [ ]	*02* [ ]
JEEP OR SIMILAR VEHICLE	*03* [ ]	*03* [ ]	*03* [ ]	*03* [ ]
PASSENGER VAN OR MINIBUS	*04* [ ]	*04* [ ]	*04* [ ]	*04* [ ]
CARGO VAN	*05* [ ]	*05* [ ]	*05* [ ]	*05* [ ]
PICKUP TRUCK	*06* [ ]	*06* [ ]	*06* [ ]	*06* [ ]
OTHER TRUCK	*07* [ ]	*07* [ ]	*07* [ ]	*07* [ ]
MOTOR HOME	*08* [ ]	*08* [ ]	*08* [ ]	*08* [ ]
OTHER (SPECIFY):	*21* [ ]	*21* [ ]	*21* [ ]	*21* [ ]

TAKE BACK EXHIBIT 77

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

	1	2	3	4
MAKE	*532-533*	*555-556*	*613-614*	*636-637*
	534-535	*557-558*	*615-616*	*638-639*
MODEL YEAR	19__ *536-537*	19__ *559-560*	19__ *617-618*	19__ *640-641*

81. What is the model name (of each one)? (SEE INSTRUCTION BELOW.) MODEL NAME

INTERVIEWER INSTRUCTIONS:

Q. 77 -- "Regular use" means keeping the vehicle at home.

Q. 79 -- If household has more than four vehicles, mark answers for the four vehicles used most.

Q. 81 -- 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 of truck, probe for size (1/2 ton, 3/4 ton, etc.)

CONTINUE IF ONE OR MORE VEHICLES ON Q. 78 OTHERWISE SKIP TO Q. 86

ASK Q's. 82-85 FIRST ABOUT FIRST VEHICLE, THEN SECOND, THIRD, AND FOURTH.

USE COLUMNS FOR VEHICLE NUMBERS CORRESPONDING TO THOSE ON PRECEDING PAGE

These next questions are about your (first/second/third/fourth) vehicle.

	VEHICLE NUMBER 1	2	3	4
	538	*561*	*619*	*642*
82. Did you get this vehicle within the past 12 months or did you have it before that? WITHIN PAST 12 MONTHS ASK Q. 83	*1* [ ]	*1* [ ]	*1* [ ]	*1* [ ]
HAD IT MORE THAN 12 MONTHS SKIP TO Q. 85	*2* [ ]	*2* [ ]	*2* [ ]	*2* [ ]
	539-542	*562-565*	*620-623*	*643-646*
IF "WITHIN PAST 12 MONTHS," ASK: 83. In what month and year did you get it? MONTH				
YEAR	198__	198__	198__	198__
84. How many miles has it been driven since you have had it, just approximately?	*543-547*	*566-570*	*624-628*	*647-651*
MILES				
DON'T KNOW	[ ]	[ ]	[ ]	[ ]
IF "HAD IT MORE THAN 12 MONTHS" ON Q. 82, ASK:	*548-552*	*571-575*	*629-633*	*652-656*
85. How many miles was it driven during the past 12 months, just approximately? MILES				
DON'T KNOW	[ ]	[ ]	[ ]	[ ]

These next questions are about household appliances.

86. Do you have a refrigerator in your home that you use regularly or occasionally?

1 [] YES
0 [] NO -- SKIP TO Q. 89 — 657

IF "YES," ASK:

87. Do you have one refrigerator or more than one that is presently in use? (How many altogether?)

1 [] ONE
2 [] TWO
3 [] THREE OR MORE — 658

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

HAND RESPONDENT EXHIBIT 38

88. Which of these best describes your refrigerator? (MARK ONE)

- Freezer section (or ice cube section) must be defrosted periodically
- Freezer section defrosts automatically after frost builds up (catch pan must be emptied)
- Full frost-free (frost does not build up)
- No working freezer section

	REFRIGERATOR #1	REFRIGERATOR #2
	659	660
1 []		
2 []		
3 []		
4 []		

TAKE BACK EXHIBIT 88

INTERVIEWER INSTRUCTIONS:

Q. 88 -- If respondent has more than two refrigerators, ask about two used most.

HAND RESPONDENT EXHIBIT 89

89. Thinking of all the different kinds of cooking done here, including cooking in the oven, on a range, and with small appliances, which fuel is used most?

01 [] GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD
02 [] LPG GAS (BOTTLED OR TANK GAS)
03 [] FUEL OIL
04 [] KEROSENE OR COAL OIL
05 [] ELECTRICITY — 661-662
06 [] COAL OR COKE
07 [] WOOD
21 [] OTHER (SPECIFY): _____
00 [] NO COOKING DONE -- SKIP TO Q. 91

TURN TO EXHIBIT 90

90. Which of these are used for cooking here in your (house/apartment)?

ELECTRIC STOVE-TOP OR ELECTRIC BURNERS	1 [] YES 0 [] NO	663
GAS STOVE-TOP OR GAS BURNERS	1 [] YES 0 [] NO	664
MICROWAVE OVEN	1 [] YES 0 [] NO	665
ELECTRIC OVEN OTHER THAN MICROWAVE	1 [] YES 0 [] NO	666
GAS OVEN	1 [] YES 0 [] NO	667
OUTDOOR GAS GRILL (USING GAS FROM UNDERGROUND PIPES)	1 [] YES 0 [] NO	668
OUTDOOR GAS GRILL (USING LPG-BOTTLED OR TANK GAS)	1 [] YES 0 [] NO	669

TURN TO EXHIBIT 91

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

AUTOMATIC CLOTHES WASHER	1 [] YES	0 [] NO	670
WRINGER WASHING MACHINE (ELECTRIC)	1 [] YES	0 [] NO	671
ELECTRIC DISHWASHER	1 [] YES	0 [] NO	672
ELECTRIC CLOTHES DRYER	1 [] YES	0 [] NO	673
GAS CLOTHES DRYER	1 [] YES	0 [] NO	674
OUTDOOR GAS LIGHT	1 [] YES	0 [] NO	675
ELECTRIC DEHUMIDIFIER	1 [] YES	0 [] NO	676
ELECTRIC HUMIDIFIER	1 [] YES	0 [] NO	677
EVAPORATIVE COOLER (SWAMP COOLER)	1 [] YES	0 [] NO	678
"WHOLE HOUSE" COOLING FAN (IN ATTIC OR ENTRANCE TO ATTIC)	1 [] YES	0 [] NO	679
WINDOW OR CEILING FAN	1 [] YES	0 [] NO	680
ELECTRIC BLANKET	1 [] YES	0 [] NO	708-709:07 711
WATER BED WITH HEATER	1 [] YES	0 [] NO	712
FROST FREE FREEZER (SEPARATE APPLIANCE FROM REFRIGERATOR)	1 [] YES	0 [] NO	713
MANUAL DEFROST FREEZER (SEPARATE APPLIANCE FROM REFRIGERATOR)	1 [] YES	0 [] NO	714
BLACK AND WHITE TELEVISION SET	[] YES	0 [] NO	NUMBER: 715
COLOR TELEVISION SET	[] YES	0 [] NO	NUMBER: 716

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

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

IF "YES," FOR COLOR TV SET, ASK:

93. How many color television sets do you use here in your home?

94. Do you have any other kinds of equipment that use a lot of energy that we have not mentioned? 1 [] YES 0 [] NO 717

IF "YES" ON Q. 94, ASK:

95. Please describe the equipment and how you use it.

TAKE BACK EXHIBIT 91 718-720

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

PERSON NUMBER	WHO IS RESPON-DENT?	RELATIONSHIP TO HOUSEHOLDER	SEX		AGE	Q. 101 - EMPLOYMENT (AGE 14+)			
			FEMALE	MALE		FULL TIME	PART TIME	NOT EMPLOYED	
1		HOUSEHOLDER	1[]	2[]		1[]	2[]	0[]	721-727
2			1[]	2[]		1[]	2[]	0[]	731-737
3			1[]	2[]		1[]	2[]	0[]	741-747
4			1[]	2[]		1[]	2[]	0[]	751-757
5			1[]	2[]		1[]	2[]	0[]	761-767
6			1[]	2[]		1[]	2[]	0[]	771-777
7			1[]	2[]		1[]	2[]	0[]	807-808:08 811-817
8			1[]	2[]		1[]	2[]	0[]	821-827
9			1[]	2[]		1[]	2[]	0[]	831-837
10			1[]	2[]		1[]	2[]	0[]	841-847
11			1[]	2[]		1[]	2[]	0[]	851-857
12			1[]	2[]		1[]	2[]	0[]	861-867

I have listed (READ RELATIONSHIPS FROM Q. 96 ABOVE). Have I missed . . . . .

97. Any babies or small children? [] YES (ADD TO LISTING) [] NO

98. Any lodgers, boarders, or persons in your employ who live here? [] YES (ADD TO LISTING) [] NO

99. Anyone who usually lives here but is away traveling or in the hospital? (SEE INSTRUCTION BELOW.) [] YES (ADD TO LISTING) [] NO

100. Anyone else staying here who does not have a regular residence elsewhere? [] YES (ADD TO LISTING) [] NO

FOR EACH PERSON AGED 14 YEARS OR OLDER, ASK:

101. Is he/she employed full-time (30 hours or more per week), part-time, or not employed?

FOR OFFICE USE ONLY: 868-869

INTERVIEWER INSTRUCTIONS:

In general, the householder is the person (or one of the persons) in whose name the home is owned or rented.

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

Q. 96 -- Be sure to list relationships, not names. Include members of a second family that share the housing unit. Check box to indicate which household member is the respondent.

Q. 99 -- Persons who are normally members of the household but who are now living away from home (e.g., college students or members of the Armed Forces) should not be listed.

102. Does another family share your home with you?

1 [] YES (SEE INSTRUCTION BELOW.)
0 [] NO

870

INTERVIEWER: MARK ANSWER. ASK, IF NECESSARY.

HOUSEHOLDER'S MARITAL STATUS

103. Which of the following best describes (HOUSEHOLDER): now married, widowed, divorced or separated, or never married?

1 [] NOW MARRIED
2 [] WIDOWED
3 [] DIVORCED OR SEPARATED
4 [] NEVER MARRIED

871

HAND RESPONDENT EXHIBIT 104

104. Which of the groups on this exhibit best describes (HOUSEHOLDER)?

1 [] WHITE
2 [] BLACK OR NEGRO
3 [] AMERICAN INDIAN, ALASKAN NATIVE
4 [] ASIAN, PACIFIC ISLANDER
5 [] OTHER (SPECIFY): _____

872

TAKE BACK EXHIBIT 104

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

1 [] YES
0 [] NO

873

INTERVIEWER INSTRUCTIONS:

Q. 102 -- If answer is "YES," check whether the additional family (or unrelated individual) has a separate room or apartment that is defined by our rules as separate living quarters. Separate living quarters are those in which the occupants (1) live and eat separately from other persons in building, and (2) have direct access from outside the building or through a common hall.

Separate living quarters should be listed separately on your housing unit address list for this location. See sampling instructions as to whether an additional interview should be completed.

If the second family's space does meet the rules for separate living quarters, that space should be excluded from the information obtained in this interview. Go back over this interview to make corrections if necessary.

If the second family's space does not meet the definition of separate living quarters, be sure that the members of the second family are included in the list of household members in Q. 96

I have just a few questions for background statistical purposes.

106. What is the highest grade (or year) (HOUSEHOLDER) attended in school?

00 [] NEVER ATTENDED SCHOOL SKIP TO Q. 108
01 [] FIRST
02 [] SECOND
03 [] THIRD
04 [] FOURTH
05 [] FIFTH
06 [] SIXTH
07 [] SEVENTH
08 [] EIGHTH
09 [] NINTH
10 [] TENTH
11 [] ELEVENTH
12 [] TWELFTH

874-875

COLLEGE (ACADEMIC YEARS)

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

107. Did (HOUSEHOLDER) finish that grade (or year)?

1 [] YES
0 [] NO

876

HAND RESPONDENT EXHIBIT 108

907-908:09

108. In the past 12 months, did you or any member of your family living here receive any income or benefits from: (INTERVIEWER: READ AND MARK "YES" OR "NO" FOR EACH ITEM.)

a. Wages or salaries.	1 [] YES	0 [] NO	911
b. Self-employment from business or farm. . . .	1 [] YES	0 [] NO	912
c. Aid to Families with Dependent Children (AFDC).	1 [] YES	0 [] NO	913
d. Supplemental Security Income (SSI)	1 [] YES	0 [] NO	914
e. General Assistance or other public assistance	1 [] YES	0 [] NO	915
f. Food Stamps.	1 [] YES	0 [] NO	916
g. Social Security or Railroad Retirement . . .	1 [] YES	0 [] NO	917
h. Unemployment compensation	1 [] YES	0 [] NO	918

TURN TO EXHIBIT 109

109. Now let's look at this list of income groups. Please tell me which group letter best describes the total combined income in the last 12 months of all members of your family living here, from all sources -- wages, dividends, Social Security, and so forth -- before taxes and deductions. (Family includes all related persons living in this household.)

CIRCLE LETTER FOR INCOME GROUP *919-920*

01	A	LESS THAN $ 3,000	*10*	I	$11,000 - $12,499	*19*	Q $27,500 - $29,999
02	B	$ 3,000 - $ 3,999	*12*	J	$12,500 - $13,999	*20*	R $30,000 - $32,499
03	C	$ 4,000 - $ 4,999	*13*	K	$14,000 - $14,999	*21*	S $32,500 - $34,999
04	D	$ 5,000 - $ 5,999	*14*	L	$15,000 - $17,499	*22*	T $35,000 - $39,999
05	E	$ 6,000 - $ 7,499	*15*	M	$17,500 - $19,999	*23*	U $40,000 - $49,999
07	F	$ 7,500 - $ 8,999	*16*	N	$20,000 - $22,499	*24*	V $50,000 - $74,999
08	G	$ 9,000 - $ 9,999	*17*	O	$22,500 - $24,999	*25*	W $75,000 OR OVER
09	H	$10,000 - $10,999	*18*	P	$25,000 - $27,499		
						96	[] DON'T KNOW
						97	[] REFUSED

TAKE BACK EXHIBIT 109

IF ANSWER TO Q. 109 IS GROUP P THROUGH W (INCOME $25,000 OR OVER), SKIP TO Q. 115 ON PAGE 28.

IF ANSWER TO Q. 109 IS GROUP A THROUGH O (INCOME UNDER $25,000), "DON'T KNOW", OR "REFUSED", CONTINUE WITH Q. 110.

HAND RESPONDENT EXHIBIT 110

110. Between October 1, 1983, and September 30, 1984, did your household receive any of the following services free or at reduced cost from the federal, state, or local government? (INTERVIEWER: READ AND MARK "YES" OR "NO" FOR EACH ITEM.)

a.	Insulation in the attic, outside wall, or basement/crawl space below the floor of the house	*1* [] YES	*0* [] NO	*921*
b.	Insulation around the hot water heater	*1* [] YES	*0* [] NO	*922*
c.	Repair of broken windows or doors to keep out the cold or hot weather	*1* [] YES	*0* [] NO	*923*
d.	Weather stripping or caulking around any windows or doors to the outside	*1* [] YES	*0* [] NO	*924*
e.	Storm doors or windows added	*1* [] YES	*0* [] NO	*925*
f.	Repair of broken furnace	*1* [] YES	*0* [] NO	*926*
g.	Furnace tuneup and/or modifications	*1* [] YES	*0* [] NO	*927*
h.	Other home energy-saving devices (Specify): _____	*1* [] YES	*0* [] NO	*928*

TURN TO EXHIBIT 111

111. The government has a home energy assistance program that helps pay heating and cooling costs. This assistance can be received directly by the household or it can be paid directly to the electric or gas company or fuel dealer.

Between October 1, 1983 and September 30, 1984 did your household receive government energy assistance (either directly or through the utility company or fuel dealer) for any of the following:

111a.	Help in paying home heating costs	*1* [] YES	*0* [] NO	*929*
111b.	Help in paying home cooling costs	*1* [] YES	*0* [] NO	*930*
111c.	Help in paying other home energy costs	*1* [] YES	*0* [] NO	*931*

IF "YES" ON Q. 111c, ASK:

112. Please describe this other assistance.

IF "YES" ON Q. 111a (ASSISTANCE TO HELP PAY HOME HEATING COSTS), TURN TO EXHIBIT 113 AND ASK:

113. Were heating assistance payments made in the form of checks, coupons, or vouchers sent to this household or were the payments sent directly to the utility company or fuel dealer? (MARK "YES" OR "NO" FOR EACH ITEM.)

a.	Check to household	*1* [] YES	*0* [] NO	*932*
b.	Coupon/voucher to household	*1* [] YES	*0* [] NO	*933*
c.	Assistance sent directly to electric or gas company, or fuel dealer	*1* [] YES	*0* [] NO	*934*

114. Altogether, how much government energy assistance to help pay heating costs has been provided directly to this household and/or provided on behalf of this household to a utility company or fuel dealer, between October 1, 1983 and September 30, 1984? (PROBE FOR BEST ESTIMATE).

NUMBER OF DOLLARS $_____.00

935-938

TAKE BACK EXHIBITS

ASK EVERYONE

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

1 [] OWN (BUYING) 939
2 [] RENT -- SKIP TO Q. 117
3 [] OCCUPIED WITHOUT PAYMENT OF RENT -- SKIP TO Q. 120

IF "OWN (BUYING)," ASK: 940

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

1 [] YES, CONDOMINIUM
2 [] YES, COOPERATIVE
0 [] NO
-- SKIP TO Q. 120

IF "RENT," ASK:

117. What is the monthly rent of your (house/apartment)?

$_____.00 PER MONTH 941-944

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

118. Is this residence in a public housing project -- that is, is it owned by a local housing authority?

1 [] YES -- SKIP TO Q. 120
0 [] NO 945
6 [] DON'T KNOW

IF "NO" OR "DON'T KNOW," ASK:

119. Are you paying lower rent because the federal, state, or local government is paying part of the cost?

1 [] YES
0 [] NO 946
6 [] DON'T KNOW

HAND RESPONDENT EXHIBIT 120

120. We may have covered some of these points before, but just to be sure, please look at this exhibit and tell me whether these fuels are used for these purposes in your household.

	USED	NOT USED	PAID BY HOUSEHOLD	INCLUDED IN RENT	OTHER (SPECIFY)	
ELECTRICITY						
a. FOR HOT WATER	1 []	0 []	1 []	2 []	5 [] _____	947-
b. FOR HEATING YOUR HOME	1 []	0 []	1 []	2 []	5 [] _____	949-
c. FOR AIR-CONDITIONING (CENTRAL OR WINDOW/WALL UNITS)	1 []	0 []	1 []	2 []	5 [] _____	951-
d. FOR COOKING	1 []	0 []	1 []	2 []	5 [] _____	953-
e. FOR LIGHTING AND OTHER APPLIANCES	1 []	0 []	1 []	2 []	5 [] _____	955-
GAS FROM UNDERGROUND PIPES SERVING YOUR NEIGHBORHOOD						
f. FOR HOT WATER	1 []	0 []	1 []	2 []	5 [] _____	957-
g. FOR HEATING YOUR HOME	1 []	0 []	1 []	2 []	5 [] _____	959-
h. FOR CENTRAL AIR-CONDITIONING	1 []	0 []	1 []	2 []	5 [] _____	961-
i. FOR COOKING INSIDE HOME	1 []	0 []	1 []	2 []	5 [] _____	963-
j. FOR COOKING ON OUTDOOR GRILL	1 []	0 []	1 []	2 []	5 [] _____	965-
k. FOR OTHER APPLIANCES (INCLUDE OUTSIDE GAS LIGHT HERE)	1 []	0 []	1 []	2 []	5 [] _____	967-
LPG GAS (BOTTLED OR TANK GAS)						
l. FOR HOT WATER	1 []	0 []	1 []	2 []	5 [] _____	969-
m. FOR HEATING YOUR HOME	1 []	0 []	1 []	2 []	5 [] _____	971-
n. FOR CENTRAL AIR-CONDITIONING	1 []	0 []	1 []	2 []	5 [] _____	973-
o. FOR COOKING INSIDE HOME	1 []	0 []	1 []	2 []	5 [] _____	975-
p. FOR COOKING ON OUTDOOR GRILL	1 []	0 []	1 []	2 []	5 [] _____	977-
q. FOR OTHER APPLIANCES (INCLUDE OUTSIDE GAS LIGHT HERE)	1 []	0 []	1 []	2 []	5 [] _____	979-
						1007-1008:10
FUEL OIL						
r. FOR HOT WATER	1 []	0 []	1 []	2 []	5 [] _____	1011-
s. FOR HEATING YOUR HOME	1 []	0 []	1 []	2 []	5 [] _____	1013-
t. FOR COOKING AND OTHER USES	1 []	0 []	1 []	2 []	5 [] _____	1015-
KEROSENE						
u. FOR HOT WATER	1 []	0 []	1 []	2 []	5 [] _____	1017-
v. FOR HEATING YOUR HOME	1 []	0 []	1 []	2 []	5 [] _____	1019-
w. FOR COOKING AND OTHER USES	1 []	0 []	1 []	2 []	5 [] _____	1021-

FOR EACH USE OF EACH FUEL, ASK:

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

TAKE BACK EXHIBIT 120

IF GAS FROM UNDERGROUND PIPES IS NOT USED, ASK Q. 122. OTHERWISE, SKIP TO INSTRUCTION AT TOP OF NEXT PAGE.

122. Is gas from underground pipes available in this neighborhood?

1 [] YES
0 [] NO 1023
6 [] DON'T KNOW

INTERVIEWER: IF USE OF ANY FUEL IS "PAID BY HOUSEHOLD" IN QUESTIONS ON PRECEDING PAGE, CONTINUE BELOW. OTHERWISE, SKIP TO INSTRUCTION FOR Q. 147 ON PAGE 37.

HAND RESPONDENT EXHIBIT 123 — 1024

123. A budget plan is a plan under which the utility company or fuel dealer and household agree that the household will pay the same amount for fuel each month for a number of months. Is your household on a budget plan for any of the fuels used by your household?

1 [] YES
0 [] NO -- TURN TO EXHIBIT 125/126 AND ASK Q. 125

IF "YES" ON Q. 123 ASK:

124. Which fuel bills are paid on a budget plan?

[] ELECTRICITY — 1025
[] GAS FROM UNDERGROUND PIPES — 1026
[] LPG GAS (BOTTLED OR TANK GAS) — 1027
[] FUEL OIL — 1028
[] KEROSENE — 1029

TURN TO EXHIBIT 125/126

125. Do any of your household fuel bills include costs of fuel used for purposes other than for your own living quarters, such as farm buildings or machinery, the house or apartment of another household, a business or office, or anything else?

1 [] YES — 1030
0 [] NO -- TAKE BACK EXHIBIT 125/126 -- SKIP TO INSTRUCTIONS FOR Q. 133 ON PAGE 32.

IF "YES," ASK:

126. For which of the purposes listed on the exhibit are costs of fuel included in your household fuel bills? (INTERVIEWER: MARK ALL THAT APPLY.)

[] FARM BUILDINGS OR MACHINERY — 1031
[] THE HOUSE OR APARTMENT OF ANOTHER HOUSEHOLD — 1032
[] A BUSINESS OR OFFICE — 1033
[] OTHER PURPOSES (SPECIFY): _____ — 1034

IF "YES" ON Q. 125, CONTINUE BELOW

127. Which fuel bills include costs of fuel used for purposes other than your own living quarters? (MARK AS MANY AS APPLY.)

[] ELECTRICITY — 1035
[] GAS FROM UNDERGROUND PIPES — 1036
[] LPG GAS (BOTTLED OR TANK GAS) — 1037
[] FUEL OIL — 1038
[] KEROSENE — 1039

TURN TO EXHIBIT 128/132

IF "ELECTRICITY" ON Q. 127, ASK:

128. Over the period of a year, about how much of your household's electricity bill is used for non-household uses such as farm buildings or machinery, the house or apartment of another household, a business or office, or anything else?

0 [] VERY LITTLE (LESS THAN 5%)
1 [] 1/4 (5 - 33%)
2 [] 1/2 (34 - 66%) — 1040
3 [] 3/4 (67 - 95%)

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

129. Over the period of a year, about how much of your household's gas bill is used for non-household uses such as farm buildings or machinery, the house or apartment of another household, a business or office, or anything else?

0 [] VERY LITTLE (LESS THAN 5%)
1 [] 1/4 (5 - 33%)
2 [] 1/2 (34 - 66%) — 1041
3 [] 3/4 (67 - 95%)

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

130. Over the period of a year, about how much of your household's LPG bill is used for non-household uses such as farm buildings or machinery, the house or apartment of another household, a business or office, or anything else?

0 [] VERY LITTLE (LESS THAN 5%)
1 [] 1/4 (5 - 33%)
2 [] 1/2 (34 - 66%) — 1042
3 [] 3/4 (67 - 95%)

IF "FUEL OIL" ON Q. 127, ASK:

131. Over the period of a year, about how much of your household's fuel oil bill is used for non-household uses such as farm buildings or machinery, the house or apartment of another household, a business or office, or anything else?

0 [] VERY LITTLE (LESS THAN 5%)
1 [] 1/4 (5 - 33%)
2 [] 1/2 (34 - 66%) — 1043
3 [] 3/4 (67 - 95%)

IF "KEROSENE" ON Q. 127, ASK:

132. Over the period of a year, about how much of your household's kerosene bill is used for non-household uses, such as farm buildings or machinery, the house or apartment of another household, a business or office, or anything else?

0 [] VERY LITTLE (LESS THAN 5%)
1 [] 1/4 (5 - 33%)
2 [] 1/2 (34 - 66%) — 1044
3 [] 3/4 (67 - 95%)

TAKE BACK EXHIBIT 128/132

IF HOUSEHOLD USES AND PAYS FOR LPG GAS (SEE QUESTIONS 120-121 PARTS l-q), ASK Q. 133ff., OTHERWISE, SKIP TO INSTRUCTION FOR Q. 136.

133. About how many deliveries of LPG does your household usually get in a year?

NUMBER OF DELIVERIES: [ ] 1045-1046

94 [ ] CASH AND CARRY, PICK UP AT STORE
95 [ ] LIVED HERE LESS THAN 1 YEAR

134. Did you buy LPG for this (house/apartment) in the past 12 months from one company or from more than one company? 1047

1 [ ] ONE COMPANY
2 [ ] MORE THAN ONE COMPANY

IF "MORE THAN ONE COMPANY," ASK:

135. How many different companies? 1048

2 [ ] TWO
3 [ ] THREE
4 [ ] FOUR OR MORE

IF HOUSEHOLD USES AND PAYS FOR FUEL OIL (SEE QUESTIONS 120-121 PARTS r-t), ASK Q. 136, OTHERWISE, SKIP TO INSTRUCTION FOR Q. 140.

136. About how many deliveries of fuel oil does your household usually get in a year?

NUMBER OF DELIVERIES: [ ] 1049-1050

94 [ ] CASH AND CARRY, PICK UP AT STORE
95 [ ] LIVED HERE LESS THAN 1 YEAR

137. Did you buy fuel oil for this (house/apartment) in the past 12 months from one company or from more than one company? 1051

1 [ ] ONE COMPANY
2 [ ] MORE THAN ONE COMPANY

IF "MORE THAN ONE," ASK:

138. How many different companies? 1052

2 [ ] TWO
3 [ ] THREE
4 [ ] FOUR OR MORE

HAND RESPONDENT EXHIBIT 139

139. About how much fuel oil does your household use in a year -- which of these groups would it be, just approximately? PROBE FOR BEST ESTIMATE. 1053

1 [ ] LESS THAN 100 GALLONS PER YEAR
2 [ ] 100-499 GALLONS PER YEAR
3 [ ] 500-999 GALLONS PER YEAR
4 [ ] 1000 OR MORE GALLONS PER YEAR

TAKE BACK EXHIBIT 139

IF HOUSEHOLD USES AND PAYS FOR KEROSENE (SEE QUESTIONS 120-121 PARTS u-w), ASK Q. 140ff. OTHERWISE, SKIP TO INSTRUCTION FOR Q. 144.

140. About how many deliveries of kerosene does your household usually get in a year?

NUMBER OF DELIVERIES: [ ] 1054-1055

94 [ ] CASH AND CARRY, PICK UP AT STORE
95 [ ] LIVED HERE LESS THAN 1 YEAR

141. Did you buy kerosene for this (house/apartment) in the past 12 months from one company or store, or from more than one company or store? 1056

1 [ ] ONE COMPANY OR STORE
2 [ ] MORE THAN ONE COMPANY OR STORE

IF "MORE THAN ONE," ASK:

142. How many different companies or stores? 1057

2 [ ] TWO
3 [ ] THREE
4 [ ] FOUR OR MORE

HAND RESPONDENT EXHIBIT 143

143. About how much kerosene does your household use in a year -- which of these groups would it be, just approximately? PROBE FOR BEST ESTIMATE. 1058

1 [ ] LESS THAN 25 GALLONS PER YEAR
2 [ ] 25- 49 GALLONS PER YEAR
3 [ ] 50- 99 GALLONS PER YEAR
4 [ ] 100-499 GALLONS PER YEAR
5 [ ] 500-999 GALLONS PER YEAR
6 [ ] 1000 OR MORE GALLONS PER YEAR

TAKE BACK EXHIBIT 143

CONTINUE IF ANY ELECTRIC, GAS (FROM UNDERGROUND PIPES OR LPG), FUEL OIL, OR KEROSENE BILLS ARE PAID BY HOUSEHOLD. OTHERWISE, SKIP TO INSTRUCTION FOR Q. 147.

144. In addition to the types of fuel you use, we are interested in the quantities used and in the amount that people pay for electricity, gas, fuel oil, or kerosene in different parts of the United States.

I have a form that would authorize the companies that supply your household to provide that information to Response Analysis Corporation. The authorization applies to the period from January 1984 through April 1988.

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, 1984, FILL IN ADDITIONAL COMPANY NAMES ON OTHER SIDE OF FORM. PLEASE PRINT.

1 [] AUTHORIZATION FORM SIGNED

0 [] AUTHORIZATION FORM NOT SIGNED -- INTERVIEWER, EXPLAIN BELOW: 1059

_____

_____

IF AUTHORIZATION FORM IS SIGNED, ASK Q. 145ff, OTHERWISE, SKIP TO INSTRUCTION FOR Q. 147

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

1[] SAME NAME -- SKIP TO Q. 146

2[] ANOTHER NAME 1060

IF BILL IS IN ANOTHER NAME, ASK:

145a. What is that name and address:

BILLING NAME: _____

STREET ADDRESS: _____

CITY AND STATE: _____

ZIP CODE: _____

146. Would it be possible for you to give me your customer number at your electric/gas company? This number is on your bills from the company.

ELECTRIC COMPANY -- CUSTOMER NUMBER: _____ 1061

[] NOT AVAILABLE/REFUSED

GAS (FROM UNDERGROUND PIPES) -- CUSTOMER NUMBER: _____ 1062

[] NOT AVAILABLE/REFUSED

Remove Form Carefully At Perforation

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, 1984 through April 30, 1988 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 _____

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: _____

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:_____

IF HOUSEHOLD HAS ONE OR MORE FUELS "INCLUDED IN RENT" OR "OTHER" (SEE Q. 121), ASK Q. 147
OTHERWISE, SKIP TO Q. 148.

147. We may be needing some additional information about fuels used in this building (house). May I have the name of the person or company to whom you pay rent or who is responsible for paying the fuel bills for this building (house)?

1063

NAME: _____

TELEPHONE NUMBER: (AREA CODE: _____) _____

STREET ADDRESS: _____

CITY OR TOWN/STATE/ZIP CODE: _____

ASK EVERYONE

148. For interview verification purposes, may I have your name, phone number, and mailing address please?

RESPONDENT'S NAME: _____

TELEPHONE NUMBER: (AREA CODE: _____) _____

STREET ADDRESS: _____

CITY OR TOWN/STATE/ZIP CODE: _____

IF APARTMENT, MOBILE HOME/TRAILER COMPLEX AND THE NAME OF THE COMPLEX IS NOT INCLUDED IN THE ADDRESS ABOVE, ASK:

149. Does this (building/development/complex/park) have a name?
[] YES
[] NO

IF "YES," ASK:

150. What is the name?

NAME: _____

151. INTERVIEWER: MARK TYPE OF HOUSING UNIT

1 [] MOBILE HOME OR TRAILER -- SKIP TO Q. 155 *1064-1065*

2 [] ONE-FAMILY HOUSE

IF ONE-FAMILY HOUSE, MARK STYLE BASED ON GENERAL APPEARANCE FROM OUTSIDE

1[] ONE STORY
2[] TWO STORY
3[] THREE STORY
4[] SPLIT-LEVEL
5[] OTHER (SPECIFY): _____

3 [] HOUSE OR BUILDING WITH 2 TO 4 UNITS -- SKIP TO Q. 158

4 [] APARTMENT BUILDING OR OTHER STRUCTURE WITH 5 OR MORE UNITS -- SKIP TO Q. 161

CONTINUE IF ONE-FAMILY HOUSE

152. Do you have a garage attached to your living space or under your house?

1 [] YES
0 [] NO -- SKIP TO Q. 155 *1066*

IF "YES" ON Q. 152, ASK:

153. Can the garage be heated during the winter months?

1 [] YES
0 [] NO -- SKIP TO Q. 155 *1067*

IF "YES" ON Q. 153, HAND RESPONDENT EXHIBIT 154 AND ASK:

154. How frequently is the garage heated during the winter months?

4 [] ALWAYS
3 [] USUALLY
2 [] OCCASIONALLY *1068*
1 [] ALMOST NEVER
0 [] NEVER
5 [] OTHER (SPECIFY): _____

TAKE BACK EXHIBIT 154

CONTINUE WITH Q. 155 ON NEXT PAGE

IF ONE-FAMILY HOUSE OR MOBILE HOME, ASK Q. 155.

HAND RESPONDENT EXHIBIT 155

155. Does your home have a basement, an enclosed crawl space, a crawl space open to the outside, a concrete slab, or a combination of these?

1 [] BASEMENT *1069*
2 [] CRAWL SPACE -- ENCLOSED
3 [] CRAWL SPACE -- OPEN TO THE OUTSIDE
4 [] CONCRETE SLAB -- SKIP TO Q. 161
5 [] COMBINATION (MARK ALL THAT APPLY.)
[] BASEMENT *1070*
[] CRAWL SPACE -- ENCLOSED *1071*
[] CRAWL SPACE -- OPEN TO THE OUTSIDE *1072*
[] CONCRETE SLAB *1073*

TAKE BACK EXHIBIT 155

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

156. About how much of the basement or crawl space would you say is warm enough to sit, work or play in during the winter months -- all, part, or none?

1 [] ALL -- SKIP TO Q. 161
2 [] PART *1074*
0 [] NONE

IF "PART," OR "NONE," HAND RESPONDENT EXHIBIT 157 AND ASK:

157. 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%) *1075*
3 [] 3/4 (67 - 95%)
4 [] ALL (96 - 100%)
6 [] DON'T KNOW

TAKE BACK EXHIBIT 157 -- SKIP TO Q. 161

IF THIS IS A BUILDING WITH 2 TO 4 HOUSING UNITS, ASK Q. 158. OTHERWISE, SKIP TO Q. 161

158. Does this building have a basement?
1 [] YES
0 [] NO -- SKIP TO Q. 161
1076

IF "YES," ASK:

159. Is any part of the basement for the exclusive or primary use of your household?
1 [] YES
0 [] NO -- SKIP TO Q. 161
1077

IF "YES," ASK:

160. Thinking of the basement space used by your household -- about how much of that space is warm enough to sit, work or play in during the winter months -- all, part, or none?
1 [] ALL
2 [] PART
0 [] NONE
1078

ASK EVERYONE

1107-1108:11

HAND RESPONDENT EXHIBIT 161

161. Since September 1982, have any of the kinds of things listed on this exhibit been done to your home -- that is, anything that has either increased or decreased the total number of square feet of space, or that has changed the number of square feet of heated space?
1 [] YES
0 [] NO -- SKIP TO Q. 166
1111

IF "YES" TO Q. 161 ASK:

162. Did the total number of square feet of space increase, decrease, or remain the same?
1 [] INCREASED
2 [] DECREASED
3 [] REMAINED THE SAME
1112

163. Did the amount of heated space increase, decrease, or remain the same?
1 [] INCREASED
2 [] DECREASED
3 [] REMAINED THE SAME
1113

164. Please give me a description of the work that was done.
1114-1115

165. In what month and year was the work completed?
MONTH: _____
YEAR: 198 _____
[] IN PROCESS

TAKE BACK EXHIBIT 161

1116-1119

166. So far, we've been talking about things in your household that affect your energy use. What we need also is a measure of your year-round living space.

With your permission, I would like to measure your home. I can do it from the inside or the outside. With your home, I think it would be most accurate to do it on the (inside/outside).

INTERVIEWER INSTRUCTIONS:

In general, measure all parts of the housing unit enclosed from the weather.

Basements or cellars

Include basements or cellars in one-family houses.

Include basement space in buildings with 2 to 4 housing units, if it is for the exclusive or primary use of household for this interview. See Q. 159.

Exclude basements and cellars in buildings with 5 or more units.

Exclude crawl spaces.

Attics

Include attics if heated or finished.

Exclude attics if unheated and also unfinished.

Garages, sheds, or barns

Include garages if attached to house and enclosed from the weather.

Exclude garages, sheds, or barns if not attached to house or if open to the weather.

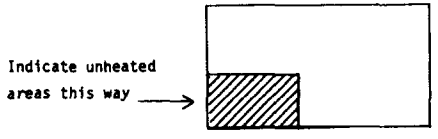
Porches

Include porches if enclosed from the weather.

Exclude porches if open to the weather.

Buildings with 2 or more housing units: Measure only the space used by household for this interview (do not measure the entire building).

Unheated areas: Within the housing unit that you measure, indicate unheated area(s) in the diagrams with lines. Give dimensions of unheated area(s).



USE BACKS OF MEASUREMENT PAGES FOR ADDITIONAL SPACE AS NEEDED, FOR SKETCHES AND MEASUREMENTS.

RECORD MEASUREMENTS ON DIAGRAM TO NEAREST FOOT

START HERE

if this household has a basement or cellar (see instruction on facing page for basements and cellars)

BASEMENT MEASUREMENTS [] FULL BASEMENT [] HALF BASEMENT

RECTANGULAR SHAPE	DRAW DIAGRAM, IF OTHER THAN RECTANGULAR
[ ] [ ]	

INTERVIEWER: HAVE YOU MARKED WITH LINES AND GIVEN DIMENSIONS OF UNHEATED AREAS IN DIAGRAM ABOVE?

START HERE

if this household does not have a basement or cellar

FIRST STORY MEASUREMENTS [] FULL STORY [] HALF STORY

RECTANGULAR SHAPE	DRAW DIAGRAM, IF OTHER THAN RECTANGULAR
[ ] [ ]	

INTERVIEWER: HAVE YOU MARKED WITH LINES AND GIVEN DIMENSIONS OF UNHEATED AREAS IN DIAGRAM ABOVE?

CONTINUE ON PAGE 45 FOR SECOND AND THIRD STORIES

FOR OFFICE USE ONLY

	Fir Codes			Unit A			Unit B			Unit C				Unit D		# of Units
	1120	21	22	23	24-25	26-27	28	29-30	31-32	33	34-35	36-37	38	39-40	41-42	43
B																
	1144	45	46	47	48-49	50-51	52	53-54	55-56	57	58-59	60-61	62	63-64	65-66	67
1																

IF NO SECOND OR THIRD STORY TO MEASURE, GO TO Q. 167

RECORD MEASUREMENTS ON DIAGRAM TO NEAREST FOOT

SECOND STORY MEASUREMENTS [] FULL STORY [] HALF STORY

RECTANGULAR SHAPE	DRAW DIAGRAM, IF OTHER THAN RECTANGULAR
[ ] [ ]	

INTERVIEWER: HAVE YOU MARKED WITH LINES AND GIVEN DIMENSIONS OF UNHEATED AREAS IN DIAGRAM ABOVE?

THIRD STORY MEASUREMENTS [] FULL STORY [] HALF STORY

RECTANGULAR SHAPE	DRAW DIAGRAM, IF OTHER THAN RECTANGULAR
[ ] [ ]	

INTERVIEWER: HAVE YOU MARKED WITH LINES AND GIVEN DIMENSIONS OF UNHEATED AREAS IN DIAGRAM ABOVE?

FOR OFFICE USE ONLY 1207-1208:12

	Flr Codes			Unit A			Unit B			Unit C				Unit D		# of Units
	1168	69	70	71	72-73	74-75	76	77-78	79-80	1211	12-13	14-15	16	17-18	19-20	21
2																
	1222	23	24	25	26-27	28-29	30	31-32	33-34	35	36-37	38-39	40	41-42	43-44	45
3																

Heated	Unheated	DK Htd/Unhtd
1246-1250	1251-1255	1256-1260

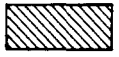
167. One part of my task is to mark on my diagram any parts of your home that are not heated during the heating season.

TELL RESPONDENT WHAT PARTS OF HOME, IF ANY, YOU HAVE MARKED AS NOT HEATED DURING HEATING SEASON. THEN ASK:

Is that correct -- have I missed any unheated areas?

REVISE SKETCHES AS NECESSARY; THEN MARK APPROPRIATE BOX AT RIGHT.

0 [] NO UNHEATED AREAS 1260

1 [] ALL UNHEATED AREAS HAVE BEEN MARKED WITH LINES 

2 [] ENTIRE UNIT IS UNHEATED (NO HEATING EQUIPMENT)

168. INTERVIEWER: MARK BOX TO INDICATE HOW MEASUREMENTS WERE OBTAINED FOR (HOUSE/APARTMENT).

01 [] MEASURED INSIDE

02 [] MEASURED OUTSIDE 1261-1262

03 [] COMBINATION OF INSIDE AND OUTSIDE MEASUREMENTS

04 [] RESPONDENT GAVE TOTAL SQUARE FEET FROM PLAN

05 [] RESPONDENT'S ESTIMATES

21 [] OTHER MEASUREMENT PROCEDURE (SPECIFY): _____

_____

TURN PAGE TO COMPLETE INTERVIEW

FOR OFFICE USE ONLY

FL	LQT

1263-1265

INTERVIEWER REPORT ON MEASUREMENT OF YEAR-ROUND LIVING SPACE

169. WHAT PROBLEMS, IF ANY, DID YOU HAVE IN MEASURING THIS (HOUSE/APARTMENT)?

170. WHAT EFFECT, IF ANY, DID THESE PROBLEMS HAVE ON THE ACCURACY OF YOUR MEASUREMENTS?

1266-1268

TIME INTERVIEW COMPLETED: _____ AM PM LENGTH OF INTERVIEW: _____ MINUTES

INTERVIEWER'S SIGNATURE _____ DATE: _____

INTERVIEWER'S I.D. #: _____ *1269-1274*

* U.S. GOVERNMENT PRINTING OFFICE: 1984-421-993:10040

U.S. DEPARTMENT OF ENERGY
1984–1985 RESIDENTIAL ENERGY CONSUMPTION SURVEY
Conducted by
RESPONSE ANALYSIS CORPORATION
P.O. Box 158, Princeton, New Jersey 08542
Mandatory Under Public Law 93-275 and 94-386

OMB NO. 1905-0092
(Expires 8/31/86)
EIA-457E F4457-06

HOUSEHOLD:

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

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

CUSTOMER
ACCOUNT #:

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, 1984 TO THE PRESENT

Time Period	Consumption Period: Beginning Date	Consumption Period: Ending Date	Number of kWh Used	(Circle One) kWh are: A - Actual E - Estimates R - Read by Customer	Total Dollar* Amount
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)

U.S. DEPARTMENT OF ENERGY
1984–1985 RESIDENTIAL ENERGY CONSUMPTION SURVEY
Conducted by
RESPONSE ANALYSIS CORPORATION
P.O. Box 158, Princeton, New Jersey 08542
Mandatory Under Public Law 93-275 and 94-386

OMB NO. 1905-0092
(Expires 8/31/86)
EIA-457F F4457-07

HOUSEHOLD:

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

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

CUSTOMER
ACCOUNT #:

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, 1984 TO THE PRESENT

Time Period	Consumption Period: Beginning Date	Consumption Period: Ending Date	Quantity Used*	(Circle One) Quantities are: A - Actual E - Estimated R - Read by Customer	Total Dollar** Amount
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)

OMB NO. 1905-0092
(Expires 8/31/86)
EIA-457G F4457-09

U.S. DEPARTMENT OF ENERGY

1984–1985 RESIDENTIAL ENERGY CONSUMPTION SURVEY

Conducted by
RESPONSE ANALYSIS CORPORATION
Research Park, Route 206
P. O. Box 158
Princeton, New Jersey 08542

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-AC01-82EI-11557. 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.

HOUSEHOLD:

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

FUEL OIL AND KEROSENE USAGE

Please provide information on all deliveries to this household from January 1, 1984 to the present date. If information is available only for a shorter period, just report deliveries for that shorter period.

Del. #	Column 1 Date of Delivery	Column 2 Fuel Sold Was: Fuel oil #1 (1) Fuel oil #2 (2) Kerosene (K) Other (0) (Circle one)	Column 3 Gallons Delivered	Column 4 Price per Gallon	Column 5 Total Dollar Amount*	Column 6 Was tank completely filled: Yes No Don't Know (DK) (Circle one)
1		1 2 K 0				YES NO DK
2		1 2 K 0				YES NO DK
3		1 2 K 0				YES NO DK
4		1 2 K 0				YES NO DK
5		1 2 K 0				YES NO DK
6		1 2 K 0				YES NO DK
7		1 2 K 0				YES NO DK
8		1 2 K 0				YES NO DK
9		1 2 K 0				YES NO DK
10		1 2 K 0				YES NO DK
11		1 2 K 0				YES NO DK
12		1 2 K 0				YES NO DK
13		1 2 K 0				YES NO DK
14		1 2 K 0				YES NO DK
15		1 2 K 0				YES NO DK
16		1 2 K 0				YES NO DK
17		1 2 K 0				YES NO DK
18		1 2 K 0				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.

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, 1984?

[] 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)

FUEL OIL AND KEROSENE

Del. #	Column 1 Date of Delivery	Column 2 Fuel Sold Was: Fuel oil #1 (1) Fuel oil #2 (2) Kerosene (K) Other (0) (Circle one)	Column 3 Gallons Delivered	Column 4 Price per Gallon	Column 5 Total Dollar Amount*	Column 6 Was tank completely filled? Yes No Don't Know (DK) (Circle one)
19		1 2 K 0				YES NO DK
20		1 2 K 0				YES NO DK
21		1 2 K 0				YES NO DK
22		1 2 K 0				YES NO DK
23		1 2 K 0				YES NO DK
24		1 2 K 0				YES NO DK
25		1 2 K 0				YES NO DK
26		1 2 K 0				YES NO DK
27		1 2 K 0				YES NO DK
28		1 2 K 0				YES NO DK
29		1 2 K 0				YES NO DK
30		1 2 K 0				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.

GPO 914-038

OMB NO. 1905-0092
(Expires 8/31/86)
EIA-457H F4457-08

U.S. DEPARTMENT OF ENERGY

1984-1985 RESIDENTIAL ENERGY CONSUMPTION SURVEY

Conducted by
RESPONSE ANALYSIS CORPORATION
Research Park, Route 206
P. O. Box 158
Princeton, New Jersey 08542

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-AC01-82EI-11557. 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.

HOUSEHOLD:

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

LIQUEFIED PETROLEUM GAS USAGE

Please provide information on all deliveries to this household from January 1, 1984 to the present date. If information is available only for a shorter period, just report deliveries for that shorter period.

Del. #	Column 1 Date of Delivery	Column 2 Fuel Sold Was: Propane P Butane B Other O (Circle one)	Column 3 Quantity Delivered	Column 4 Price per Unit	Column 5 Total Dollar Amount*	Column 6 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.

GPO 914-037

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, 1984?

[] 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)

LIQUEFIED PETROLEUM GAS (LPG)

Del. #	Column 1 Date of Delivery	Column 2 Fuel Sold Was: Propane P Butane B Other O (Circle one)	Column 3 Quantity Delivered	Column 4 Price per Unit	Column 5 Total Dollar Amount*	Column 6 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

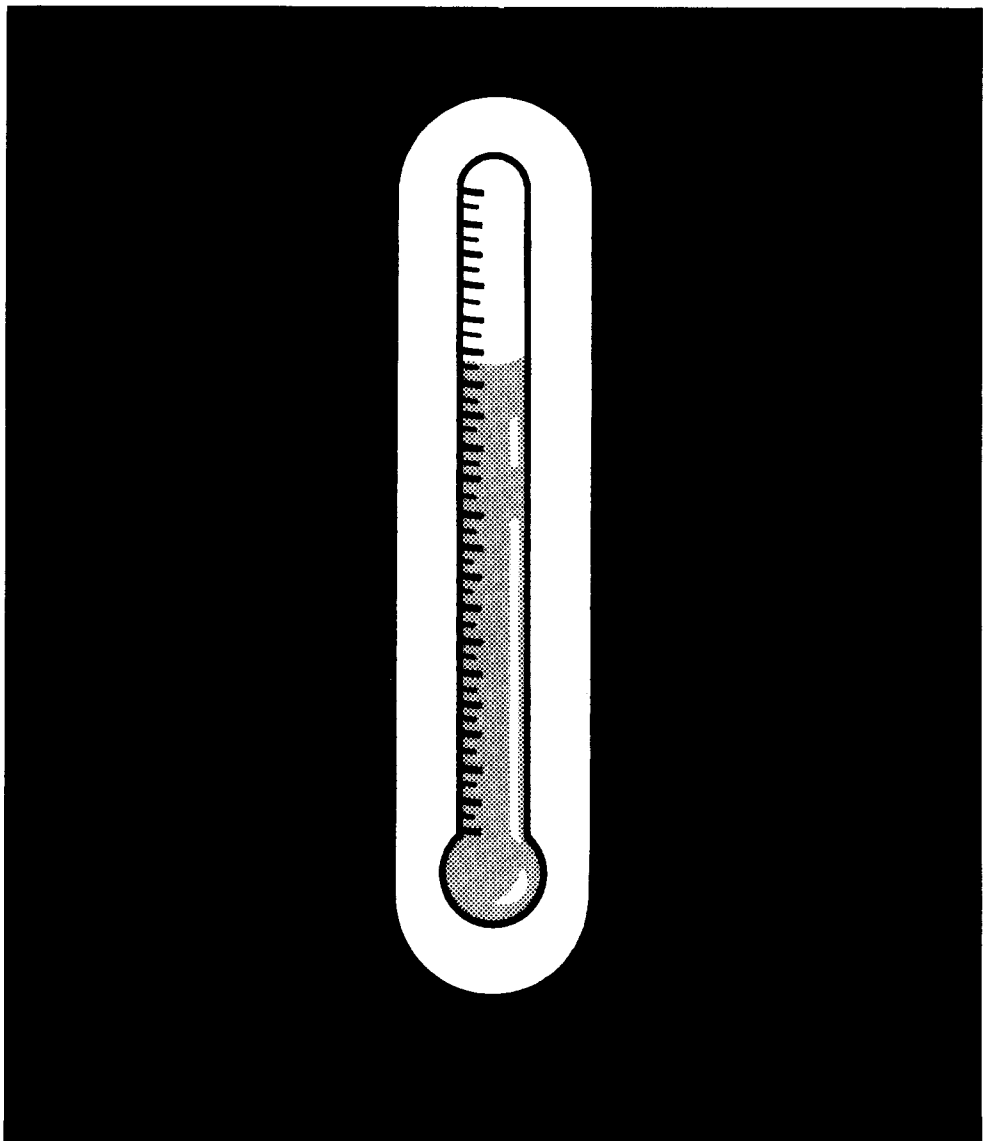
*Please include state and local sales taxes, where applicable. Exclude merchandise, repairs, or service charges.

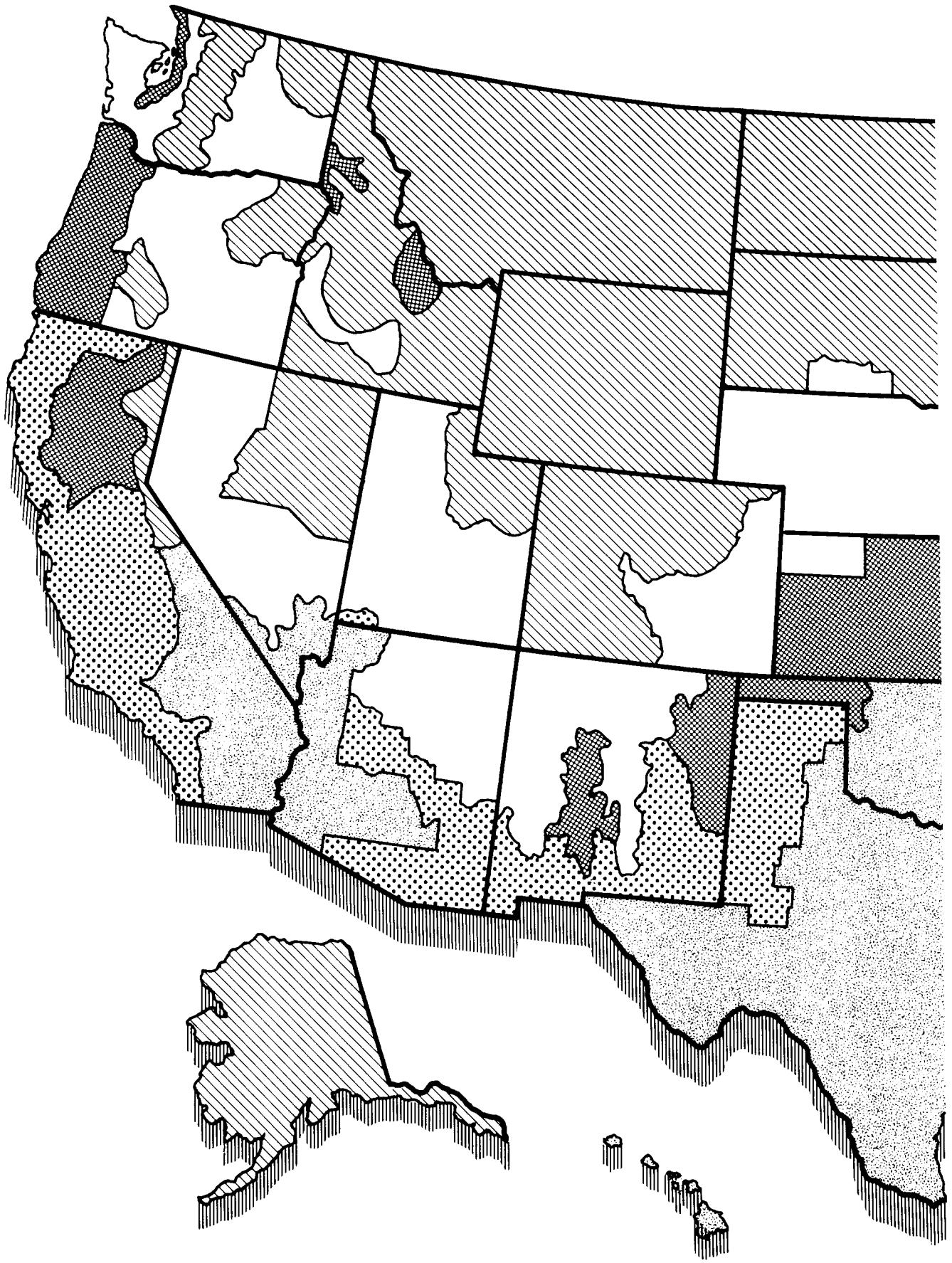
PLEASE USE THIS SPACE FOR ANY ADDITIONAL NOTES THAT YOU WISH TO MAKE TO EXPLAIN ENTRIES ON THIS FORM.

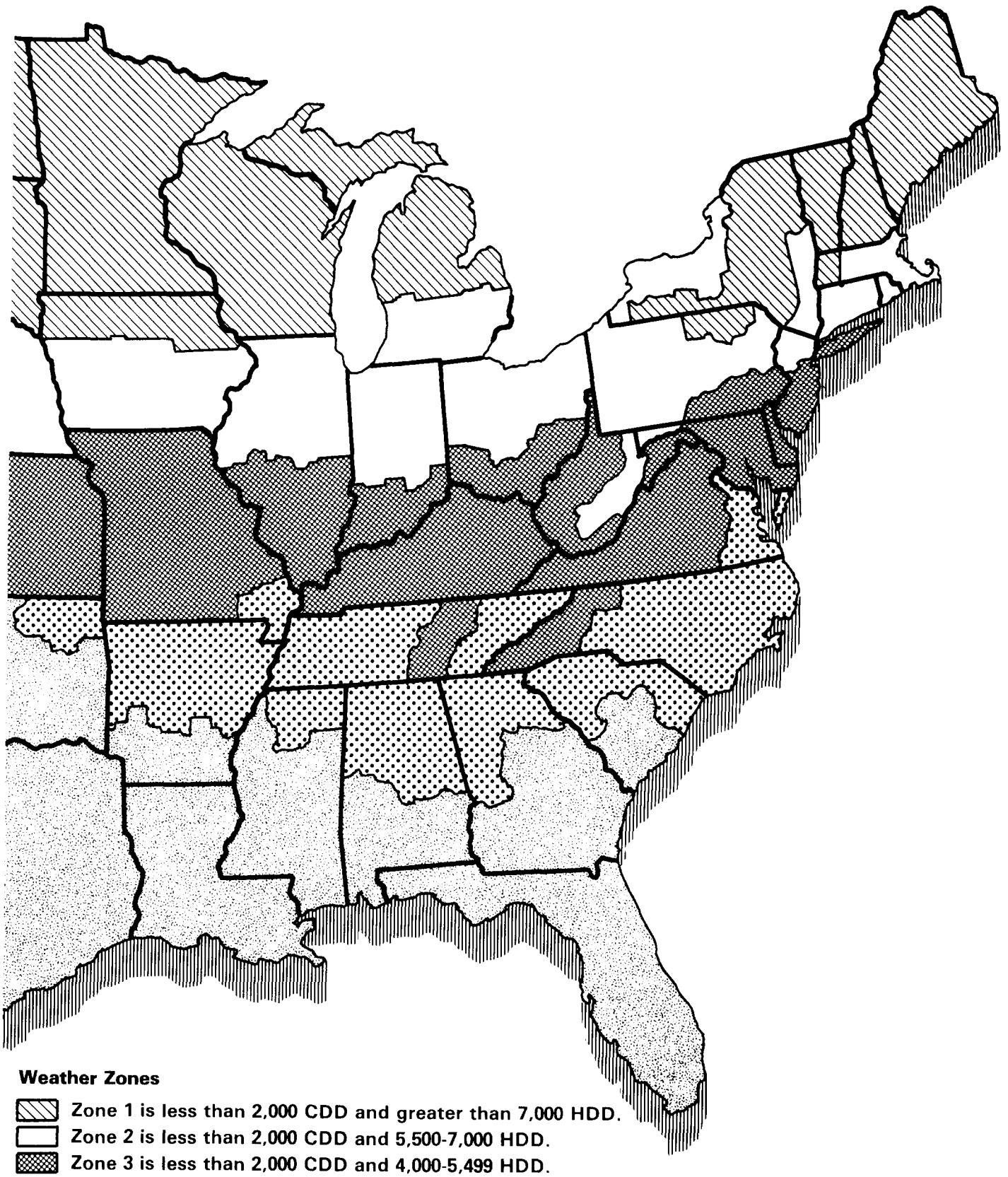
PLEASE CHECK THAT THE QUESTIONS ON PAGE THREE HAVE BEEN ANSWERED.

Appendix E

U.S. Weather Zone Map





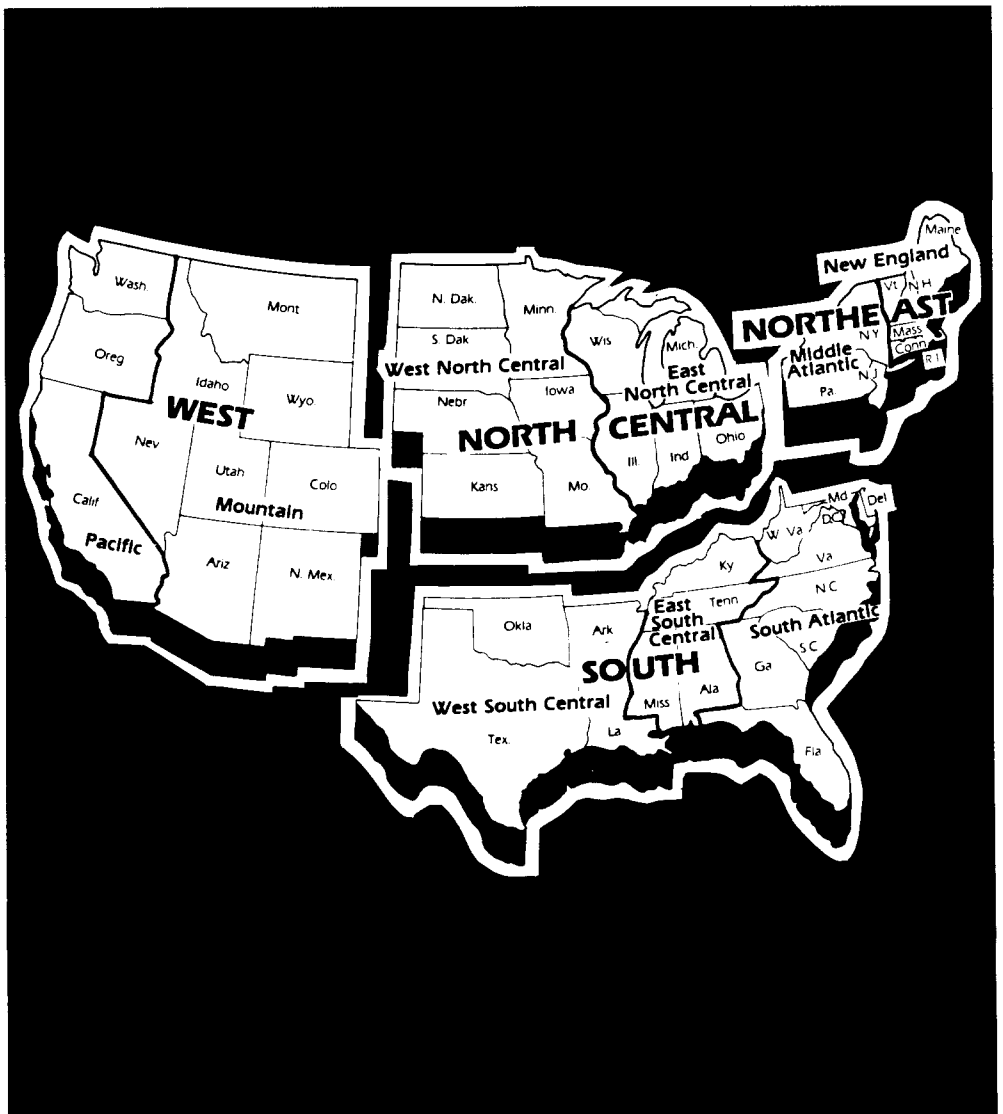


Weather Zones

- 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.

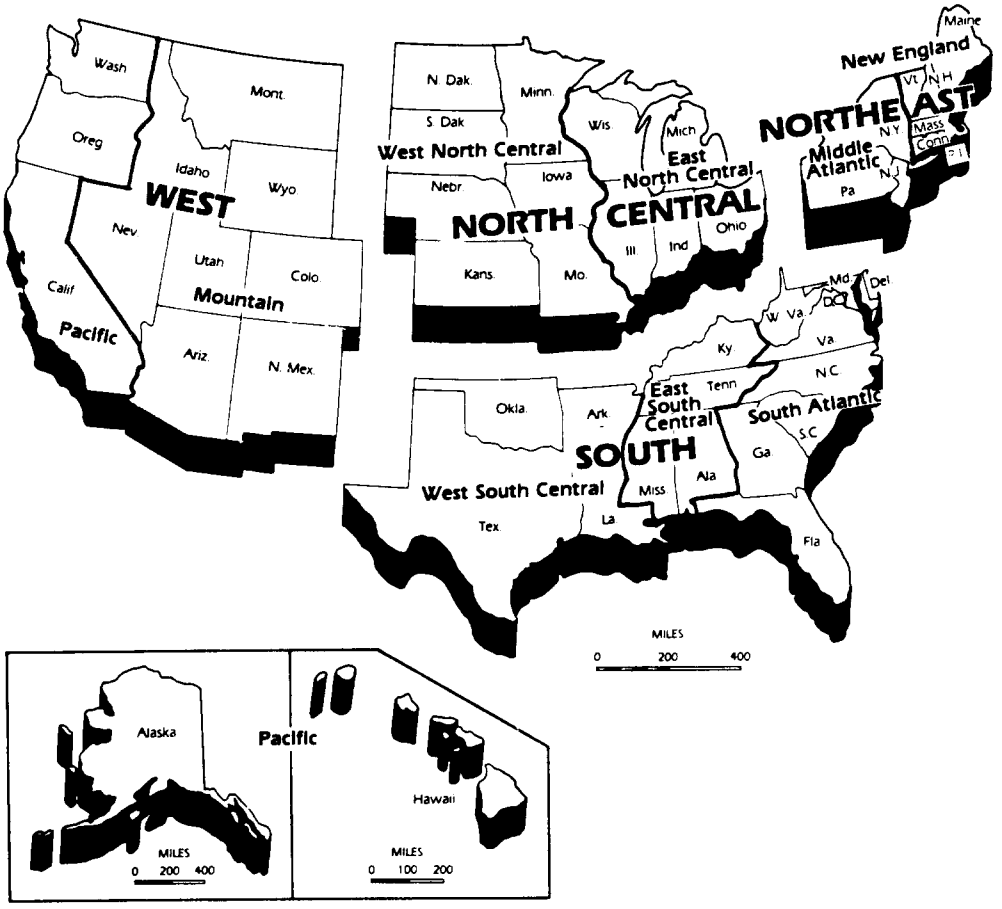
Appendix F

U.S. Census Regions and Divisions



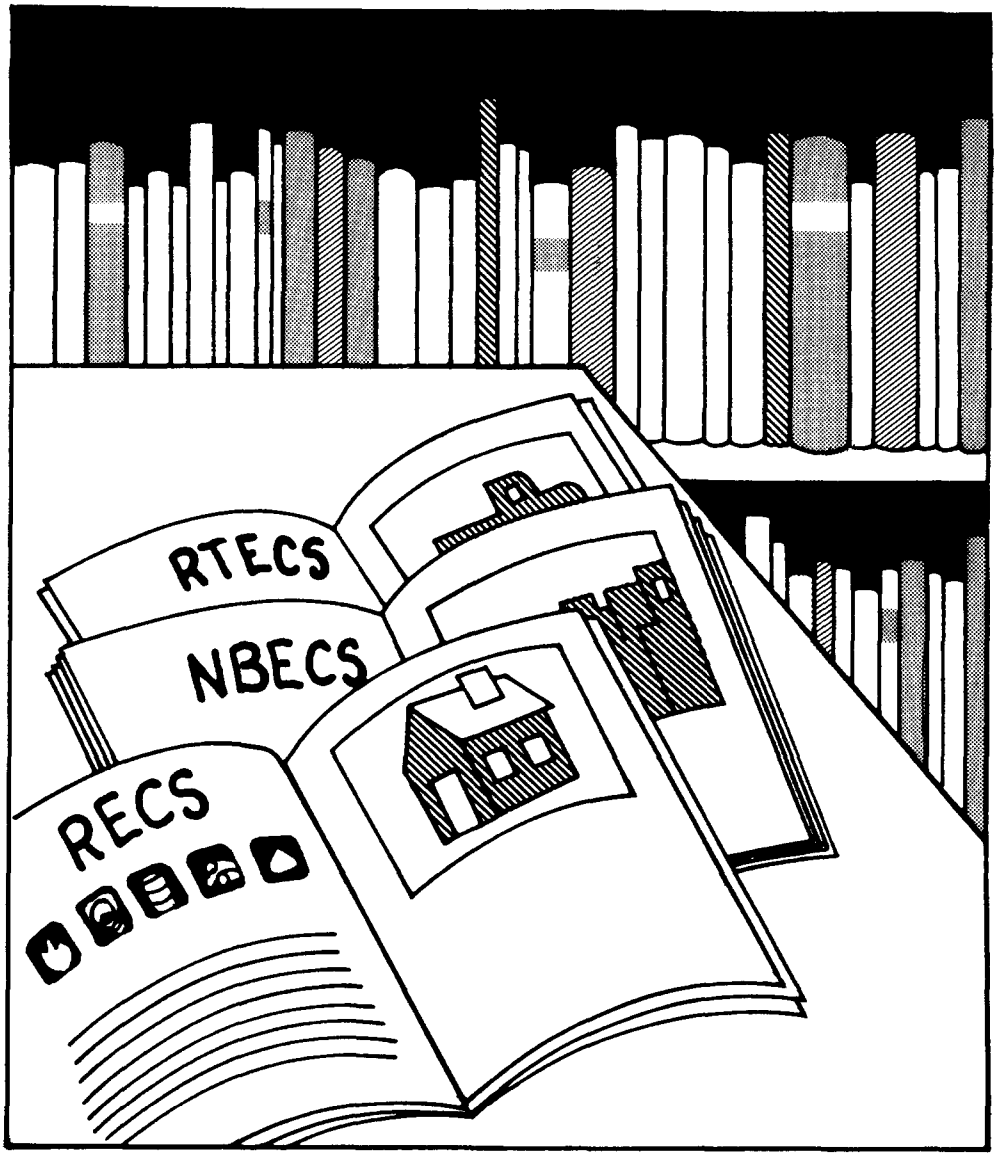
Appendix F

U.S. Census Regions and Divisions



Appendix G

Related Publications on Energy Consumption



Appendix G

Related Publications on Energy Consumption

Residential Sector

Housing Characteristics

Residential Energy Consumption Survey: Housing Characteristics 1984; October 1986, DOE/EIA-0314(84), GPO Stock No. 061-003-00499-7, $12.00.

Residential Energy Consumption Survey: Housing Characteristics, 1982; August 1984, DOE/EIA-0314(82), GPO Stock No. 061-003-00393-1, $7.00.

Residential Energy Consumption Survey: Housing Characteristics, 1981; August 1983, DOE/EIA-0314(81), GPO Stock No. 061-003-00330-3, $6.50.

Residential Energy Consumption Survey: Housing Characteristics, 1980; June 1982, DOE/EIA-0314, GPO Stock No. 061-003-00256-1, $11.00.

Residential Energy Consumption Survey: Characteristics of the Housing Stock and Households, 1978; February 1980, DOE/EIA-0207/2, GPO Stock No. 061-003-00093-2, $4.25.

Residential Energy Consumption Survey: Conservation; February 1980, DOE/EIA-0207/3, GPO Stock No. 061-003-00087-8, $6.00.

Preliminary Conservation Tables from the National Interim Energy Consumption Survey; August 1979, DOE/EIA-0193/P (no GPO Stock No.).

Characteristics of the Housing Stock and Households: Preliminary Findings from the National Interim Energy Consumption Survey; October 1979, DOE/EIA-0199/P (no GPO Stock No.).

Consumption and Expenditures

Residential Energy Consumption Survey: Consumption and Expenditures, April 1984 through March 1985, Part 1: National Data; March 1987, DOE/EIA-0321/1(84).

Residential Energy Consumption Survey: Consumption and Expenditures, April 1984 through March 1985, Part 2: Regional Data; June 1987, DOE/EIA-0321/2(84).

Residential Energy Consumption Survey: Consumption and Expenditures, April 1982 Through March 1983, Part 1: National Data; November 1984, DOE/EIA-0321/1(82), GPO Stock No. 061-003-00411-3, $7.00.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1982 Through March 1983, Part 2: Regional Data; December 1984, DOE/EIA-0321/2(82), GPO Stock No. 061-003-00414-8, $9.50.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 Through March 1982, Part 1: National Data; September 1983, DOE/EIA-0321/1(81), GPO Stock No. 061-003-00340-1, $6.00.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 Through March 1982, Part 2: Regional Data; October 1983, DOE/EIA-0321/2(81), GPO Stock No. 061-003-00357-5, $8.00.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, Part 1: National Data; September 1982, DOE/EIA-0321/1(80), GPO Stock No. 061-003-00278-1, $7.50.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, Part 2: Regional Data; June 1983, DOE/EIA-0321/2(80), GPO Stock No. 061-003-00319-2, $7.00.

Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures, Part 1: National Data (Including Conservation); April 1981, DOE/EIA-0262/1, GPO Stock No. 061-003-00191-2, $6.50.

Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures, Part II: Regional Data; May 1981, DOE/EIA-0262/2, GPO Stock No. 061-003-00189-1, $8.50.

Residential Energy Consumption Survey: Consumption and Expenditures, April 1978 Through March 1979; July 1980, DOE/EIA-0207/5, GPO Stock No. 061-003-00131-9, $7.50.

Single-Family Households: Fuel Oil Inventories and Expenditures: National Interim Energy Consumption Survey; December 1979, DOE/EIA-0207/1, GPO Stock No. 061-003-00075-4, $3.50.

Other Publications on the Residential Sector

Residential Energy Consumption Survey: Trends in Consumption and Expenditures 1978-1984 (Forthcoming).

Residential Conservation Measures; July 1986, SR/EEUD/86/01 (no GPO Stock No.).

An Economic Evaluation of Energy Conservation and Renewable Energy Tax Credits; October 1985, Service Report (no GPO Stock No.).

Residential Energy Consumption and Expenditures by End Use for 1978, 1980, and 1981; December 1984, DOE/EIA-0458, GPO Stock No. 061-003-00415-6, $4.50.

Weatherization Program Evaluation, SR-EEUD-84-1; August 1984 (available from the Office of the Assistant Secretary for Conservation and Renewable Energy, Department of Energy).

Residential Energy Consumption Survey: Regression Analysis of Energy Consumption by End Use; October 1983, DOE/EIA-0431, GPO Stock No. 061-003-00347-8, $5.00.

National Interim Energy Consumption Survey: Exploring the Variability In Energy Consumption; July 1981, DOE/EIA-0272, GPO Stock No. 061-003-00205-6, $5.00.

National Interim Energy Consumption Survey: Exploring the Variability in Energy Consumption--A Supplement; October 1981, DOE/EIA-0272/S, GPO Stock No. 061-003-00217-0, $4.50.

Energy Use by U.S. Households; November 1980, DOE/EIA-0248 (brochure, no GPO Stock No.).

Residential Transportation Sector

Residential Transportation Energy Consumption Survey: Consumption Patterns of Household Vehicles 1985; March 1987, DOE/EIA-0464(85).

Residential Transportation Energy Consumption Survey: Consumption Patterns of Household Vehicles, 1983; January 1985, DOE/EIA-0464(83), GPO Stock No. 061-003-00420-2, $4.50.

Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, Supplement: January 1981 to September 1981; February 1983, DOE/EIA-0328, GPO Stock No. 061-003-00297-8, $4.75.

Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, June 1979 to December 1980; April 1982, DOE/EIA-0319 (no GPO Stock No.).

Commercial Sector

Characteristics of Buildings

Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings, 1983; July 1985, DOE/EIA-0246(83), GPO Stock No. 061-003-00439-3, $7.50.

Nonresidential Buildings Energy Consumption Survey: Fuel Characteristics and Conservation Practices; June 1981, DOE/EIA-0278, GPO Stock No. 061-003-00200-5, $9.00.

Nonresidential Buildings Energy Consumption Survey: Building Characteristics; March 1981, DOE/EIA-0246, GPO Stock No. 061-003-00171-8, $6.50.

Consumption and Expenditures

Nonresidential Building Energy Consumption Survey: Commercial Buildings, Consumption and Expenditures 1983; October 1986, DOE/EIA-0318(83), GPO Stock No. 061-003-00496-2, $13.00.

Nonresidential Buildings Energy Consumption Survey: 1979 Consumption and Expenditures, Part 1: Natural Gas and Electricity; March 1983, DOE/EIA-0318/1, GPO Stock No. 061-003-00298-6, $9.50.

Nonresidential Buildings Energy Consumption Survey: 1979 Consumption and Expenditures, Part 2: Steam, Coal, Fuel Oil, LPG, and Total Fuels; December 1983, DOE/EIA-0318(79)/2, GPO Stock No. 061-003-00366-4, $6.00.

Industrial Sector

Report on the 1980 Manufacturing Industries' Energy Consumption Study and Survey of Large Combustors; February 1983, DOE/EIA-0358, GPO Stock No. 061-003-00293-5, $5.00.

Industrial Energy Consumption, "Survey of Large Combustors: Report on Alternate Fuel-Burning Capabilities of Large Boilers in 1979"; February 1982, DOE/EIA-0304, GPO Stock No. 061-003-0233-1, $2.50.

Methodological Report of the 1980 Manufacturing Industries Survey of Large Combustors (EIA-463); March 1982, DOE/EIA-0306 (no GPO Stock No.).

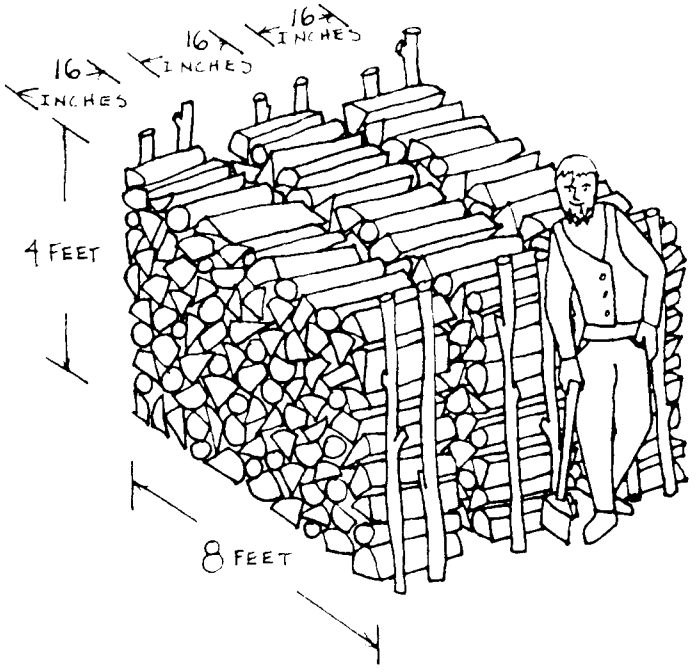
Cross-Sector

Natural Gas: Use and Expenditures; April 1983, DOE/EIA-0382, GPO Stock No. 061-003-00307-9, $5.50.

See inside front cover for information concerning copies of these publications.

Appendix H

Estimated Savings in Conventional Fuels from Use of Wood Fuel



1 CORD

Appendix H

Estimated Savings in Conventional Fuels from Use of Wood Fuel

Further analysis of RECS data has been undertaken in an effort to understand the role that wood fuel has played in residential energy use. The question of interest is: What are the estimated savings in conventional fuels for households that use wood fuel as one of their heating fuels? The answer to this question obtained from RECS data is much more speculative than the answer to questions in the Summary of Findings section as to how wood fuel is used in home heating and what the characteristics of significant wood fuel users are. The answer is more speculative because the question really asks what would happen if households that are "significant" wood fuel users, as defined in this study, changed their heating practices by no longer relying on wood fuel to supply part of their heat.

The amount of conventional fuels saved by the use of wood fuel is estimated by comparing the consumption of conventional fuels by significant wood fuel users to an estimate of what the consumption of conventional fuels would be if they did not use wood fuel. The differences between the consumption and the estimated consumption will never provide conclusive evidence as to what would really happen if the wood-fuel-using homes changed their fuel use to become nonwood-using homes. The methodology assumes that households no longer using wood fuel do not make any other changes except to use more conventional fuels in existing equipment. For example, they do not change their pattern of setting the thermostat, they do not add insulation, they do not install any new conservation equipment, and they do not purchase new secondary heating equipment such as a portable electric heater or a portable kerosene heater.

Conclusive evidence as to the amount of conventional fuels saved by the use of wood fuel could be obtained by using a controlled experiment. A controlled experiment would involve some variation of a plan for sampling households that are wood-using households, designating a random set of the sampled households to continue using wood fuel and assigning the remaining households to stop using wood fuel. The effect of the wood consumption could be estimated by analyzing the changes in the consumption of the other fuels for the two sets of households. Clearly, such an activity (requiring households to continue or stop using wood fuel) is impractical and beyond the scope of EIA's data collection mandate.

A second problem in estimating the conventional fuels saved arises from the methodology used to calculate the savings. The methodology uses regression equations that have been developed to be used to impute the consumption of fuels for households lacking billing records supplied by their fuel suppliers.[25] These equations were developed to produce good estimates of the total consumption of each fuel and may also be used to produce good estimates of the consumption of each fuel for each of the following end uses: space heating, air conditioning, water heating, and appliances. These estimates may not be good for particular households, but the average over a number of households is considered good. The significant use of a secondary heating fuel is a variable in these equations; however, these equations were not developed to isolate the effects of the significant use of a secondary heating fuel on the consumption of conventional fuels. The value of the coefficients might be different if the equations had been developed with that purpose in mind.

The equations for each fuel generally contain four terms corresponding to each of the four end uses described above. Only one end use is involved with savings due to the use of wood fuel--space heating. This space-heating term in the equation considers whether the fuel functions as a main or secondary source of heat. If it serves as a main source of heat, there are components that generally describe the size of the housing unit and the weather. Additional adjustments are made for a number of other conditions. One of these is whether the main heating fuel supplies most of the heat even though secondary heating may be present.

[25]See Appendix A for a general description of the imputation procedures. Further details on the terms used in these equations and a description of the nonlinear regression equations are found in Appendix C, *Residential Energy Consumption Survey: Consumption and Expenditures, April 1984 Through March 1985, Part 2, Regional Data* DOE/EIA-0321/2(84), (Forthcoming).

The presence of a space-heating term in the equations was used to estimate the amount of electricity, natural gas, fuel oil, or LPG displaced by the use of wood fuel. The fuel displaced is referred to as "estimated savings" to underscore the tentative nature of the findings. The methodology is described below separately for households using wood fuel as a main heating fuel and those using it as a secondary source of heat.

For households using wood fuel as a main source of heat, the secondary heating fuel was recoded to make it the main heating fuel. The equations were run with these recoded values and the change in consumption of the fuel was noted. If electricity, for example, had been the secondary heating fuel, recoding it as the main heating fuel would mean that the electricity equation would now produce a positive value for the main heating component and a zero value for the secondary heating component.

Households using wood as a secondary source of heat were handled in the following manner. The regression equation contained a term indicating the household uses a secondary source of heat which supplied one third or more of the heat. For purposes of estimating the savings, this term was removed from the equation. The effect of this removal was to increase the consumption of the main space-heating fuel, since the term had a negative effect on estimates of consumption for the main space-heating fuel.

Estimated Savings in Conventional Fuel Expenses

The estimated savings in reduced use of electricity, natural gas, fuel oil, and LPG from the addition of wood fuel as a home-heating fuel totals 2 billion dollars,[26] about half of which comes from projected savings in electricity (Table H1).

Table H1. Estimated Savings in Electricity, Natural Gas, Fuel Oil, and LPG by Homes Using Wood as an Additional Source of Home Heating, 1984

Home Heating Fuel		Number of Households (million)	Estimated Savings in Nonwood Heating Fuel[b]			
			Total		Per Household	
Main	Secondary		(trillion Btu)	(million dollars)	(million Btu)	(dollars)
Wood	Electricity	1.8	48	1,100	27	500
Electricity	Wood[a]	.5	4	80	8	140
	Subtotal	2.3	52	1,180		
Wood	Natural Gas	.8	33	220	43	280
Natural Gas	Wood[a]	.7	22	130	31	180
	Subtotal	1.5	55	350		
Wood	Fuel Oil	.8	31	250	37	290
Fuel Oil	Wood[a]	.3	15	110	55	430
	Subtotal	1.1	46	360		
Wood	LPG	.7	30	330	41	440
LPG	Wood[a]	.2	2	20	13	110
	Subtotal	.9	32	350		

[a] Wood supplies one-third or more of the home heat, as reported by respondents.
[b] Rounded to two significant digits to indicate imprecision in the estimated savings.
Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, The 1984 Residential Energy Consumption Survey.

[26]Standard errors are not presented for estimated savings because there is no way to incorporate the effect of the assumptions into the errors. A standard error for these estimated savings that is based solely on sampling error would seriously underestimate the true standard error.

The total estimated savings in dollars are shown below:

Fuel	Estimated Savings (million dollars)
Electricity	1,180
Natural Gas	350
Fuel Oil	360
LPG	350
Total	2,240

These estimated savings have not been reduced by expenditures for wood fuel itself or expenditures and costs associated with collecting one's own wood, so these estimated savings do not represent total savings for the households. The estimated savings do represent, however, a loss of revenue for the nonwood energy suppliers for the fuels listed above.

Expressed in physical units, the estimated energy savings are shown below:[27]

Fuel	Estimated Savings
Electricity	15 gigawatthours
Natural Gas	550 million therms
Fuel Oil	340 million gallons
LPG	350 million gallons

As a percent of the total consumption of these fuels by all households, the estimated savings represent one to two percent for electricity and natural gas, 4 percent for fuel oil, and 10 percent for LPG.

The average estimated savings per household in nonwood fuel expenditures ranged from $110 to $530 depending on the fuel and whether the nonwood fuel was a primary or secondary source of heat (Table H1). When the wood fuel was a primary source of heat, savings were usually larger--$530 versus $140 for electricity, for example. Fuel oil is an exception. Fuel oil does not follow the pattern described for the other fuels that show a smaller savings when wood is a secondary heating fuel. There is no reason known why fuel oil households would be different from others.

Cord of Wood Fuel Saves $100 in Estimated Consumption of Other Fuels

One indication of the value of a cord of wood to those 5.8 (±0.9) million households (Table 3) that use wood as one of their heating fuels is to compare the estimated savings of conventional heating fuels with the number of cords burned. The estimated savings totaled 2 billion dollars. The households who made these savings burned a total of 21 (±5) million cords of wood. This provides an estimated value of $100 for each cord of wood burned. This value of a cord of wood fuel does not take into account the expenses in using the wood fuel including its purchase, delivery, or costs of cutting. Estimates of these costs are not available in the RECS. Including these costs would reduce the economic value per cord.

[27]These results can be compared with a similar analysis using a different methodology and published in: Ken E. Skog and Irena A. Waterson, *Residential Fuelwood Use in the United States: 1980-1981*, United States Department of Agriculture, Forest Service, Resource Bulletin, WO-3, 1986, Washington, D.C. 42pp.

Glossary

Air Conditioning: Cooling of the air in a building by a refrigeration unit driven by electricity or gas. This definition excludes fans, blowers, or evaporative cooling systems ("swamp coolers") that are not connected to a refrigeration unit. Air-conditioning units that are not currently in working condition or are not used are still included in this survey if they are in place in the housing unit. Air-conditioning categories are as follows:

All rooms air-conditioned--100 percent of the rooms are air-conditioned. "Some rooms air-conditioned" means that fewer than 100 percent are air-conditioned.

Central air-conditioning system--a system, with ducts, that air-conditions several rooms in a home. (See also **Central System for the Building**. For a definition of rooms, see **Number of Rooms**.)

Number of rooms that can be air-conditioned--the number of rooms the air-conditioning equipment is capable of cooling when the equipment is used. The question "How many rooms in your house (apartment) can be cooled by your air-conditioning?" refers to rooms that could be cooled if the air-conditioning equipment were used. There are, therefore, no cases in the data set of households with air-conditioning equipment that cooled zero rooms.

AIA Zone: Classification replaced in this report by "weather zone." (See **Weather Zone.**)

All-Electric Home: A residence in which electricity is used 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 during the year. 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 is used. Appliances loaned to the household for its regular use are included. Appliances temporarily not in working condition but generally used by the household are included only if a repair person has been called or the appliance has been taken to a repair shop. Swimming pools, hot tubs, or jacuzzi heaters come under this definition only if they are for the exclusive use of the housing unit. This category excludes any swimming pools, hot tubs, or jacuzzis (such as those in apartment buildings, condominiums, or cooperatives) that are for the use of many resident households. Ponds, or children's wading pools, are not considered swimming pools. The definition of "oven" 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 **Air Conditioning**; also see **Refrigerator**).

Assistance for Heating in Winter: Indicates the household answered yes to Question 111a--that the household received assistance from the Low-Income Home Energy Assistance Program (LIHEAP) during the Fiscal Year 1984 that began in October 1983 and ended September 1984. 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. The most recent report on the program is found in U.S. Department of Health and Human Services, *Low Income Home Energy Assistance Program: Report to Congress for Fiscal Year 1985,* July 22, 1986. Copies are available from: Office of Family Assistance, Welfare Management Institute, Transpoint Building, 2100 Second Street, S.W., Washington, D.C. 20201.

Assistance for Weatherization of Residence: Received services free or at a reduced cost from the Federal, state, or local Government between October 1, 1983 and September 30, 1984.

Any of the following services could have been received:

a. Furnace tuneup and/or modifications,

b. Insulation around the hot water heater,

c. Insulation in the attic, outside wall, or basement/crawl space below the floor of the house,

d. Repair of broken furnace,

e. Repair of broken windows or doors to keep out the cold or hot weather,

f. Storm doors or windows added,

g. Weather stripping or caulking around any windows or doors to the outside,

h. Other home energy-saving devices.

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?" Because respondents were not provided with a definition of "available" or "neighborhood," some variation is to be expected in what these concepts meant to each respondent. The intent of this question is to determine whether a residence could be hooked up to a gas line.

Basement: An enclosed space in which a person can walk upright under all or part of the building. A crawl space is the space between the ground and the floor of a house. An enclosed crawl space is one **not** accessible from the outside of the house because the walls of the space protect it from the weather. A crawl space "open to the outside" is one that is accessible from outside the house--even though it may be covered by a trellis or lathwork, or some kind of brickwork that leaves space for circulation of air.

Bathroom: A room set aside for lavatory facilities. A complete bathroom is one that has a flush toilet, a bathtub or shower, and a sink or wash basin with running water. A half-bath is a bathroom that has a flush toilet or a bathtub or shower but lacks the facilities to be a complete bathroom. A room is not considered a half-bathroom if it contains only a sink or washbasin.

Billing Period: The time between meter readings. It does not refer to the time when 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.

Btu (British Thermal Unit): The amount of energy required to raise the temperature of 1 pound of water by 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.

For this survey, Btu conversion factors were as follows:

Electricity	3,412	Btu/kilowatthour
Natural Gas	1,031	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)	91,330	Btu/gallon
Wood	20 million	Btu/cord

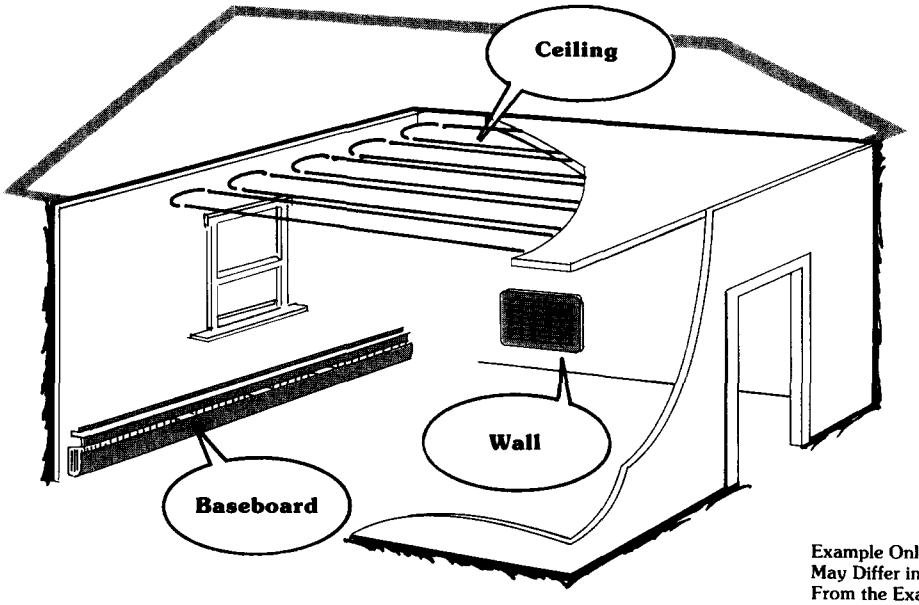
Other conversion factors used in this survey include:

1 therm = 100,000 Btu
1 barrel = 42 gallons

Because almost all LPG reported by the fuel suppliers was propane, the LPG conversion factors are those for propane. (See **Wood Consumption** for a discussion of the Btu value of wood.)

Built-in Electric Units: An individual resistance electric heating unit that is permanently installed in the floors, walls, ceilings, or baseboards and is part of the electrical installation of the building. Electric heating devices that are plugged into an electric socket or outlet are not considered built in.

Built-in Electric Units



Example Only. Your Equipment May Differ in Minor Ways From the Example Shown.

Census Division: An area within each of the four census region consisting of various States selected by the U.S. Bureau of the Census according to the population, size, and physical location. The States are grouped into nine divisions: (See map in Appendix F.)

New England:
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont

Middle Atlantic:
Pennsylvania, New Jersey, and New York

East North Central:
Illinois, Indiana, Michigan, Ohio, and Wisconsin

West North Central:
Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota

South Atlantic:
Delaware, the District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia

East South Central:
Alabama, Kentucky, Tennessee, and Mississippi

West South Central:
Arkansas, Louisiana, Oklahoma, and Texas

Mountain:
Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming

Pacific:
Alaska, California, Hawaii, Oregon, and Washington

Census Region: An area consisting of various States selected by the U.S. Bureau of the Census according to population size and physical location. The States are grouped into four regions: (See map in Appendix F.)

Northeast:

Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont

North Central:

Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin

South:

Alabama, Arkansas, Delaware, the District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia

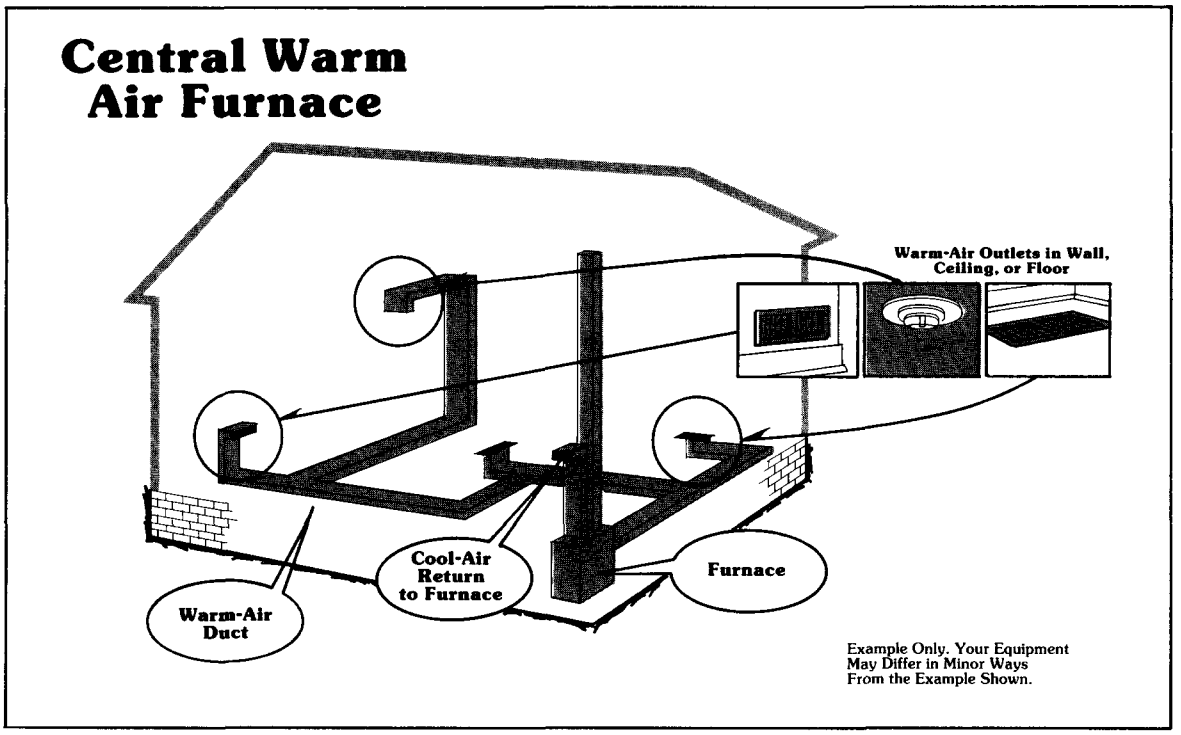
West:

Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming

CDD: See **Cooling Degree-Days**.

Central System for the Building: A system providing the main space heating, water heating, or air-conditioning for two or more housing units in the building. A system that is used only for the respondent's living quarters is not a central system for the building.

Central Warm-Air Furnace: A central combustor or resistance unit--generally using gas, fuel oil, or electricity--that provides warm air through ducts leading to the various rooms. Heat pumps are not included in this category. A forced-air furnace is one in which a fan is used to force the air through the ducts. In a gravity furnace, air is circulated by gravity, relying on the natural flow of warm air up and cold air down. The warm air rises through ducts and the cold air falls through ducts that return it to the furnace to be reheated. This completes the circulation cycle.



Climate Zone: Classification term replaced in this report by the term "weather zone." (See **Weather Zone**.)

Coal: See **Fuel**.

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. The following items qualify as conservation measures:

Automatic or clock thermostat--a thermostat that can be set to turn the heating system off and on at certain predetermined times.

Automatic flue door (vent damper)--a mechanism that automatically closes the flue when the furnace goes off, to prevent heat loss up the chimney.

Caulking around any windows or doors to the outside--moldable sealing material that (when put into cracks around the frames of windows or doors, or cracks in other stationary parts of a house) prevents drafts from coming into a house. Caulking comes in a tube and is claylike so it can be molded by hand to fit the space being treated. Caulking applied either to the inside or to the outside of the home qualifies as an energy-saving item.

Closable shutters, insulating drapes, reflective film--types of energy conservation for windows. This category is used if any one of these has been added to any door or window in the housing unit. Shutters that close to provide an insulating effect are counted, as well as insulated roller shades or "window quilts" whose sides ride in a channel attached to the window frame. Decorative shutters that do not close are not counted.

Electrical or mechanical furnace ignition system (spark ignition)--a mechanism for starting a furnace that ignites fuel from an electrically or mechanically produced spark rather than from a pilot light that burns continuously.

Flame-retention head burner of furnace (fuel oil)--a device that controls the pattern of flame in the combustion chamber of a boiler or furnace.

Insulation around heating and/or cooling ducts--extra insulation around the heating and/or cooling ducts, intended to reduce the loss of hot or cold air as it travels to different parts of the residence.

Insulation around the hot-water and/or cooling pipes--wrapping of insulating material around hot-water and/or cooling pipes, to reduce the loss of heat or cold through the pipes.

Insulation around hot-water heater--blanket insulation wrapped around the hot-water heater to reduce loss of heat. To qualify under this definition, this wrapping must be in addition to any insulation provided by the manufacturer.

Plastic sheets--a generally transparent material used to cover a window or other opening in the housing unit in an attempt to reduce the loss of heat.

Weather-stripping around any windows or doors to the outside--any of several kinds of crack-filling material used to prevent drafts from coming into a house around movable parts of a door or window. Weather-stripping is available in strips or rolls of metal, vinyl, or foam rubber and can be applied on the inside or outside of a building.

Consumption: The amount of electricity or natural gas used by or delivered to the household during a 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.

Cooking Stove: See **Main Heating Equipment**.

Cooling Degree-Days (CDD): The number of degrees per day the average daily temperature is above 65 degrees Fahrenheit; a quantity used to estimate the need for cooling systems in buildings. (The average daily temperature is the mean of the maximum and minimum temperatures for a 24-hour period.) 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 average daily 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. After being calculated for each day, the number of cooling degree-days can be computed for a larger unit of time (a month, a year).

Cooling degree-days for RECS households in the 48 contiguous States and the District of Columbia were assigned according to the NOAA division in which each household was located. For Alaskan and Hawaiian households, cooling degree-days were assigned by appropriate nearby weather stations. (See **NOAA Division, Weather Zone**.)

Door: A movable, usually solid barrier for opening and closing an entrance way. Outside doors lead from a heated area to the outside or to an unheated area, such as a porch or garage. Doors leading to a heated hallway in an apartment building, doors permanently sealed shut, and doors to an unheated attic or basement were not counted, because they are not usually fitted with storm doors. Although the NIECS, the predecessor of RECS, counted doors to an unheated attic or basement, the RECS did not. Double doors were counted in the RECS as one door. A pair of sliding glass doors was counted as one door in this survey, whereas in the NIECS survey a pair of sliding glass doors had been counted as two doors. As defined in the RECS, an apartment with one door that opens into a heated hallway has zero doors. The definition of "standard" doors includes doors both with and without glass panels. (See **NIECS**.)

Electricity: See **Fuel**.

Electricity Paid by Household: The household paid the electric utility company directly for all household uses of electricity, such as for water heating, space heating, air-conditioning, cooking, lighting, and operating appliances.

Estimated Bill: A set of charges for a fuel, calculated by the supplier when the meter is not read. The estimate may be based on one or more of the following factors: past usage, usage by similar households, and weather data.

Expenditures: The cost for electricity or natural gas consumed during the 365-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 **Consumption**). For households that do not pay directly to their fuel supplier, the expenditures for fuels are estimated and included in the tables. Households that do not pay directly for the energy used are also included in the data. In 1984, for 18 percent of the households, the cost of one or more fuels was included in a tenant's rent or paid by someone outside of the household.

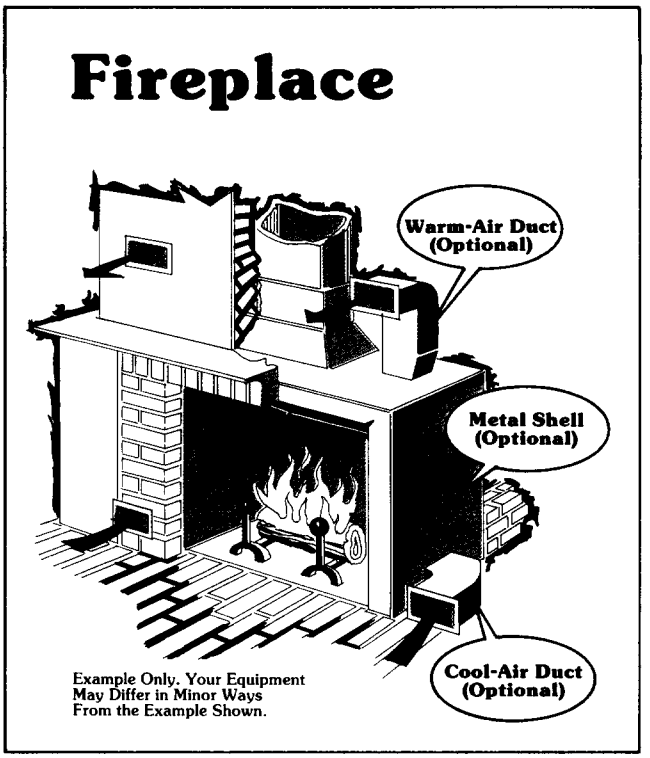
Expenditures as a Percentage of Income: The households energy expenditures divided by the family's income. The median percentage is percentage of income spent on energy for the middle household, when the households are ranked by the percentage they spend on energy. That is, 50 percent of the weighted households in the cell spend a lower percentage on energy than the median value.

Family Income: The total combined income (before taxes and deductions) of all members of the family from all sources, for the 12 months before the interview. It includes wages, salaries, tips, commissions, and income from Social Security, pensions, interest, dividends, rent, public assistance, and unemployment insurance. This definition includes the total income of all family members who lived in the household during the 12 months before the interview, regardless of whether they were living there at the time of the interview. Income of nonfamily members of the household is not included. "Family" includes the following types of relationships: mother, father, sister, brother, son, daughter, father-in-law, uncle, aunt, niece, grandchild, foster child (and similar relationships). The 1984 RECS was the first to ask for income over the prior 12 months. Previous RECS income questions covered the prior calendar year.

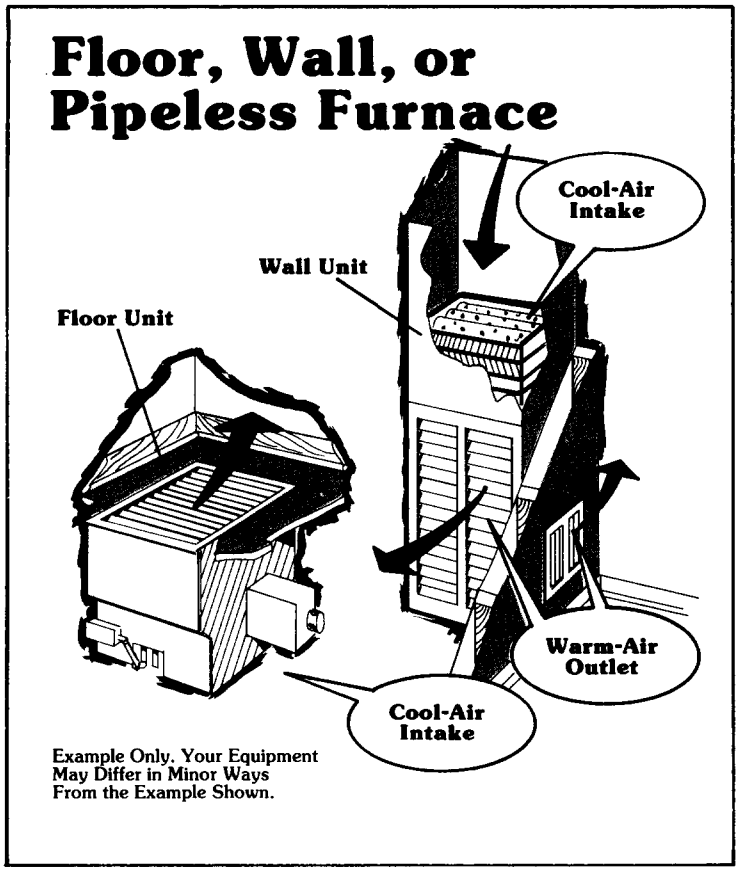
Federal Regions: The States (including the District of Columbia), divided into 10 groups as follows:

Region	States
1	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont
2	New Jersey and New York
3	Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia
4	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee
5	Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin
6	Arkansas, Louisiana, New Mexico, Oklahoma, and Texas
7	Iowa, Kansas, Missouri, and Nebraska
8	Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming
9	Arizona, California, Hawaii, and Nevada
10	Alaska, Idaho, Oregon, and Washington

Fireplace: Usually a masonry unit burning wood, that is built into the wall of a house. Fireplaces in mobile homes are included. A fireplace must have a permanent chimney. Fireplaces may have glass doors or metal shields to cover the opening into the room. Accessories such as convective grates or radiant grates may be present to increase the efficiency of the fireplace. A free-standing fireplace that can be detached from its chimney is a heating stove. (See **Heating Stove**.)



Floor, Wall, or Pipeless Furnace: A ductless combustor or resistance unit, an enclosed chamber where fuel is burned or where electrical-resistance heat is generated to warm the rooms of a building. A floor furnace is located below the floor and delivers heated air to the room immediately above or (if under a partition) to the room on each side. A wall furnace is installed in a partition or in an outside wall and delivers heated air to the rooms on one or both sides of the wall. A pipeless furnace is installed in a basement and delivers heated air through a large register in the floor of the room or hallway immediately above.



Fuel: The primary fuel delivered to a residential site. It may be converted to some other form of energy at the site. In this report, electricity is included as a fuel. The following are primary fuels:

Coal--a combustible mineral substance (carbonized vegetable matter); in this report, the term includes its derivative (formed by destructive distillation or imperfect combustion) coke. Only statistics on the number of households using coal are presented.

Electricity--metered electric power supplied by a central utility company to a residence via underground or above-ground power lines. It does not refer to electricity generated on site for the exclusive use of a residence. When a residence has its own generating capability, the fuel used for the generator will be specified. The Btu equivalent for electricity is the energy value of electricity as received by the household (3,412 Btu per kilowatthour). For this report, energy losses that occur in generating and transmitting electricity are not included in the conversion of electricity into Btu. If these losses were to be included, the conversion rate would generally be about 10,353 Btu per kilowatthour.

Fuel oil--No. 1, No. 2, or No. 4 grade fuel oil or residual oil that is burned for space- or water-heating purposes. No. 1 distillate fuel oil is a form of heating oil used mostly as a blending stock to assure that heavier grades of fuel flow under severe cold weather conditions. No. 2 distillate collectively refers to No. 2 heating oil and No. 2 diesel fuel. Although these products are not precisely identical, they are essentially interchangeable in most applications. No. 2 fuel oil is the most common form of heating oil. No. 4 distillate is a blend of No. 2 and No. 5 or No. 6 residual fuel oil, used in large stationary diesel engines and boilers equipped with fuel preheating equipment. Residual fuel oil refers to the heavier oils that remain after the distillate fuel oils and lighter hydrocarbons are boiled off in refinery operations.

Kerosene--a distilled product of oil or coal with the generic name kerosene, having properties similar to those of No. 1 fuel oil. Kerosene is used for cooking stoves or for space heating or water heating or for lighting equipment that uses wicks. It is sometimes sold under the names "range oil," "stove oil," or "coal oil."

LPG or liquefied petroleum gas--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 a user of LPG.

Natural gas--utility gas supplied by underground pipeline to individual housing units by a central utility company. It does not refer to privately owned gas wells operated by the household, nor to LPG.

Solar collector--equipment that actively concentrates thermal energy from the sun. The energy is usually used for space heating, for water heating, and for heating swimming pools. Either air or liquid is the working fluid. Passive collection of solar thermal energy does not qualify for inclusion.

Fuel Oil: See **Fuel**.

Fuel Oil Paid by Household: The household paid the fuel supplier directly for all household uses of fuel oil or kerosene (such as for space heating or water heating). (See **Fuel**.)

Gas Paid by Household: The household paid the utility company directly 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 **Fuel**.)

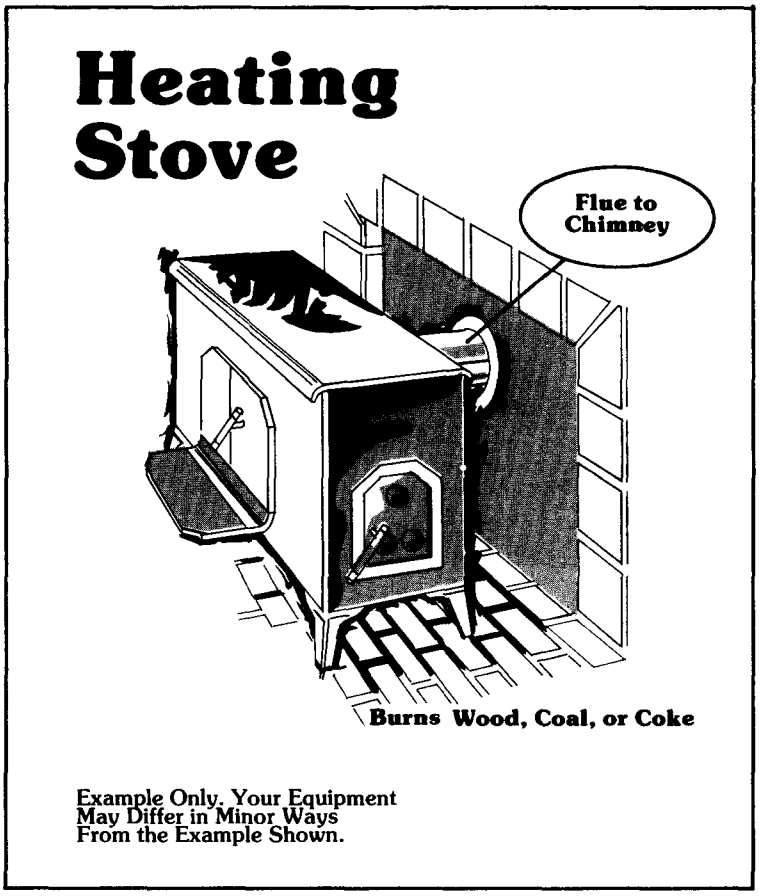
Gigawatthour: One billion watthours or one million kilowatthours.

HDD: See **Heating Degree-Days**.

Heating Degree-Days (HDD): The number of degrees per day the average daily temperature is below 65 degrees Fahrenheit; a quantity used to estimate the need for heating systems in buildings. (The average daily temperature is the mean of the maximum and minimum temperatures for a 24-hour period.) 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. After being calculated for each day, the number of heating degree-days can be computed for a larger unit of time (a month, a year).

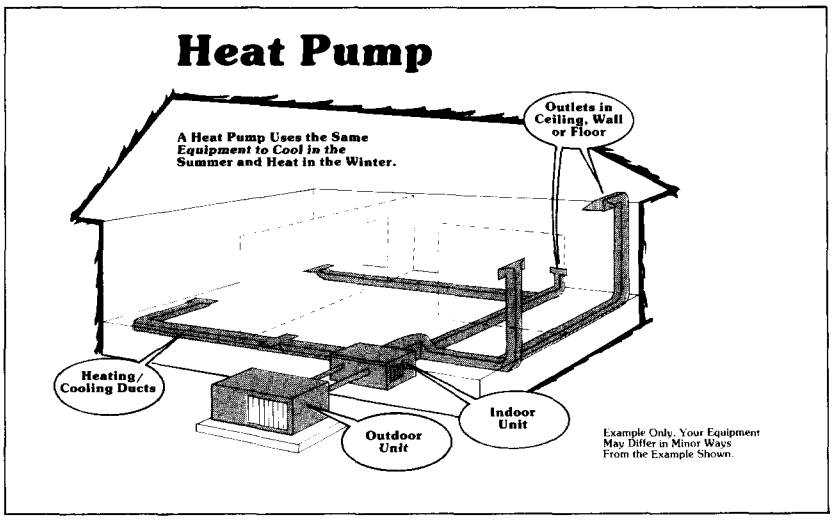
Heating degree-days for RECS households in the 48 contiguous States and the District of Columbia were assigned according to the NOAA division in which each household was located. For Alaskan and Hawaiian households, heating degree-days were assigned by appropriate nearby weather stations. (See **NOAA Division, Weather Zone**.)

Heating Stove Burning Wood, Coal, and Coke: Any free-standing box or controlled-draft stove; or a stove installed in a fireplace opening, using the chimney of the fireplace. Stoves are made of cast iron, sheet metal, or plate steel. Free-standing fireplaces that can be detached from their chimneys are considered heating stoves. "Airtight" stoves allow the user to control the amount of air in the stove to regulate the rate of combustion. The doors fit tightly so that the air flow can be controlled. Many airtight stoves have a gasket around the door of the stove. "Nonairtight" stoves are those lacking gaskets around their door openings.



Heat Pump (Reverse Cycle System): A year-round heating/air-conditioning system in which refrigeration equipment supplies both heating and cooling through ducts leading to individual rooms. A heat pump generally consists of a compressor, both indoor and outdoor coils, and a thermostat; in the RECS system, only electricity was allowed as the power source.

The heat pump, when attached to a central furnace, is either the main or secondary heating equipment (depending on how often the heat pump operates). It if operates for a short time and then the furnace comes on, the heat pump is secondary (or additional) heating equipment. If the heat pump is sufficient to provide the desired warmth, the heat pump is cited as the main heating equipment.



Heated Area of Residence: See **Square Feet**.

Heating Controls: A procedure by which the household file is sorted by variables related to the missing item. Then a household is selected that has the same value on the matching variables, and the value for this "donor" household supplies the value for the missing item. (See **Imputation**.)

Household: A family, an individual, or a group of up to nine unrelated persons occupying the same housing unit. The housing unit has to have been the person's usual or permanent place of residence when the first field contact was made. The household includes babies, lodgers, boarders, people who live in the housing unit as employees, and people who usually live in the household but are away traveling or are patients in a hospital. The household does not include people 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 people temporarily visiting with the household if they have a place of residence elsewhere, people who take their meals with the household but usually lodge or sleep elsewhere, domestic employees (or other people employed by the household) who **do not** sleep in the same housing unit, or people who are former members of the household but have since become inmates of facilities in which residents may remain for long periods of time (such as correction or penal institutions, mental institutions, homes for the aged or needy, homes or hospitals for the chronically ill or handicapped, nursing homes, or convents or monasteries). By definition, the count of households is the same as the count of occupied housing units.

Householder: The person (or one of the people) in whose name the home is owned or rented. If there is no lease or similar agreement, or if the person who owns the home or pays the rent does not live in the housing unit, the householder is the person responsible for paying the household bills, or whoever is generally in charge.

Housing Structure: One of four structural types used to categorize the building in which the housing unit was located. The types of structure are as follows:

> Single-family housing unit--a structure that provides living space for one household or family. The structure may be detached, attached on one side (semidetached), or attached on two sides. Attached houses are considered single-family houses as long as the house itself is not divided into more than one housing unit and has an independent outside entrance. A single-family house is contained within walls that go from the basement (or the ground floor, if there is no basement) to the roof. (A mobile home with one or more rooms added is classified as a single-family home.)
>
> House or building with two to four housing units--a structure that is divided into living quarters for two, three, or four families or households. This category also includes houses originally intended for occupancy by one

family (or for some other use) that have since been converted to separate dwellings for two to four families. Typical arrangements in these type of living quarters are separate apartments downstairs and upstairs, or one apartment on each of three or four floors.

Building with five or more housing units--a structure that contains living quarters for five or more households or families.

Mobile home or trailer--a structure that has all the facilities of a swelling unit but is built on a movable chassis. It may be placed on a permanent or temporary foundation and may contain one room or more. If rooms are added to the structure, it is considered a single-family housing unit.

Housing Unit: A structure or part of a structure where a household (either a family or an individual) lives (or could live). It has access to the outside of the building either directly 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. If occupied as the usual or permanent place of residence, hotel rooms, motel rooms, mobile homes, or trailers are considered housing units.

Imputation: 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: Any material that when placed between the interior of the dwelling and the outdoor environment, reduces the rate of heat loss to the environment in winter or heat gain from the environment in summer. Floor insulation is defined as insulation between the bottom floor and the unheated basement or crawl space; carpeting or carpeting pads do not qualify as insulation. The four forms of insulation illustrated in a drawing shown to respondents are listed below.

Blankets or batts--rolls or pieces of insulation that are nailed or stapled between the rafters or wall joists (beams). Such insulation is usually made of fiberglass or rock wool.

Loose particles or loose fill--loose insulation (supplied in a bag) that is poured between joists (beams). Loose insulation can also be blown into open spaces. Loose fill can be glass fiber, rock-wool fibers, cellulose fiber, or vermiculite.

Firm foam or firm plastic--rigid boards (such as styrofoam) that can be cut to size and either edged, nailed, or glued into place.

Sprayed-in foam--foam that solidifies after being sprayed on a surface or poured into a cavity to be insulated.

Kerosene: See **Fuel**.

kWh (kilowatthour): A unit of work or energy, measured as 1 kilowatt (1,000 watts) of power expended for 1 hour. One kWh is equivalent to 3,412 Btu. (See **Btu**.)

LPG: See **Fuel**.

LPG Paid by Household: The household paid the fuel supplier directly for all household uses of LPG such as water heating, space heating, air-conditioning, cooking (except that cooking on an outdoor grill is not counted), and operating appliances. (See **Fuel**.)

Main Cooking Fuel: The answer to the question "Thinking of all the different kinds of cooking done here, including cooking in the oven, on a range, and with small appliances, which fuel is used most?"

Main Heating Equipment: The equipment primarily used for heating ambient air in household. The main heating equipment is reported as such even if it is temporarily out of order. If two types of heating equipment are used, the main equipment is the one that is used more. If both are used equally, the main equipment is the one that appears first on the list in the question. A "cooking stove" may be used as the main heating equipment even though it was built for preparing food. (See also description of specific heating equipment.)

Main Heating Fuel: The fuel named by the respondent in response to the question "What is the main fuel used for heating your home?"

Master-Metering: The method used by utility companies (that is, purveyors of electricity and natural gas) to measure the total volume of energy used by several individual customers collectively.

Mean: The simple arithmetic average for a population--the sum of all the values in a population, divided by the size of the population.

Measured Heated Area of Residence: See **Square Feet**.

Median: A measure of central tendency, intended to express a "typical" value for an attribute. The median is different from the arithmetic average (mean) in that its value is not much influenced by extremes. For example, the mean number of cords of wood consumed per household would be affected by the inclusion of a few heavy users of wood, and would not express wood consumption for a "typical" wood-using household. However, the median number of cords of wood consumed per household would not be so affected. Medians are computed by listing all values in ascending order. The value that divides the list in half is the median.

Metropolitan: A group of households located within Metropolitan Statistical Areas (MSA's) as defined in the 1980 Census. Except in New England, an MSA is a country 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 MSA if (according to certain criteria) they are essentially metropolitan in character and are socially and economically integrated with the central city. In New England, MSA's consist of towns and cities, rather than counties. "Nonmetropolitan" refers to households not located within MSA's as defined in the 1980 Census.

Natural Gas: See **Fuel**.

NIECS: The National Interim Energy Consumption Survey, the first developmental survey in the planned series of Residential Energy Consumption Surveys. The NIECS contacted 4,081 households in October and November 1978. Fuel suppliers provided data on consumption and expenditures for the period April 1978 through March 1979.

NOAA Division: One of the 344 weather divisions, designated by the National Oceanic and Atmospheric Administration (NOAA), encompassing the 48 contiguous States and the District of Columbia. Although these divisions usually follow county borders to encompass counties with similar weather conditions, they do not follow county borders when weather conditions vary considerably within a county (such as is likely to be the case when the county borders the ocean or contains high mountains). A State contains an average of seven NOAA divisions; a NOAA division contains an average of nine counties.

Number of Rooms: Subdivisions of a living unit. Whole rooms are rooms such as living rooms, dining rooms, bedrooms, kitchens, lodgers' rooms, finished basements or attic rooms, recreation rooms, and permanently enclosed sun porches that are used year-round. Rooms used for offices by a person living in the unit are included in this survey. "Finished" means that the ceiling and walls are covered with finishing materials.

Not considered to be rooms, in this survey, are bathrooms, halls, foyers, or vestibules, balconies, closets, alcoves, pantries, strip or pullman kitchens, laundry or furnace rooms, unfinished attics or basements, open porches, and unfinished space used for storage.

A partially divided room, such as a dinette next to a kitchen or a living room, is considered a separate room only if there is a partition from floor to ceiling--but not if the partition consists solely of shelves or cabinets. If a room is used by occupants of more than one unit, the room is included with the unit from which it is most easily reached.

Occupied Housing Unit: A unit someone was living in as his or her usual or permanent place of residence when the first field contact was made.

Origin: The primary ethnic background of the person considered the householder. Each respondent was asked, "Which of the groups on this exhibit best describes (householder)?" The groups listed were white, black or Negro, American Indian, Alaskan native, Asian, Pacific Islander. The word "race" was not used in either the questionnaire or the instructions.

Owned/Rented: The relationship of its occupants to the structure itself, not the land on which it is located. "Owned" means the owner or co-owner is a member of the household. The housing unit may be mortgaged and not fully paid for. A household is classified "rented" even if the rent is paid by someone not living in the unit. "Rent free" means the unit is not owned or being bought and no money is paid or contracted for rent. Such units are usually provided in exchange for services rendered or as an allowance or favor from a relative or friend not living in the unit. Unless shown separately, rent-free households are grouped with rented households.

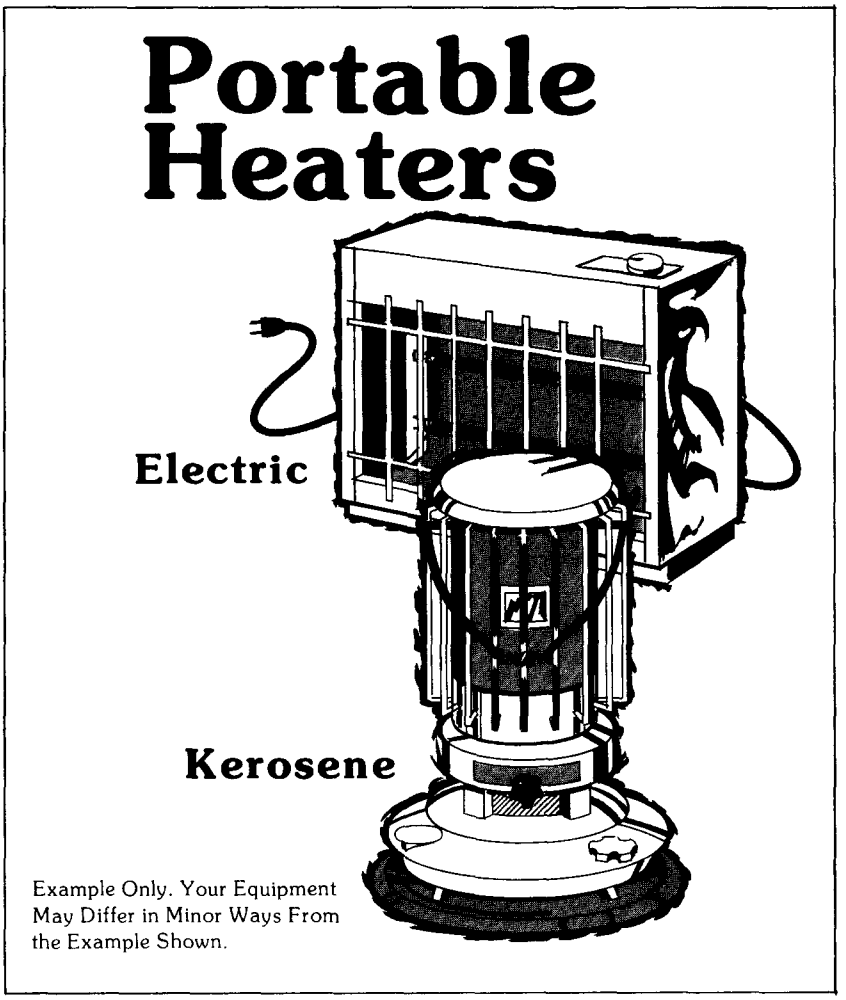
Payment Method for Utilities: Method by which fuel suppliers or utility companies were paid for **all** electricity, natural gas, fuel oil, kerosene, or liquefied petroleum gas used by a household. Households that paid the utility company directly were classified in this survey as "all paid by household." Households that paid directly for at least

one but not all of their fuels used and that has at least one fuel charge included in the rent were classified as "some paid, some included in rent." Households for which all fuels used were included in rent were classified as "all included in rent." Some households were classified as "other method," if they did not fall into any of those three categories. These are households for which fuel bills were paid by a department of social services or a relative, and households that paid for some of their fuels used but paid for other fuels through another arrangement.

Poverty: Low-income classifications to which certain households are assigned. "Below 100 percent of poverty" encompasses a group of households with incomes below the poverty level as defined by the Bureau of the Census. "Below 125 percent of poverty" includes a group of households with incomes below 125 percent of the poverty level. These groups of the poor and near-poor represent alternative levels for defining poverty. The definitions of "poor" are based on the number of family members in the household and the income of the entire family (See Table C2.)

Portable Electric Heater: A heater that uses electricity and that can be picked up and moved.

Portable Kerosene Heater: A heater that uses kerosene and that can be picked up and moved.



Primary Sampling Units or PSU's: The sampling units selected at the first stage in multistage area probability sampling. A PSU typically consists of one to several contiguous counties--for example, a metropolitan area with surrounding suburban counties. The approximately 3,100 counties and independent cities of the contiguous United States were grouped into about 1,800 PSU's by a procedure similar to the one used by the Census Bureau for its Current Population Survey. PSU's can be composed of one or more MSA's or can be composed of rural counties. (See **Metropolitan** and Appendix A "How the Survey Was Conducted.")

Quadrillion: The quantity 1,000,000,000,000,000 (10^{15}).

Race: See **Origin**.

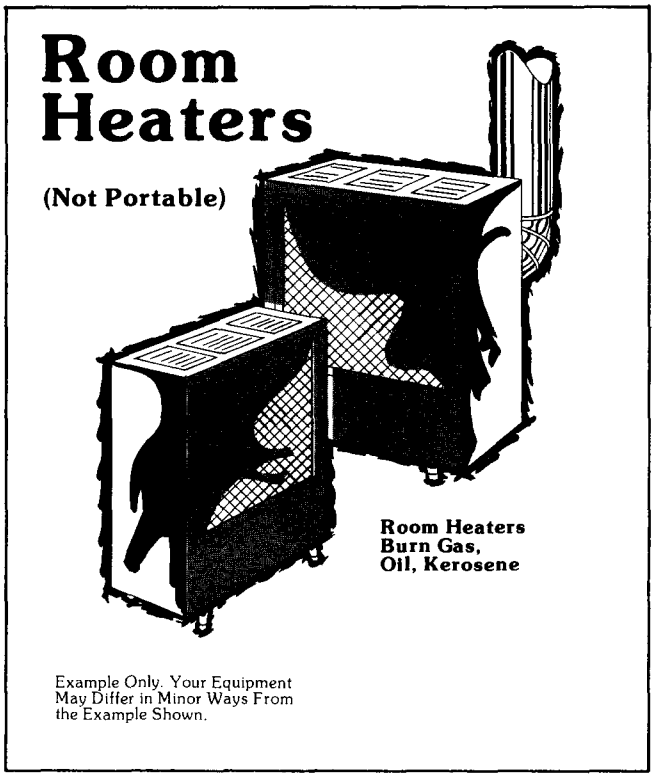
Refrigerator: A cabinet or box for keeping food cool, usually powered by electricity. Those with no freezer sections are included in the nonfrost-free category. "Frost-free" means that frost does not build up on the insides of the freezer section or the ice-cube section.

Rent: See **Owned/Rented**.

Residential: Occupied housing units, including mobile homes, single-family housing units (attached and detached), and apartments. The definition of "occupied housing units" is the same as that used by the U.S. Bureau of the Census. (See **Household** and **Housing Unit** for further definition.)

Rooms: See **Number of Rooms**.

Room Heater Burning Gas, Oil, Kerosene: Any of the following structures: circulating heaters, convectors, radiant gas heater, space heaters, or other **nonportable** room heaters that may or may not be connected to a flue, vent, or chimney.



RSE or Relative Standard Error: A measure of the reliability or precision of a survey statistic. Variability occurs in survey statistics because the different samples that could be drawn would each produce different values for the survey statistics. Relative Standard Error, or RSE, is a measure of precision on a percentage scale. The RSE is defined as the standard error of a survey estimate, divided by the survey estimate and multiplied by 100. (Standard error is the square root of the variance.) For example, an RSE of 50 percent means that the standard error is half as large as the survey estimate. (See Appendix C, "Quality of the Data," for a discussion of sampling errors.)

RSE Column Factor: An adjustment factor that appears with each column of the main tables used to compute RSE's. For a survey estimate in a particular row and column of a table (that is, a particular "cell"), the approximate RSE is obtained by multiplying the RSE row factor by the RSE column factor for that particular "cell." (See **RSE**, **RSE Row Factor** and the section on Sampling Errors in Appendix C.)

RSE Row Factor: A factor used to compute RSE's. The row factor is equal to the geometric mean of the RSE's in a particular row of the main tables. For a survey estimate in a particular row and column of a table (that is, a particular "cell"), the approximate RSE is obtained by multiplying the RSE row factor by the RSE column factor for that particular "cell." (See **RSE**, **RSE Column Factor** and the section on Sampling Errors in Appendix C.)

Screener Survey: The Residential Energy Consumption Survey that resulted in contact with 4,033 households in October and November 1979. Fuel suppliers provided data on consumption and expenditures from 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 Fuel: Fuels used in secondary heating equipment. When no secondary heating equipment is used, a secondary heating fuel that is used in the main heating equipment is not included in the tabulations. This occurs when, for example, wood and coal are both used in a furnace but wood is named the main heating fuel. Coal, in this case, is not tabulated.

Secondary Heating Equipment: Equipment used besides the main equipment. Description of the secondary heating equipment is the same as for the main heating equipment.

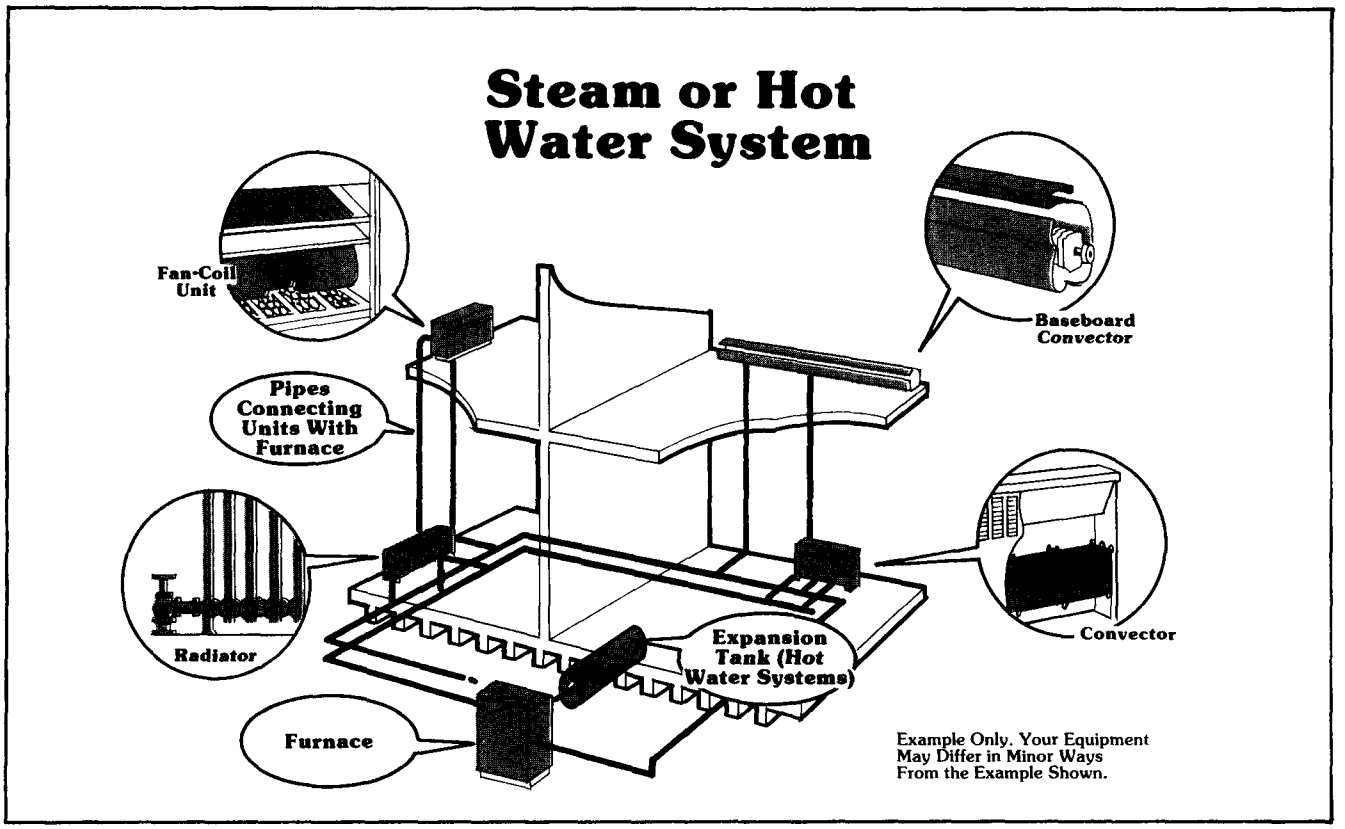
Site Energy: The Btu value of energy at the point it enters the home, sometimes referred to as "delivered" energy. In this report, the site value of energy is used. See "Btu" for the Btu values of energy forms discussed in this report. (See **Useful Energy**.)

Solar Collector: See **Fuel**.

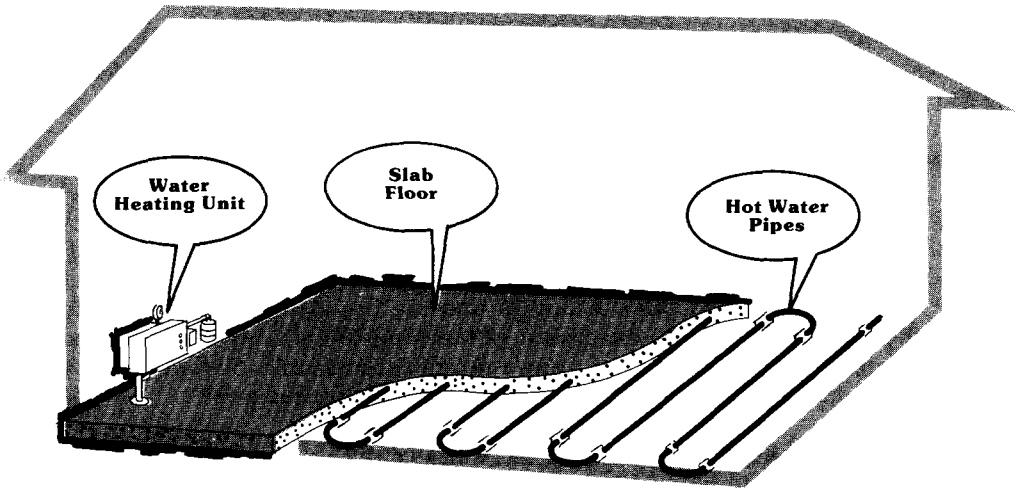
Square Feet: The floor area of the housing unit that is enclosed from the weather. Basements are included, whether or not they contain finished space. Garages are included if they have a wall in common with the house. Attics that have finished space and attics that have some heated space are included. 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" means that the measurement of the dimensions of the home did not rely on the respondent's reports but was an actual measurement made by the interviewer using a metallic, retractable, 50-foot tape measure. (For details on how the measurement was made and how the data were treated, see Appendix B.)

"Heated area" is the portion of the measured square feet that is heated during most of the winter season. Rooms that are shut off during the heating season to save fuel are not counted as heated square footage. Attached garages that are unheated, and unheated areas in basements and attics, are not counted as heated square feet.

Steam or Hot-Water System: Either of two types of central heating system that supplies steam or hot water to radiators, convectors, or pipes. The more common type supplies either steam or hot water to conventional radiators, baseboard radiators, convectors, heating pipes embedded in the walls or ceilings, or heating coils or equipment that are part of a combined heating/ventilating or heating/air-conditioning system. The other type supplies radiant heat through pipes that carry hot water and are inlaid in a concrete slab floor.



Hot Water Pipes Running Through Slab Floor



Example Only. Your Equipment May Differ in Minor Ways From the Example Shown.

Storm Doors and Windows: Doors made of double or insulating glass such as thermopane. Glass or plexiglass placed over a sliding glass door on either the exterior or interior is counted as a storm door. A plastic sheet covering the door is not counted as a storm door.

Windows made of double or insulating glass, such as thermopane. Glass or plexiglass placed over windows on either the interior or exterior side are counted as storm windows. Plastic sheets covering windows are counted only if they can be used year after year.

> Note: Responses of "don't know" for storm doors, storm windows, and/or 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 whether it had attic insulation, was counted in the "have one or two of these" category.

Useful Energy: That portion of "site energy" actually used for the task at hand. The difference between site energy and useful energy is the loss of energy which usually occurs in the combustion of fossil fuels. This lost energy is not available for the task at hand, such as heating a home or heating water. The energy is lost in the form of unused heat or unburned gas emittted through a chimney or exhaust pipe. The efficiency of the combustion process determines, in large part, how much useful energy is derived from the site energy. Electricity is one form of energy that does not need to be converted by combustion, so, for electricity, the useful energy may be equal to the site energy for many applications. (See **Site Energy**.)

Vacant Housing Unit: A housing unit not occupied when the first field contact was made. An occupied seasonal or migratory housing unit is classified as vacant at the time of the first contact if all of its occupants had a usual place of residence elsewhere.

Water-Heating Fuel: The fuel used to heat bath and wash water (as clarified for the first time in the 1982 RECS), in answer to the question "Which fuel is used **most** for heating water?" The phrase "other than just for cooking purposes" was added to the question in the 1982 RECS to clarify that the use for the hot water is for bathing and washing. Households that did not have running water in the home were also asked this question. The hot water may

have been available anywhere in the same building as the respondent's living quarters--in a hallway, in a room used by several units in the building, in the basement, or in an enclosed porch--provided the respondent's household had access to it.

Weather Zone: One of seven distinct areas, designated by the American Institute of Architects (AIA) for the U.S. Department of Energy and the U.S. Department of Housing and Urban Development, that are used to classify housing units or buildings by long-term weather conditions. The zones were determined according to the annual sum of heating and cooling degree-days (HDD and CDD) averaged over 45 years, as follows:

Weather Zones
Zone 1 has fewer than 2,000 CDD and more than 7,000 HDD.
Zone 2 has fewer than 2,000 CDD and 5,500 to 7,000 HDD.
Zone 3 has fewer than 2,000 CDD and 4,000 to 5,499 HDD.
Zone 4 has fewer than 2,000 CDD and 2,000 to 3,999 HDD.
Zone 5 has fewer than 2,000 CDD and fewer than 2,000 HDD.
Zone 6 has more than 2,000 CDD and fewer than 2,000 HDD.
Zone 7 has more than 2,000 CDD and 2,000 to 3,999 HDD.

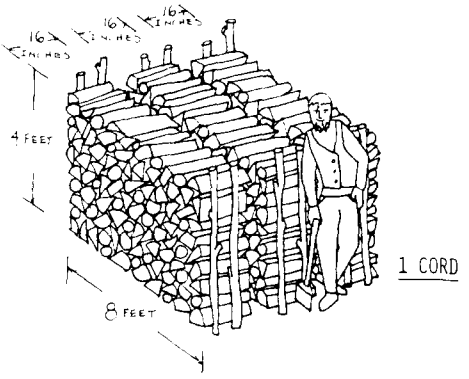
Zones 4 and 5 and Zones 6 and 7 were combined for this report. A building was assigned to a weather zone on the basis of its geographic location. (See **Heating Degree-Days**, **Cooling Degree-Days**, and **NOAA Division**.)

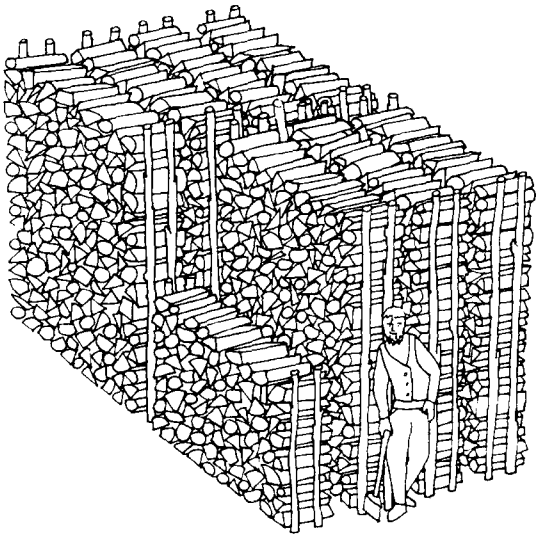
Windows: All windows in the year-round living space. Windows in the basement, attic, garage, and porch are counted only if these areas are heated. Windows in doors are not counted. Each window that opens separately is counted as one window. Windows fixed in place are also counted. Panes of glass in a large window are **not** counted individually unless they open separately. Skylights and stained-glass windows are counted as windows.

Wood Consumption: The amount of wood burned in the home at any time during the preceding 12 months in a fireplace, stove, or furnace, as reported by the respondent at the time of the interview. The figures for wood burned cover the major part of the 1983-1984 heating season and the first part of the 1984-1985 heating season.

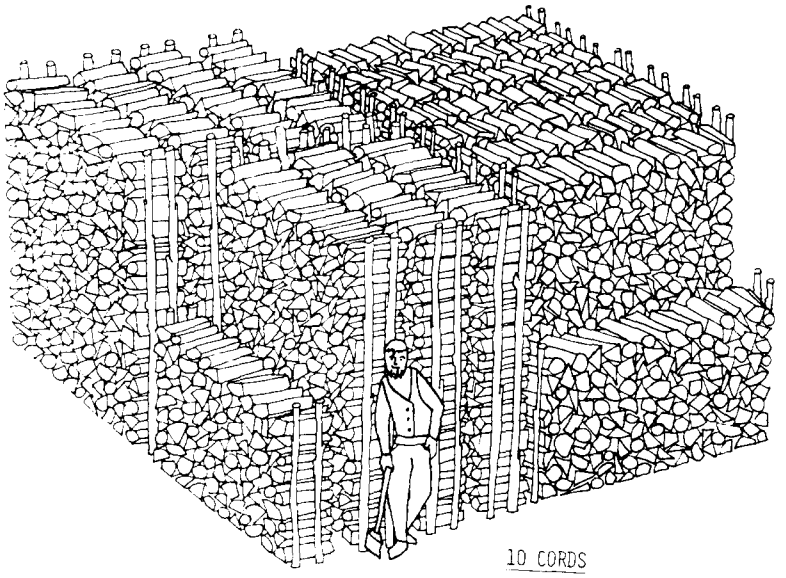
A cord of wood measures 4 feet by 4 feet by 8 feet and approximately 128 cubic feet. A third of a cord measures 16 inches by 4 feet by 8 feet.

More detailed and accurate drawings were used for the first time in the 1982 RECS. The drawings had more correct perspective than in previous surveys; they included a person holding an ax as a point of reference, and showed wood piles containing 5 and 10 cords. The purpose of these improvements was to enable respondents to be more accurate in reporting the amount of wood they burned, especially those households that used more than 5 cords of wood. A copy of the drawing for 1, 5, and 10 cords is reproduced below.





5 CORDS



10 CORDS

Note on Conversion to Btu:

Converting cords of wood into a Btu equivalent is an imprecise procedure. The number of cords each household reports having burned is inexact, even with the more precise drawings provided, because the estimate requires the respondent to add up the use of wood over a 12-month period during which wood may have been added to the supply as well as removed. Besides errors of memory 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 difference is possible because wood is most often cut in lengths that are longer than what makes a third of a cord (16 inches) and shorter than what makes a half cord (24 inches).

In other cases, wood is bought or cut in unusual units (for example, pickup truck-load or trunk load). Finally, volume estimates are difficult to make when the wood is left in a pile instead of being stacked.

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. 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 in driving off the moisture.) Finally, some tree species contain twice the Btu content of species with the lowest Btu value. Generally, hard woods have greater Btu value than soft woods. Wood was converted to Btu at the rate of 20 million Btu per cord, which is a rough average that takes all these factors into account.

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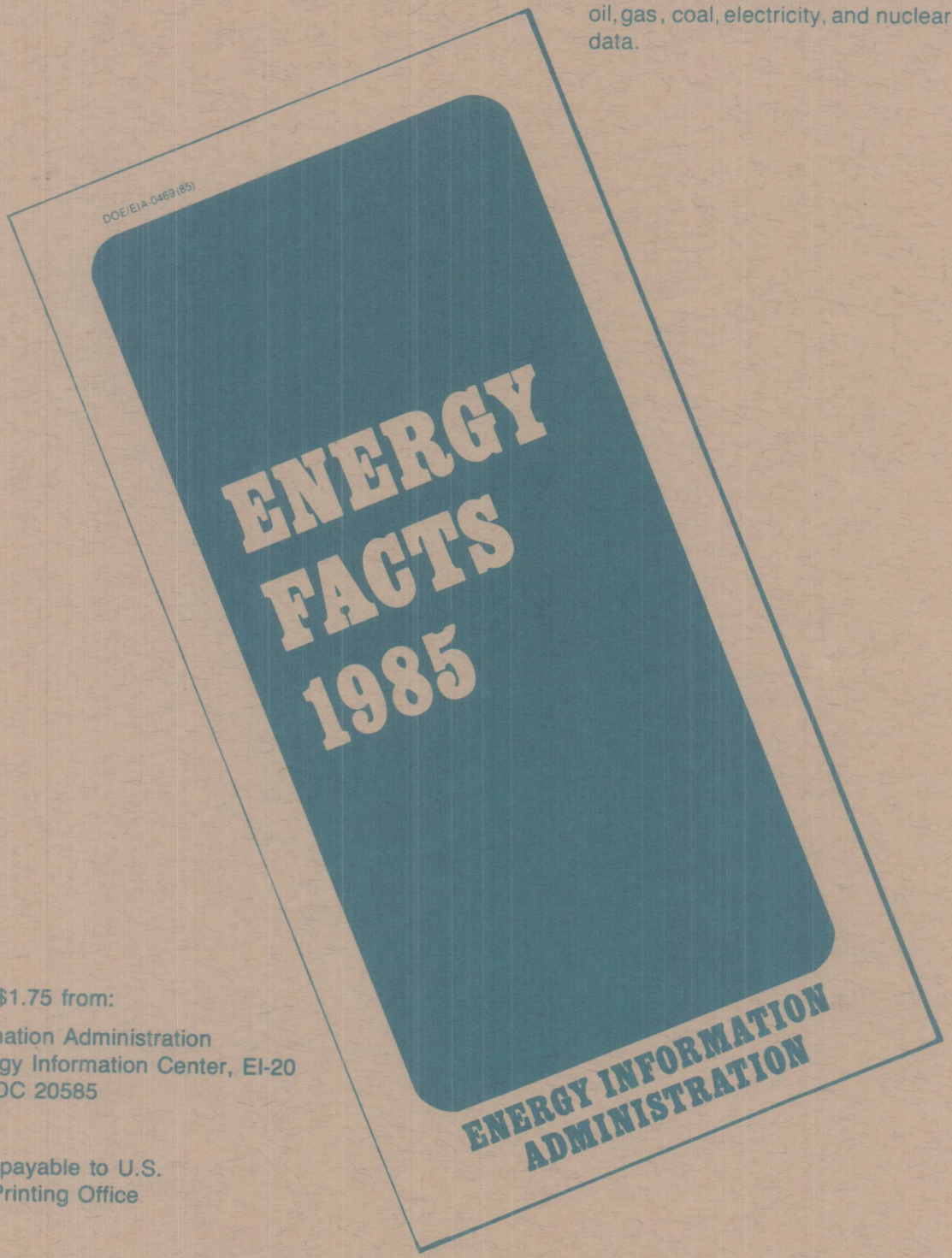

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