

A Look at Residential Energy Consumption in 1997

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Contacts

The Energy Information Administration (EIA) prepared this publication under the general direction of W. Calvin Kilgore, Director of the Office of Energy Markets and End Use (202-586-1617). The project was directed by Dwight K. French (202-586-1126), Director of the Energy Consumption Division (ECD) and by Nancy L. Leach (202-586-1122), Team Leader of the Consumption Data Management Team of ECD, who also may be contacted for specific technical information. The fax number for all ECD personnel is 202-586-0018.

For detailed technical questions on the topics indicated, contact the following ECD staff members:

Michael T. Laurence	Residential Energy 1997 Overview Two Decades of RECS Out With Old . . . In With the New Detailed Tables Appendix D	202-586-2453 michael.laurence@eia.doe.gov
Ivy Harrison	At A Glance Residential Vehicles 1997	202-586-5931 ivy.harrison@eia.doe.gov
Vicki Moorhead	Table Production	202-586-1133 vicki.moorhead@eia.doe.gov
Hattie Ramseur	Appendices E, F, and G Report Manager	202-586-1124 hattie.ramseur@eia.doe.gov
Robert Latta	End Uses of Electricity and Residential Energy Cost Analysis Using Percentiles Appendices A, B, and C	202-586-1385 robert.latta@eia.doe.gov
LaVerne Gilchrist	Desktop Publishing Text Tables & Figures Design	202-586-1112 laverne.gilchrist@eia.doe.gov
Joelle S. Davis	Cover Graphics Design	202-586-8952 joelle.davis@eia.doe.gov

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AT A GLANCE:

Residential Energy Consumption in Perspective

In-depth information about how energy was used in residential housing units that were occupied year-round is provided by the Energy Information Administration (EIA) in this analysis of the 1997 Residential Energy Consumption Survey results. The uses and costs of residential energy (excluding vehicle fuels, primarily gasoline) were analyzed by using households' energy-related characteristics, such as location, type (for example, single-family), size, number of household members and vehicles, and age.



The average household spent \$1,338 on energy in 1997

The average household spent most of their energy dollars on refrigeration, other appliances, and lighting, followed by space heating. Over 45 percent of the average household's energy costs was for energy used in appliances and lighting, while space heating accounted for another 30 percent. Water heating and air conditioning expenditures accounted for the remaining energy expenditures in the average household.



and used 101 million Btu of energy.

This 101 million Btu value reflects the energy content of all energy sources, including electricity, as they are used in the home (so-called "site energy"). However, large amounts of additional energy are used to generate and transmit electricity for residential use. If the energy losses in electricity generation and transmission are added to the energy value of the electricity as it enters the home, then the total energy requirement associated with the average household (so-called "primary energy") becomes 172 million Btu.



About half of the average household's site energy consumption was used for space heating. Another 22 percent was used for appliances. On a per-household basis, site energy consumption was 27 percent lower in 1997 than in 1978. Most of the decrease was in the amount of energy used for space heating and occurred between 1978 and 1987. The 1997 site energy consumption was the same as in 1987.

Households spent more money on electricity than on all other fuels combined,

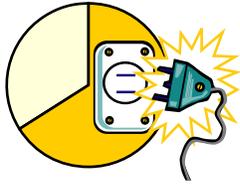
Households spent a total of \$136 billion on energy and almost two-thirds of the total (\$88 billion) was used to purchase electricity. The remaining amount was spent on natural gas, \$36 billion; fuel oil, \$7 billion; LPG, \$4 billion; and kerosene, \$0.5 billion.



but used more natural gas than all other fuels combined.

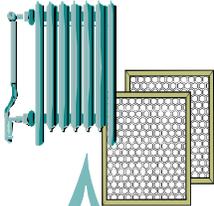
Households used a total of 10 quadrillion Btu of site energy in their homes. Natural gas (5.3 quadrillion Btu) and electricity (3.5 quadrillion Btu) predominated. Fuel oil (1.0 quadrillion Btu), LPG (0.4 quadrillion Btu), and kerosene (0.1 quadrillion Btu) accounted for the remainder. The relatively high cost of electricity per Btu accounts for the fact that more was spent on electricity despite the fact that more natural gas was consumed.





Approximately two-thirds of the electricity used in homes was used to operate appliances, refrigerators, and lights;

Appliances, refrigerators, and lights accounted for approximately two-thirds of the electricity consumed in homes; no single appliance was clearly dominant. The remaining one-third was approximately equally divided among air-conditioning, space heating, and water heating.



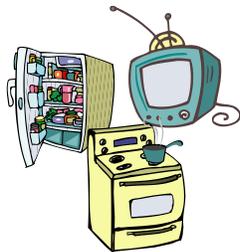
the greater shares of most other fuels were used for space heating.

Sixty-eight percent of natural gas consumption was devoted to space heating, as was 72 percent of LPG and 84 percent of fuel oil. Kerosene was used almost exclusively for space heating.



Natural gas remained the predominant fuel for space heating.

Natural gas was used as the main space-heating fuel in over half of all homes in 1978 and in 1997. In 1978, fuel oil was the second most prevalent space-heating fuel, while only 16 percent of homes had electric heat. By 1997, the situation was reversed; close to one-third of homes had electric heat, while only 9 percent were heated with fuel oil.



Refrigerators, color televisions, ranges, and ovens all were found in typical U.S. homes in 1997;

The market penetration of refrigerators and color televisions was almost universal. More precisely, 99.9 percent of the homes had at least one refrigerator and 98.7 percent had at least one color television. (In fact, nearly two-thirds of the households had two or more color televisions.) Similarly, 99.2 percent of the households had ranges and 98.8 percent had ovens.



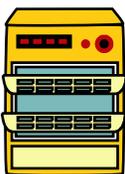
however, the presence of central air-conditioning depended on the location of the home;

Nationally, on average, 47 percent of the homes had central air-conditioning. In the South, the warmest region, 70 percent of the homes had central air-conditioning. In the Northeast, in contrast, only 22 percent of homes had central air-conditioning.



the presence of a clothes washer and dryer depended on the type of home;

The share of households with clothes washers and dryers varied substantially by type of home. Among single-family homes, 92 percent contained a clothes washer and 86 percent contained a clothes dryer. By contrast, among units in apartment buildings with five or more units, 21 percent contained a clothes washer and 18 percent contained a clothes dryer.



and the presence of a dishwasher depended on the age of the home.

Not surprisingly, the share of households with dishwashers was higher among new homes than among old homes. The percent of homes with dishwashers was 30 percent for old homes (built in 1949 or before) and 77 percent for new homes (built from 1990 through 1997).

1. RESIDENTIAL ENERGY 1997 OVERVIEW : UNITED STATES

Number of households: 101.5 million

Single-family homes: 73%
Multifamily dwellings: 21%
Mobile homes: 6%

Owner-occupied homes: 67%

Home ownership is highest in the Midwest and South and lowest in the West

Homes with a ...
... basement¹: 45%
... garage or carport: 54%
... clothes washer: 77%
... clothes dryer: 71%
... personal computer: 35%

Most homes in the Northeast and Midwest were built over a basement

58 percent of the personal computers were equipped with a modem

Homes using ...
... natural gas: 61%
... fuel oil: 10%
... LPG: 8%
... kerosene: 3%

Natural gas was used most in the Midwest and least in the South

Fuel oil was used most in the Northeast



Total energy consumed: 101 million Btu per household
Amount spent on all energy: \$1,338 per household

Homes where main space heating energy source was ...
... natural gas: 53%
... electricity: 29%
... fuel oil: 9%
... some other fuel: 9%

Energy consumed for space heating: 52 million Btu per household
Amount spent for space heating: \$421 per household

Homes with air-conditioning: 72%
... with a central air-conditioning system: 47%
... with room/wall units: 25%

Air conditioning was most likely to be used in the South and least likely to be used in the West

Electricity consumed for air conditioning²: 7 million Btu per household
Amount spent for air conditioning: \$140 per household

Eligible for the *Low-Income Home Energy Assistance Program (LIHEAP)*: 34%

LIHEAP eligibility rate was highest in the West and lowest in the Midwest

¹ Of single family homes.

² Of households that used air conditioning.

RESIDENTIAL ENERGY 1997
OVERVIEW ■ **CENSUS REGIONS**

Number of households: 19.7 million
Portion of all U.S. households: 19%



Single-family homes: 70%
 Multifamily dwellings: 28%
 Mobile homes: 2%

Owner-occupied homes: 65%

Homes built...
 ... before 1940: 32%
 ... after 1980: 18%

Total energy consumed: 121 million Btu per household
 Amount spent on all energy: \$1,644 per household

Homes with a ...
 ... basement¹: 82%
 ... garage or carport: 47%
 ... clothes washer: 76%
 ... clothes dryer: 67%
 ... personal computer: 32%

Homes where main space heating energy source was ...
 ... natural gas: 46%
 ... fuel oil: 36%
 ... electricity: 12%

Homes using ...
 ... natural gas: 60%
 ... fuel oil: 38%
 ... LPG: 8%

Energy consumed for space heating: 76 million Btu per household
 Amount spent for space heating: \$657 per household

Homes with air-conditioning: 62%
 ... with a central air-conditioning system: 22%
 ... with room/wall units: 40%

Eligible for the *Low-Income Home Energy Assistance Program*: 33%

Electricity consumed for air conditioning²: 2 million Btu per household
 Amount spent for air conditioning: \$74 per household

Number of households: 24.1 million
Portion of all U.S. households: 24%



Single-family homes: 77%
 Multifamily dwellings: 19%
 Mobile homes: 5%

Owner-occupied homes: 72%

Homes built...
 ... before 1940: 30%
 ... after 1980: 20%

Total energy consumed: 134 million Btu per household
 Amount spent on all energy: \$1,396 per household

Homes with a ...
 ... basement¹: 76%
 ... garage or carport: 62%
 ... clothes washer: 79%
 ... clothes dryer: 76%
 ... personal computer: 38%

Homes where main space heating energy source was ...
 ... natural gas: 75%
 ... electricity: 11%
 ... LPG: 7%

Homes using ...
 ... natural gas: 77%
 ... LPG: 10%
 ... fuel oil: 4%

Energy consumed for space heating: 82 million Btu per household
 Amount spent for space heating: \$548 per household

Homes with air-conditioning: 77%
 ... with a central air-conditioning system: 51%
 ... with room/wall units: 26%

Eligible for the *Low-Income Home Energy Assistance Program*: 30%

Electricity consumed for air conditioning²: 3 million Btu per household
 Amount spent for air conditioning: \$81 per household

¹ Of single family homes.

² Of households that used air conditioning.

RESIDENTIAL ENERGY 1997
OVERVIEW ■ **CENSUS REGIONS**

Number of households: 35.9 million
Portion of all U.S. households: 35%



Single-family homes: 74%
 Multifamily dwellings: 17%
 Mobile homes: 8%

Owner-occupied homes: 71%

Homes built...
 ... before 1940: 9%
 ... after 1980: 36%

Homes with a ...
 ... basement¹: 18%
 ... garage or carport: 48%
 ... clothes washer: 82%
 ... clothes dryer: 74%
 ... personal computer: 31%

Homes using ...
 ... natural gas: 46%
 ... LPG: 9%
 ... fuel oil: 3%

Eligible for the *Low-Income Home Energy Assistance Program*: 35%

Total energy consumed: 84 million Btu per household
 Amount spent on all energy: \$1,328 per household

Homes where main space heating energy source was ...
 ... electricity: 49%
 ... natural gas: 38%
 ... fuel oil: 3%

Energy consumed for space heating: 31 million Btu per household
 Amount spent for space heating: \$314 per household

Homes with air-conditioning: 92%
 ... with a central air-conditioning system: 69%
 ... with room/wall units: 23%

Electricity consumed for air conditioning²: 9 million Btu per household
 Amount spent for air conditioning: \$201 per household

Number of households: 21.8 million
Portion of all U.S. households: 21%



Single-family homes: 68%
 Multifamily dwellings: 24%
 Mobile homes: 8%

Owner-occupied homes: 60%

Homes built...
 ... before 1940: 9%
 ... after 1980: 27%

Homes with a ...
 ... basement¹: 19%
 ... garage or carport: 59%
 ... clothes washer: 70%
 ... clothes dryer: 65%
 ... personal computer: 41%

Homes using ...
 ... natural gas: 69%
 ... LPG: 4%
 ... fuel oil: 1%

Eligible for the *Low-Income Home Energy Assistance Program*: 37%

Total energy consumed: 75 million Btu per household
 Amount spent on all energy: \$1,014 per household

Homes where main space heating energy source was ...
 ... natural gas: 58%
 ... electricity: 33%
 ... LPG: 3%

Energy consumed for space heating: 31 million Btu per household
 Amount spent for space heating: \$241 per household

Homes with air-conditioning: 41%
 ... with a central air-conditioning system: 28%
 ... with room/wall units: 13%

Electricity consumed for air conditioning²: 4 million Btu per household
 Amount spent for air conditioning: \$128 per household

¹ Of single family homes.

² Of households that used air conditioning.

RESIDENTIAL ENERGY 1997
OVERVIEW ■ **MOST POPULOUS STATES**

Number of households: 11.5 million
Portion of all U.S. households: 11%



Single-family homes: 68%
 Multifamily dwellings: 28%
 Mobile homes: 4%

Owner-occupied homes: 54%

Homes built...
 ... before 1940: 10%
 ... after 1980: 25%

Homes with a ...
 ... basement¹: 7%
 ... garage or carport: 59%
 ... clothes washer: 61%
 ... clothes dryer: 57%
 ... personal computer: 40%

Homes using ...
 ... natural gas: 84%
 ... LPG: 4%

Eligible for the Low-Income Home
 Energy Assistance Program: 43%

Total energy consumed: 64 million Btu per household
 Amount spent on all energy: \$1,009 per household

Homes where main space heating energy source was ...
 ... natural gas: 68%
 ... electricity: 25%
 ... LPG: 2%

Energy consumed for space heating: 20 million Btu per household
 Amount spent for space heating: \$170 per household

Homes with air-conditioning: 40%
 ... with a central air-conditioning system: 28%
 ... with room/wall units: 12%

Electricity consumed for air conditioning²: 4 million Btu per household
 Amount spent for air conditioning: \$127 per household

Number of households: 7 million
Portion of all U.S. households: 7%



Single-family homes: 75%
 Multifamily dwellings: 21%
 Mobile homes: 4%

Owner-occupied homes: 64%

Homes built...
 ... before 1940: 8%
 ... after 1980: 31%

Homes with a ...
 ... basement¹: 7%
 ... garage or carport: 59%
 ... clothes washer: 73%
 ... clothes dryer: 70%
 ... personal computer: 37%

Homes using ...
 ... natural gas: 68%
 ... LPG: 4%

Eligible for the Low-Income Home
 Energy Assistance Program: 33%

Total energy consumed: 96 million Btu per household
 Amount spent on all energy: \$1,374 per household

Homes where main space heating energy source was ...
 ... natural gas: 54%
 ... electricity: 41%
 ... LPG: 4%

Energy consumed for space heating: 31 million Btu per household
 Amount spent for space heating: \$248 per household

Homes with air-conditioning: 90%
 ... with a central air-conditioning system: 69%
 ... with room/wall units: 23%

Electricity consumed for air conditioning²: 12 million Btu per household
 Amount spent for air conditioning: \$266 per household

¹ Of single family homes.

² Of households that used air conditioning.

RESIDENTIAL ENERGY 1997
OVERVIEW ■ **MOST POPULOUS STATES**

Number of households: 6.8 million
Portion of all U.S. households: 7%



Single-family homes: 56%
 Multifamily dwellings: 41%
 Mobile homes: 2%

Owner-occupied homes: 55%

Homes built...
 ... before 1940: 37%
 ... after 1980: 14%

Total energy consumed: 123 million Btu per household
 Amount spent on all energy: \$1,724 per household

Homes with a ...
 ... basement¹: 86%
 ... garage or carport: 41%
 ... clothes washer: 67%
 ... clothes dryer: 54%
 ... personal computer: 32%

Homes where main space heating energy source was ...
 ... natural gas: 50%
 ... fuel oil: 40%
 ... electricity: 6%

Homes using ...
 ... natural gas: 75%
 ... fuel oil: 43%
 ... LPG: 8%

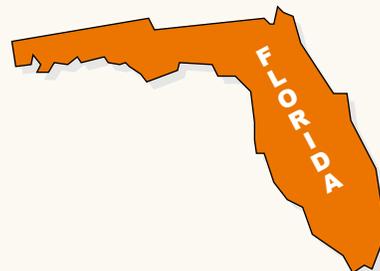
Energy consumed for space heating: 77 million Btu per household
 Amount spent for space heating: \$661 per household

Homes with air-conditioning: 62%
 ... with a central air-conditioning system: 18%
 ... with room/wall units: 44%

Eligible for the Low-Income Home
 Energy Assistance Program: 32%

Electricity consumed for air conditioning²: 2 million Btu per household
 Amount spent for air conditioning: \$80 per household

Number of households: 5.9 million
Portion of all U.S. households: 6%



Single-family homes: 77%
 Multifamily dwellings: 20%
 Mobile homes: 3%

Owner-occupied homes: 75%

Homes built...
 ... before 1940: 5%
 ... after 1980: 45%

Total energy consumed: 55 million Btu per household
 Amount spent on all energy: \$1,266 per household

Homes with a ...
 ... basement¹: 1%
 ... garage or carport: 13%
 ... clothes washer: 82%
 ... clothes dryer: 74%
 ... personal computer: 33%

Homes where main space heating energy source was ...
 ... electricity: 80%
 ... natural gas: 12%

Homes using ...
 ... natural gas: 19%
 ... LPG: 6%

Energy consumed for space heating: 5 million Btu per household
 Amount spent for space heating: \$83 per household

Homes with air-conditioning: 95%
 ... with a central air-conditioning system: 83%
 ... with room/wall units: 12%

Eligible for the Low-Income Home
 Energy Assistance Program: 33%

Electricity consumed for air conditioning²: 13 million Btu per household
 Amount spent for air conditioning: \$322 per household

¹ Of single family homes.

² Of households that used air conditioning.

RESIDENTIAL ENERGY 1997
OVERVIEW ■ **TYPES OF HOUSING UNITS**



SINGLE-FAMILY HOMES

Number of households: 73.7 million
Portion of all U.S. households: 73%

Owner-occupied homes: 83%

Homes with a ...

- ... clothes washer: 92%
- ... clothes dryer: 86%
- ... personal computer: 40%

Eligible for the Low-Income Home Energy Assistance Program: 27%

Total energy consumed:
 115 million Btu per household
 Amount spent on all energy:
 \$1,492 per household

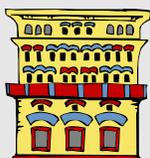
Homes where main space heating energy source was ...

- ... natural gas: 58% □ ... LPG: 5%
- ... electricity: 24% □ ... kerosene: 1%
- ... fuel oil: 10% □

Energy consumed for space heating: 60 million Btu per household
 Amount spent for space heating: \$482 per household

Homes with air-conditioning: 73%
 ... with a central air-conditioning system: 50%
 ... with room/wall units: 23%

Electricity consumed for air conditioning¹: 6 million Btu per household
 Amount spent for air conditioning: \$150 per household



MULTIFAMILY DWELLINGS

Number of households: 21.4 million
Portion of all U.S. households: 21%

Owner-occupied homes: 10%

Homes with a ...

- ... clothes washer: 26%
- ... clothes dryer: 21%
- ... personal computer: 25%

Eligible for the Low-Income Home Energy Assistance Program: 51%

Total energy consumed:
 60 million Btu per household
 Amount spent on all energy:
 \$849 per household

Homes where main space heating energy source was ...

- ... electricity: 44% □ ... LPG: nearly none
- ... natural gas: 42% □ ... kerosene: nearly none
- ... fuel oil: 10% □

Energy consumed for space heating: 26 million Btu per household
 Amount spent for space heating: \$224 per household

Homes with air-conditioning: 67%
 ... with a central air-conditioning system: 36%
 ... with room/wall units: 29%

Electricity consumed for air conditioning¹: 4 million Btu per household
 Amount spent for air conditioning: \$94 per household



MOBILE HOMES

Number of households: 6.3 million
Portion of all U.S. households: 6%

Owner-occupied homes: 83%

Homes with a ...

- ... clothes washer: 79%
- ... clothes dryer: 72%
- ... personal computer: 15%

Eligible for the Low-Income Home Energy Assistance Program: 47%

Total energy consumed:
 80 million Btu per household
 Amount spent on all energy:
 \$1,206 per household

Homes where main space heating energy source was ...

- ... electricity: 37% □ ... kerosene: 6%
- ... natural gas: 33% □ ... fuel oil: nearly none
- ... LPG: 16% □

Energy consumed for space heating: 37 million Btu per household
 Amount spent for space heating: \$357 per household

Homes with air-conditioning: 71%
 ... with a central air-conditioning system: 41%
 ... with room/wall units: 30%

Electricity consumed for air conditioning¹: 8 million Btu per household
 Amount spent for air conditioning: \$175 per household

¹ Of households that used air conditioning.

2. Two Decades of RECS: Changes in Energy Consumption and Related Household Characteristics

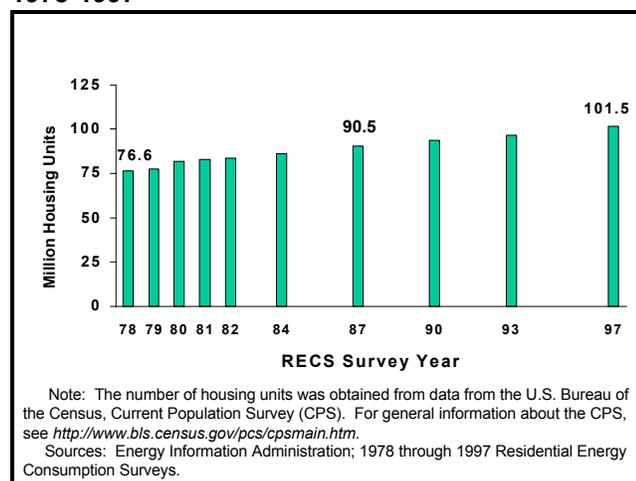
The 1997 Residential Energy Consumption Survey (RECS) was the tenth administration of the survey since 1978. Over the 19 years between the first and last surveys, energy consumption and related household characteristics in U.S. households have changed significantly. This section of this report describes some of the more notable changes documented by the RECS.

The fuels consumed in U.S. households are usually measured in physical units: electricity in kilowatt-hours; natural gas in cubic feet; fuel oil, kerosene, and liquefied petroleum gas in gallons; and wood in cords. For comparisons across fuels to be made, a common measure is necessary. Hence, the physical units have all been converted to Btu (British thermal units). (For the factors used to convert physical units to Btu, see *Btu Conversion Factors* in the Glossary.)

U.S. Housing Units

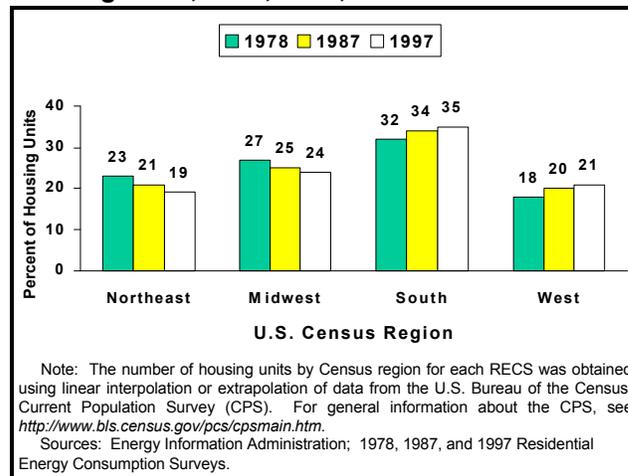
Over the past two decades, the number of U.S. housing units increased by 33 percent. When the first RECS was conducted in 1978, there were 76.6 million housing units in the United States. When the 1997 RECS was conducted, the number had increased to 101.5 million units (Figure 2.1).

Figure 2.1. Number of U.S. Housing Units, 1978-1997



Although the number of housing units in all four U.S. Census regions increased over the 1978-1997 period, the distribution of those same housing units across the Nation also changed (Figure 2.2).

Figure 2.2. Geographic Distribution of U.S. Housing Units, 1978, 1987, and 1997



The change in the distribution directly affected both the types and the amounts of energy consumed in the United States. For example, air-conditioning was used more in the South than in the West; natural gas was the most frequently used heating fuel in the Midwest, while fuel oil was little used outside the Northeast.

The proportion of housing units in the South increased from 32 percent in 1978 to 35 percent in 1997. At the same time, housing units in the West increased from 18 percent to 21 percent. In contrast, the proportion of housing units in the Northeast and the Midwest decreased by 4 percentage points and 3 percentage points, respectively.

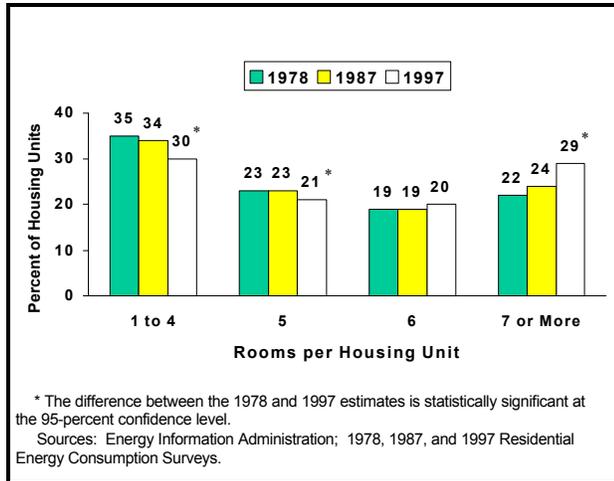
At the same time that the number of housing units was increasing, the size of housing units in the United States also became increasingly larger, resulting in an increased demand for energy-consuming activities, such as heating, air-conditioning, and lighting. The percentage of smaller housing units, those with four or fewer rooms (excluding bathrooms), decreased from 35 percent to 30 percent (Figure 2.3). At the other end of the scale, the percentage of larger housing units, those with seven or more rooms, increased from 22 percent in 1978 to 29 percent in 1997.

Energy Consumption

Energy consumption can be expressed as the amount of energy consumed within the housing unit (*site* energy) or it can include the energy consumed in generating and

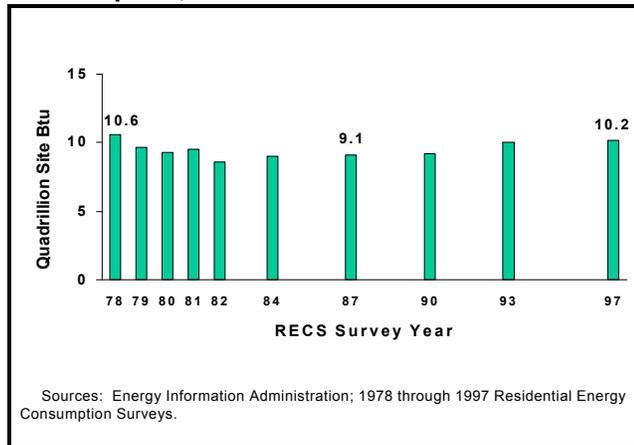
transmitting electricity (*primary* energy) (see the shaded Box). All consumption data presented in this report, unless otherwise noted, are site energy.

Figure 2.3. Number of Rooms per U.S. Housing Unit, 1978, 1987, and 1997



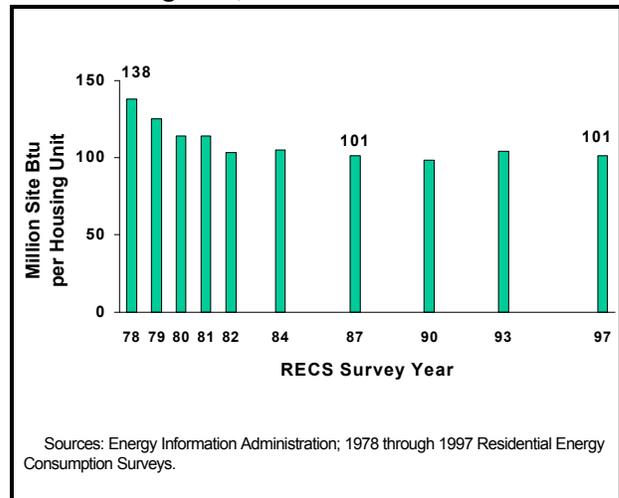
The total amount of site energy consumed by American housing units in 1997 was 10.2 quadrillion Btu (Figure 2.4). In 1978, 10.6 quadrillion Btu had been consumed. (Those totals are not statistically different.) Over this 19-year period, the total Btu consumption first decreased by 19 percent over the 1978-1982 period, then reversed course and increased by 19 percent over the 1984-1997 period.

Figure 2.4. Total U.S. Residential Site Energy Consumption, 1978-1997



On a per-housing unit basis, site energy consumption was 27 percent lower in 1997 than in 1978, dropping from 138 million Btu per housing unit to 101 million Btu per housing unit (Figure 2.5). All of this decrease occurred in the 1978-1987 period. Btu consumption per housing unit in 1997 was unchanged from the 1987 estimate.

Figure 2.5. Total Site Energy Consumption per U.S. Housing Unit, 1978-1997



Primary and Site Energy

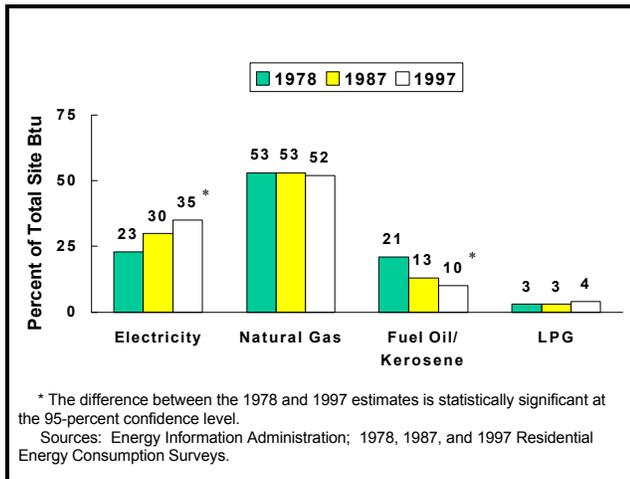
Primary energy is the sum of the energy directly consumed by end users (*site energy*) and the energy consumed in the production and delivery of energy products. Electricity, of the major energy sources, has the greatest disparity between primary and site energy—a vastly greater amount of energy is used to generate and transmit electricity than to produce and distribute the other major sources. In 1997, steam-electricity utility plants, which were the largest source of electricity generation, were estimated to have used approximately 3.02 Btu of fossil-fuel energy to generate 1 Btu of electricity. Thus, in keeping with EIA policy, primary energy, as measured in this report, is the sum of site energy and electricity losses.

The choice of expressing energy consumption data as site energy or primary energy (or site electricity or primary electricity, when that energy source alone is considered) depends on how the data are used. Site energy and site electricity reflect the amount actually consumed within the housing unit. Primary energy and primary electricity data are useful to policymakers, energy analysts, and others, who are concerned with environmental issues, such as carbon emissions from energy sources.

The consumption data presented in previous RECS have been expressed as site energy and site electricity. Primary electricity data are presented in the tables in the Total Consumption section of the 1997 RECS Detailed Data Tables (Chapter 4 of this report).

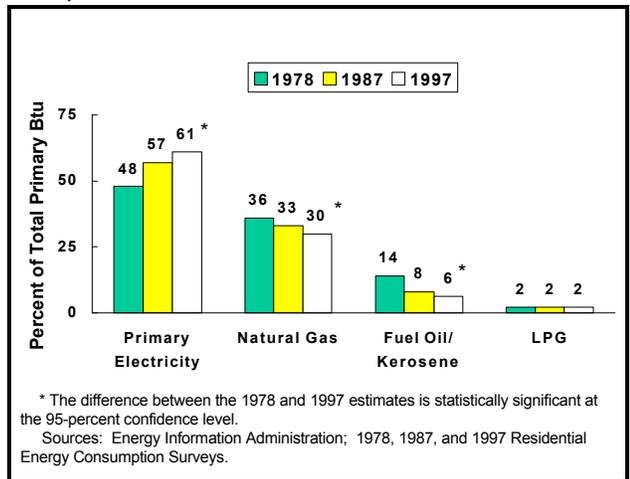
Over the past two decades, the sources of the site energy consumed in U.S. housing units changed (Figure 2.6a). Over that period, the percentage of site energy provided by electricity increased from 23 percent of all site energy consumed in 1978 to 35 percent in 1997. In contrast, the site energy provided by fuel oil/kerosene (some housing units use either fuel oil or kerosene; some use both) decreased from 21 percent in 1978 to 10 percent in 1997. The percentage of site energy provided by natural gas, 52 percent in 1997, and LPG, 4 percent in 1997, were statistically unchanged from the 1978 levels.

Figure 2.6a. Percent of Total U.S. Residential Site Energy Consumption by Fuel, 1978, 1987, and 1997



The distribution of total energy consumption by fuel is notably different if primary electricity, rather than site electricity, is measured. By this measure, electricity, not natural gas, is the predominate energy source (Figure 2.6b).

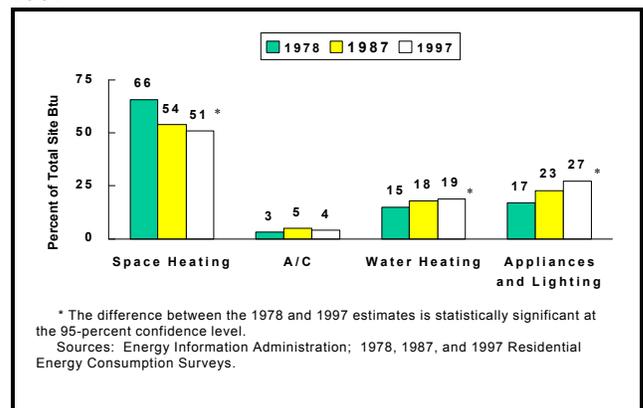
Figure 2.6b. Percent of Total U.S. Residential Primary Energy Consumption by Fuel, 1978, 1987, and 1997



Over the 1978-1997 period, the percentage of total primary energy provided by primary electricity increased from 48 percent of all energy consumed to 61 percent. In contrast, the percentage of primary energy provided by both natural gas and fuel oil/kerosene decreased. The percentage of total primary energy consumption of natural gas decreased from 36 percent in 1978 to 30 percent in 1997; the primary energy consumption of fuel oil/kerosene decreased from 14 percent in 1978 to 6 percent in 1997.

The end-use consumption of site energy in U.S. housing units has also changed over the 1978-1997 period. The percentage of Btu consumed for space heating decreased and the Btu consumed in operating appliances increased (Figure 2.7). Energy consumption for space heating decreased from 66 percent of all site Btu in 1978 to 51 percent in 1997.

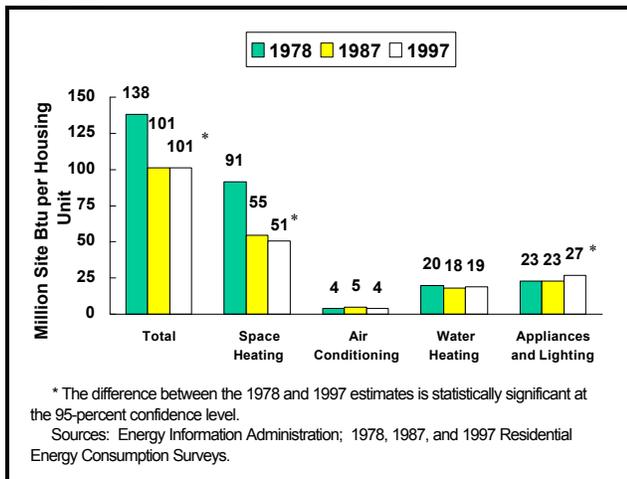
Figure 2.7. Percent of Total U.S. Residential Site Energy Consumption by End Use, 1978, 1987, and 1997



Btu consumption for appliances and lighting increased from 17 percent of all site Btu in 1978 to 27 percent in 1997. Over the same 19-year period, the proportion of Btu consumed for cooling remained unchanged. The proportion of Btu consumed for water heating increased from 15 percent in 1978 to 19 percent in 1997.

As noted earlier, site energy consumption per housing unit has decreased by 27 percent since 1978. In 1978, an average 138 million Btu were consumed; in 1997, an average 101 million Btu were consumed. Virtually all of that decrease was the result of a 44-percent decrease in site Btu consumption for space heating (Figure 2.8). In 1978, an average of 91 million Btu was consumed for space heating (66 percent of all the Btu consumed); in 1997, an average of 51 million Btu was consumed for space heating (51 percent of all the Btu consumed).

Figure 2.8. Site Energy Consumption per U.S. Housing Unit by Total and End Use, 1978, 1987, and 1997



The decrease in site energy consumption for space heating followed the energy crises of the 1970s, which resulted in an increase in energy conservation. Housing units became better insulated; heating equipment became more efficient; and people became more aware of how much energy they consumed.

Somewhat offsetting the large decrease in Btu consumption for space heating was a 17-percent increase in site Btu consumption by appliances and lighting from 23 million Btu per household in 1978 (17 percent of all the Btu consumed) to 27 million Btu per household in 1997 (27 percent of all the Btu consumed). Electricity was the source for virtually all of the additional energy consumed for appliances.

Main Space Heating

In addition to an overall decrease in site energy consumption for space heating, the source of the space heating Btu changed substantially after 1978 (Figure 2.9a). While the percent of all space heating Btu from natural gas increased from 61 percent in 1978 to 70 percent in 1997, the percent provided by fuel oil/kerosene dropped from 30 percent in 1978 to 18 percent in 1997.

The distribution of total energy consumption for space heating by fuel is not very different when primary electricity, rather than site electricity, is compared to the other fuels (Figure 2.9b). One noteworthy difference is that, in 1997 primary electricity accounted for a larger share of space heating Btu (20 percent) than did fuel oil/kerosene (15 percent). When site electricity is considered, the reverse is the case (Figure 2.9a) with site electricity accounting for 8 percent of space-heating Btu and fuel oil/kerosene

accounting for 18 percent. Also noteworthy is the finding that the increase in site natural gas consumption from 1978 to 1997 was statistically significant; the comparable increase for primary natural gas consumption was not.

Figure 2.9a. Percent of U.S. Residential Space-Heating Site Energy Consumption by Main Heating Fuel, 1978, 1987, and 1997

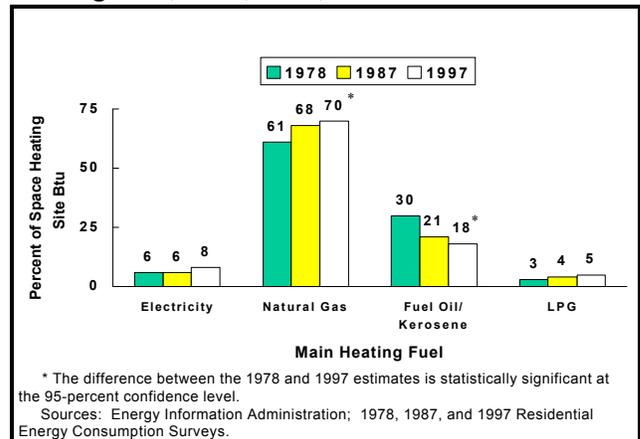
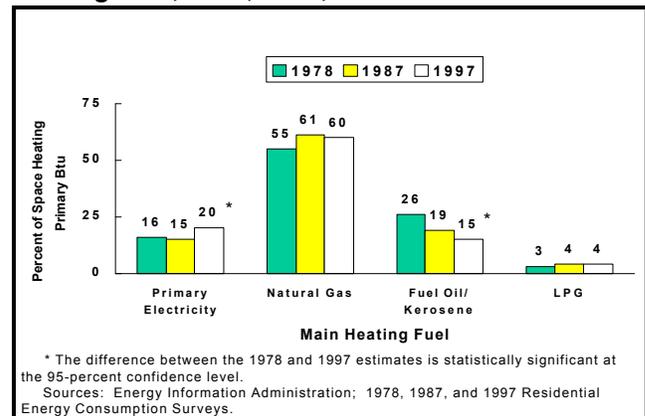
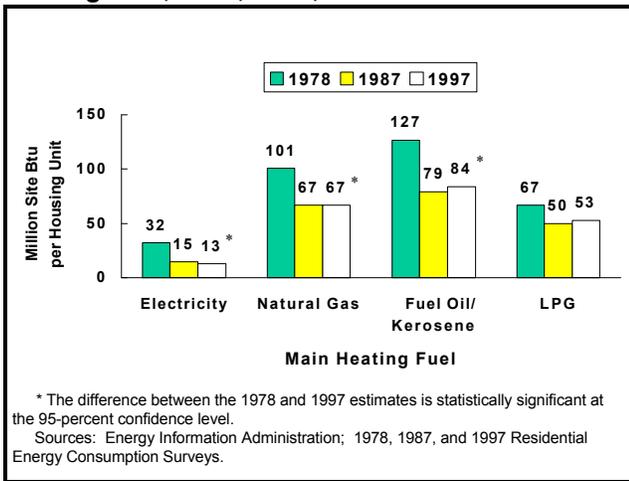


Figure 2.9b. Percent of U.S. Residential Space-Heating Primary Energy Consumption by Main Heating Fuel, 1978, 1987, and 1997



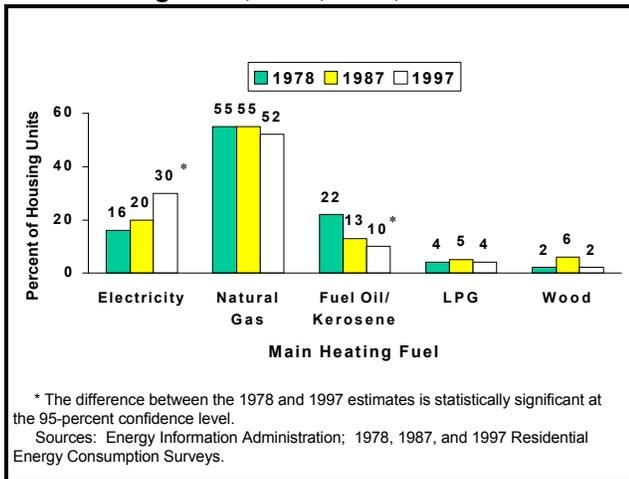
On a per-housing unit basis, the decrease in site Btu consumption for space-heating occurred regardless of the main heating fuel used (Figure 2.10). On a percentage basis, the largest decrease in space heating energy consumption occurred in those housing units whose main heating fuel was electricity. In those housing units, site Btu consumption decreased by 60 percent, from 32 million Btu per housing unit in 1978 to 13 million Btu in 1997. Btu consumption in housing units where natural gas or fuel oil/kerosene was the main heating fuel decreased by 34 percent and 33 percent, respectively, over the 1978-1997 period. Btu consumption in housing units where LPG was the main heating fuel decreased by 21 percent over the same period.

Figure 2.10. Space-Heating Site Energy Consumption per U.S. Housing Unit by Main Heating Fuel, 1978, 1987, and 1997



After 1978, the percentage of housing units using electricity as their main heating fuel nearly doubled, from 16 percent in 1978 to 30 percent in 1997 (Figure 2.11). Nevertheless, natural gas remained the most frequently used main heating fuel, used by 55 percent of housing units in 1978 and 52 percent in 1997, with little change over the 19-year period. Over the same period, the percentage of housing units mainly using fuel oil/kerosene for space heat decreased from 22 percent to 10 percent.

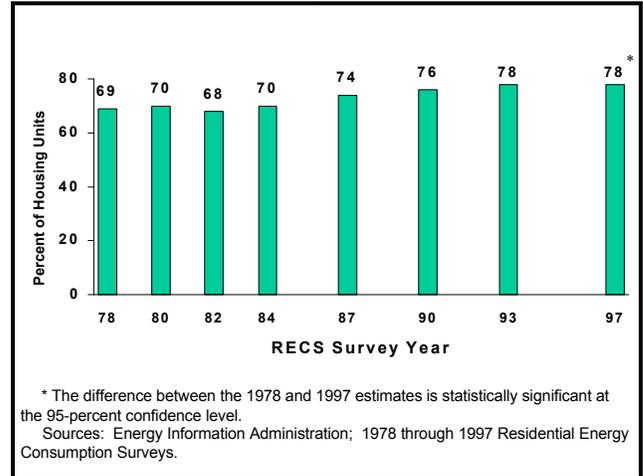
Figure 2.11. Main Central Heating Fuels Used in U.S. Housing Units, 1978, 1987, and 1997



In 1978, when the first RECS was conducted, 69 percent of U.S. housing units were heated by some type of central heating system: either a warm-air furnace, a steam or hot-

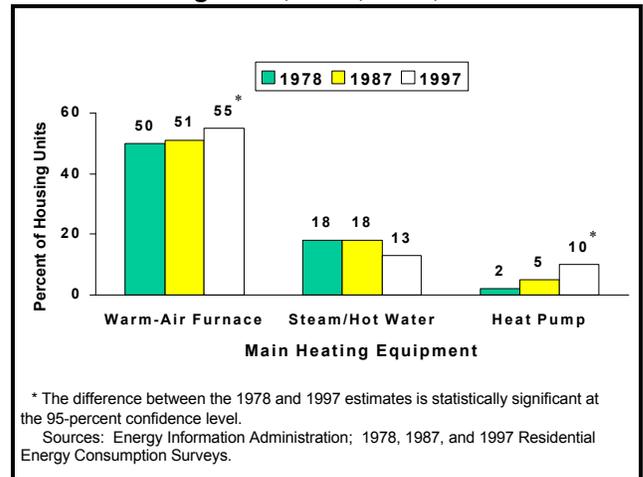
water system, or a heat pump (Figure 2.12). By 1997, the percentage of housing units heated by central heating systems increased to 78 percent. (For a more detailed discussion of the changes in the types of residential heating equipment, see *Out With the Old...In With the New: Changes in the Types of Residential Heating Equipment* in Chapter 3 of this report.)

Figure 2.12. Use of Main Central Heating Systems in U.S. Housing Units, 1978-1997



Warm-air furnaces were the most frequently used central heating systems, followed by steam/hot water systems and heat pumps (Figure 2.13). In 1978, heat pumps were relatively rare, used in only 2 percent of all housing units. By 1997, the use of heat pumps quintupled to 10 percent of housing units. After 1978, the use of warm-air furnaces increased by 5 percentage points, and the use of steam/hot-water systems declined by 5 percentage points.

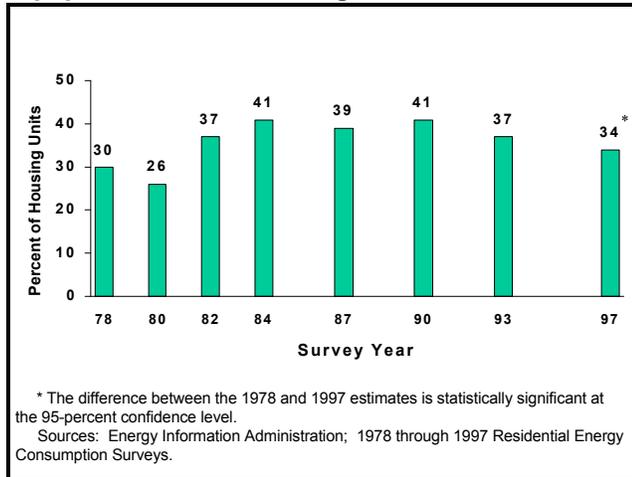
Figure 2.13. Main Central Heating Systems Used in U.S. Housing Units, 1978, 1987, and 1997



Secondary Space Heating

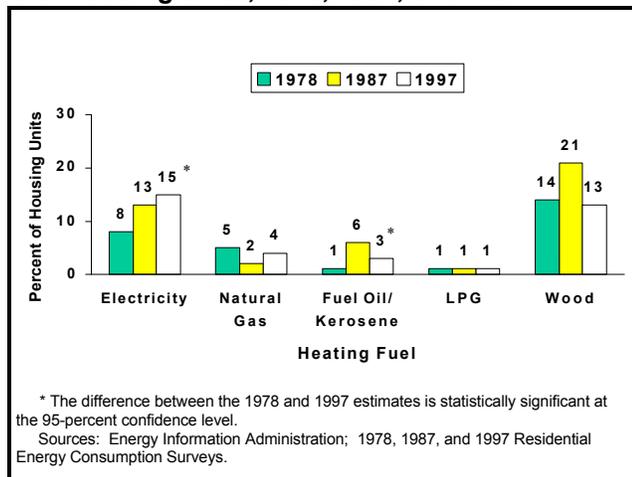
As the name implies, secondary space heating is that which supplements main heating systems. In 1978, 30 percent of all housing units used secondary heating equipment, compared with 39 percent in 1987 (Figure 2.14). In 1997, 34 percent used secondary equipment, 5 percentage points lower than in 1987, but 4 percentage points higher than in 1978. Much of the 1987 to 1997 decrease can be attributed to the abandonment of wood as a secondary heating fuel.

Figure 2.14. Use of Secondary Heating Equipment in U.S. Housing Units, 1978-1997



Some housing units used more than one fuel for secondary space heating (Figure 2.15). In 1978, wood was the most commonly used secondary heating fuel. By 1997, electricity had caught up to it. Meanwhile, the other measurable secondary heating fuels, natural gas, fuel oil/kerosene, and LPG, remained at lower levels throughout the period.

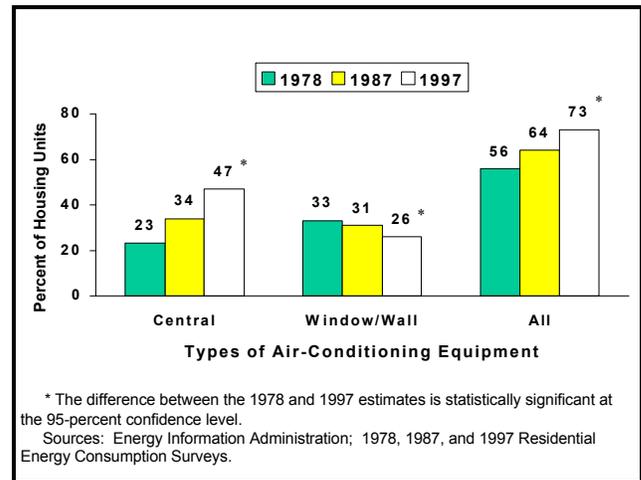
Figure 2.15. Secondary Heating Fuels Used in U.S. Housing Units, 1978, 1987, and 1997



Air-Conditioning

Air-conditioning equipment has steadily increased its penetration in the U.S. housing stock over the past two decades (Figure 2.16). In 1978, 56 percent of U.S. housing units used air-conditioners of some kind. By 1997, the use of air-conditioning equipment had increased to 73 percent.

Figure 2.16. Types of Air-Conditioning Equipment in U.S. Housing Units, 1978, 1987, and 1997



That overall increase was the result of a very large increase in the use of central air-conditioning systems, an increase that more than offset a decline in the use of window/wall units. In 1978, the use of window/wall units exceeded the use of central systems by 10 percentage points (33 percent compared with 23 percent). By 1987, the percentages were about equal, and by 1997, there were nearly twice as many housing units using central systems as window/wall units (47 percent compared with 26 percent).

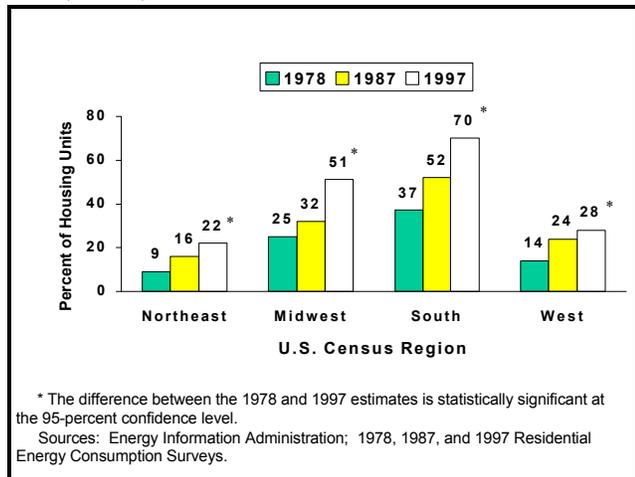
Over the 1978-1997 period, each of the four Census regions experienced dramatic growth in the use of central air-conditioning equipment (Figure 2.17). As would be expected, the South, with its warm climate, consistently had the highest percentage of housing units using central air-conditioners, followed by the Midwest, the West, and the Northeast.

Use of Appliances

Over the two decades covered by the RECS, large increases in appliance use in U.S. housing units were observed. As shown earlier (Figures 2.7 and 2.8), Btu consumption for appliances increased from 23 million Btu per housing unit in 1978 (17 percent of all the Btu consumed) to 27 million Btu per housing unit in 1997 (27 percent of all the Btu consumed). Microwave ovens, dishwashers, freezers,

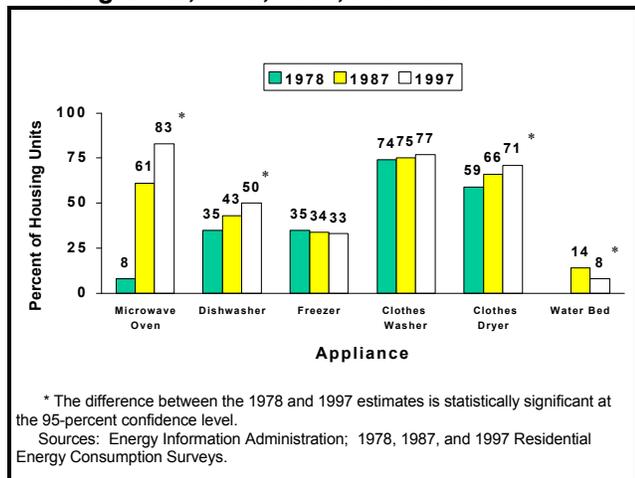
clothes washers and dryers, and water-bed heaters were some of the most commonly used major household appliances (Figure 2.18).

Figure 2.17. Geographic Location of U.S. Residential Central Air-Conditioning Equipment, 1978, 1987, and 1997



Microwave ovens, which were introduced in the mid-1970's, were found in only 8 percent of housing units in 1978. By 1997, the percentage of housing units with a microwave oven had increased by a factor of more than 10 to 83 percent. The use of dishwashers increased from 35 percent in 1978 to 50 percent in 1997. The percentage of housing units using a stand-alone freezer remained essentially unchanged.

Figure 2.18. Selected Appliances Used in U.S. Housing Units, 1978, 1987, and 1997

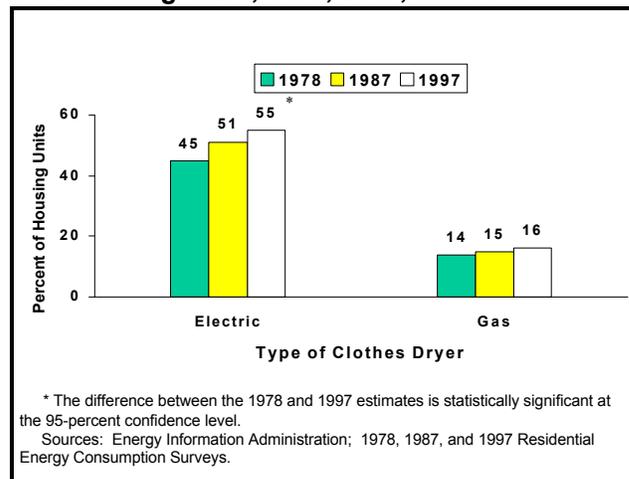


Although the use of in-home clothes washers remained about the same over the 1978-1997 period, the use of in-home clothes dryers increased. In 1978, 59 percent of housing

units used a clothes dryer, compared with 71 percent in 1997, a 12-percentage-point increase. Virtually all of that growth was in electric dryers--those that use electricity as the operating energy source (Figure 2.19). In 1997, 55 percent of the dryers used electricity, a 10-percentage-point increase above the 45 percent that used electricity in 1978. In contrast, the percentage of dryers using gas remained essentially unchanged over the same 19-year period.

Water bed heaters, which were not counted in 1978, reached their peak of 15 percent (the data point is not shown) of all housing units in 1990. Their use then declined to 8 percent of housing units in 1997.

Figure 2.19. Types of Clothes Dryers Used in U.S. Housing Units, 1978, 1987, and 1997



Refrigerators

From 1978, the first survey year, through 1997, the RECS data show that virtually every housing unit in the United States used a refrigerator. Over the 1978-1997 period, refrigerators became more efficient, meaning that, all else being equal, less electricity would be required to operate them. However, after 1990, the size of the most-used refrigerator in U.S. housing units also increased, and, to some degree, offset efficiency gains (Figure 2.20).

After 1990, when the data were first collected, there was a notable shift towards the use of larger refrigerators. Over the 1990-1997 period, the percentage of housing units using small refrigerators decreased from 25 percent to 9 percent. Over the same period, the percentage of housing units using large refrigerators increased from 34 percent of all housing units in 1990 to 46 percent in 1997.

Frost-free refrigerators captured an increasingly large share of the refrigerator market over the 1978-97 period (Figure 2.21). Frost-free equipment represented about 3 of every 5

of the most-used refrigerators in 1978. By 1997, about 7 of 8 of the most-used refrigerators were frost-free. This increase is due to the fact that, except for small refrigerators, most new refrigerators are frost-free.

Figure 2.20. Most-Used Refrigerator in U.S. Housing Units, by Size, 1990, 1993, and 1997

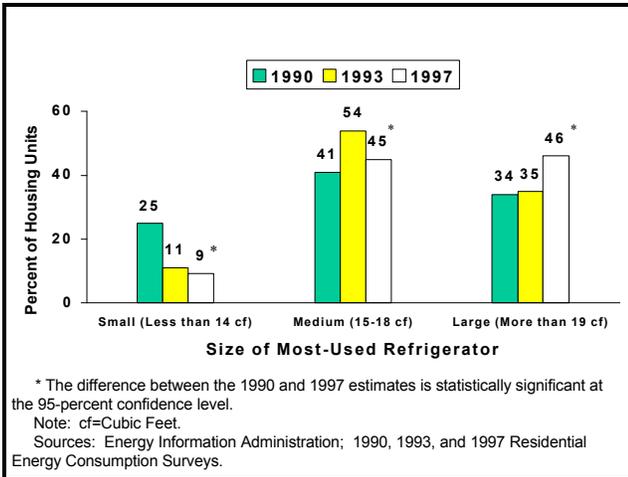
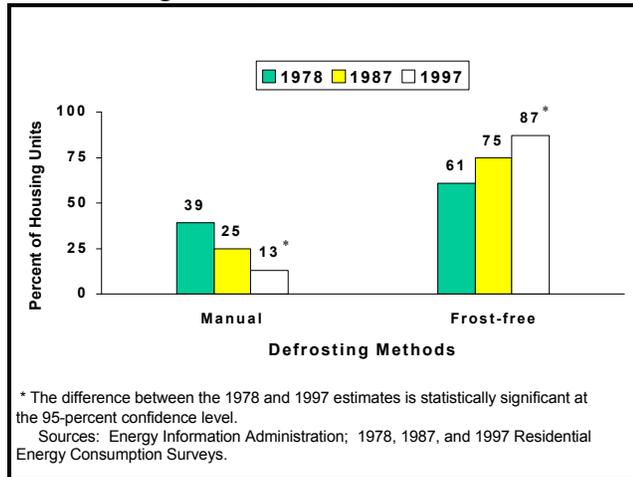


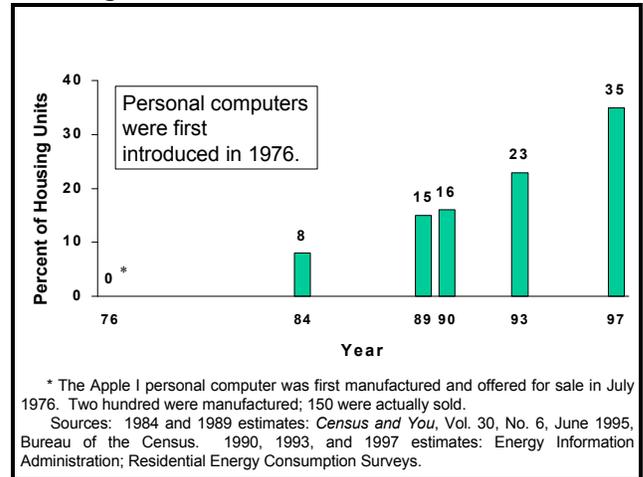
Figure 2.21. Refrigerator Defrosting Methods in U.S. Housing Units, 1978, 1987, and 1997



Use of Personal Computers

Personal computers (PCs) are among the newest energy-consuming appliances in U.S. housing units and are quickly becoming very common (Figure 2.22). The number of PCs in U.S. housing units rose from zero in 1976, when the first 200 Apple I PCs were manufactured, to nearly 43 million in 1997, when 35 percent of all U.S. housing units used at least one PC.

Figure 2.22. Use of Personal Computers in U.S. Housing Units, 1976-1997



It is interesting to note that while PCs have been the “hot technology” of the 1990s, they have not penetrated the housing stock as fast as microwave ovens--the “hot technology” of the 1980s. The difference may be due to comparative costs, as well as the perceived utility of each in the housing unit.

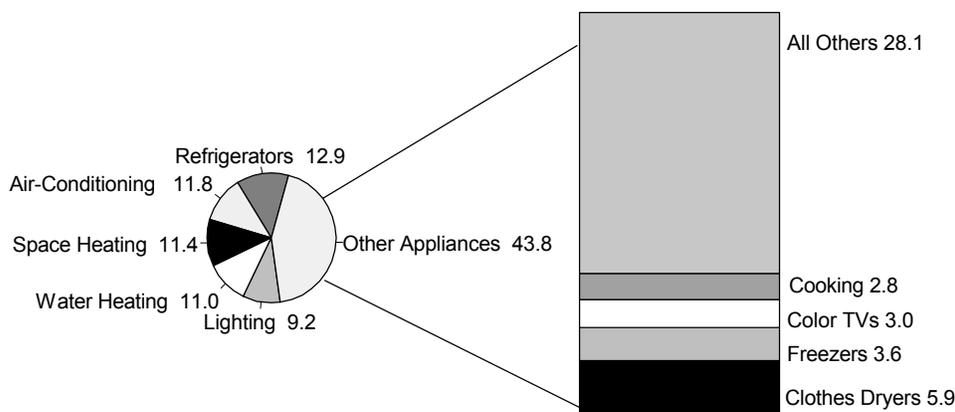
3. Special Topics

End Uses of Electricity

Energy serves a wide range of household needs--space heating and cooling, water heating, refrigerators, lighting, and the operation of a variety of appliances for entertainment, health, and comfort. For 19 years, the Residential Energy Consumption Survey has estimated the contribution of each of those end uses to total energy consumption. The share and relative ranking of each end use represent how the total consumption of electricity or natural gas is distributed over the end uses. The other commonly used household energy sources (fuel oil, LPG, and kerosene) are used mostly for space heating, water heating, and cooking.

- The largest use of electricity in the average U.S. household is for appliances (including refrigerators and lights), which consume approximately two-thirds of all the electricity used in the residential sector (Figure 3.1, Table 3.1).
- Air-conditioning, space heating, and water heating each consume approximately one-ninth.
- No single appliance dominates the use of electricity. Refrigerators consume the most electricity (13 percent of the total), followed by lighting (9 percent), clothes dryers (6 percent), freezers (4 percent), color TVs (3 percent), and cooking (3 percent).
- The many other electrical appliances are grouped together and their total consumption is shown as "All Others" (Figure 3.1). Those include some appliances that are found in almost all homes but that use small amounts of electricity, such as VCRs, answering machines, cordless telephones, and other appliances that use large amounts of electricity but are not found in many homes, such as swimming pool pumps and large heated

Figure 3.1. Percent of Total Electricity Consumption in U.S. Housing Units, 1997



Source: Energy Information Administration, Forms EIA-457A, B, C, E, and H of the 1997 Residential Energy Consumption Survey.

aquariums.

Table 3.1. End-Use Consumption of Electricity by End Use and Appliance, 1997

End Use/Appliance	Households (millions)	Units (million)	Electricity Consumption for 1997			
			Annual Consumption		Total (billion kWh)	Percent
			kWh per unit	kWh per household		
Total Households	101.5			10,215	1,036.7	100.0
Refrigerators	101.3	117.5	1,141	1,323	134.1	12.9
Air-Conditioning					121.8	11.8
Central Air-Conditioners	47.8			2,109	100.8	9.7
Room Air-Conditioners	25.8	40.6	519	817	21.1	2.0
Space Heating					117.9	11.4
Main Space-Heating Systems	29.6			3,760	111.2	10.7
Secondary Space-Heating Equipment	12.4			536	6.7	0.6
Water Heating	40.2			2,835	113.9	11.0
Lighting Appliances (indoor and outdoor)	101.5			^a 940	95.4	9.2
Other Appliances (total of list below)	101.5			4,470	453.6	43.8
Clothes Dryer	55.9			1,090	60.9	5.9
Freezer	33.7	36.9	1,013	1,110	37.4	3.6
Color TV	100.2	213.0		^b 307	30.8	3.0
Cooking ^c	65.0			451	29.4	2.8
Furnace Fan	67.1			^d 398	26.7	2.6
Dishwasher	50.9			^e 410	20.9	2.0
Microwave Oven	84.2			^d 135	11.4	1.1
Personal Computer	35.6	43.0	^d 262	317	11.3	1.1
Waterbed Heater	8.4	10.1	^d 1,070	1,286	10.8	1.0
VCR	88.9	132.2	^b 70	104	9.3	0.9
Clothes Washer	78.5			^{d,f} 108	8.5	0.8
Ceiling Fan	61.7	155.6	^e 50	126	7.8	0.8
Pool/Hot Tub/Spa Heater	2.7			^e 2,300	6.3	0.6
Stereo	69.8			^d 71	4.9	0.5
Swimming Pool Pump	5.5			^d 792	4.3	0.4
Laser printer	12.6			^e 250	3.2	0.3
Large, Heated Aquarium	3.9			^e 548	2.1	0.2
Answering Machine	59.3			^e 35	2.1	0.2
Battery Charger	44.4			^e 44	2.0	0.2
Cordless Telephone	62.3			^e 26	1.6	0.2
Fax machine	6.3			^e 216	1.4	0.1
Well Pump	14.3			^d 83	1.2	0.1
Copier	3.8			^e 25	0.1	0.0
Residual	101.5				159.4	15.4

^a1993 Residential Energy Consumption Survey.

^bEnergy Use of Televisions and Videocassette Recorders in the U.S., Lawrence Berkeley National Laboratory, 1999.

^cSee Appendix C, "End-Use Estimation Methodology" for a definition of the households using electricity for cooking.

^dElectricity Consumption by Small End Uses in Residential Buildings, Arthur D. Little, Inc, 1998.

^eEnergy Data Sourcebook for the U.S. Residential Sector, Lawrence Berkeley National Laboratory, 1997.

^fDoes not include energy used to heat water coming into the washer.

Notes: ! "Residual" includes appliances not listed, such as dehumidifiers, evaporative coolers, crankcase heaters, automatic drip coffee makers, irons, air cleaners, and a myriad of other small electrical appliances. "Residual" also includes errors that may be present in estimates of annual consumption. ! Totals may not equal sum of components due to independent rounding. ! This table does not reflect the interactive effects of appliance usage, especially when mixing the estimates from RECS with those from outside sources. For example, for a home with an electric oven, range, and a microwave, the use of the microwave may not add 132 kWh to the cooking consumption. For more discussion of this problem, see Appendix C, "End-Use Estimation Methodology."

Sources: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457A-C, E, and H of the 1997 Residential Energy Consumption Survey (RECS), RECS Public-Use Data Files; American Electric Power Service Corporation, and Southern California Edison.

Percentiles for Household Energy Costs

The amount that households spend for energy varies from household to household, even for households with similar characteristics. Percentiles can be used to show where in the entire range a particular household falls.

A percentile can be defined as follows: given a set of numbers, a p-th percentile is a value where p percent of the number in the set are smaller than or equal to the value and (100-p) percent of the number in the set are larger than or equal to the value. In 1997, for example, 50 percent of the households in the country spent \$1,247 or less for energy used in the home and 50 percent spent \$1,247 or more (See Table 3.3). Hence, \$1,247 was the 50th percentile (or median). Similarly, the 25th percentile was \$885 and the 75th percentile was \$1,676. The spread between the 25th and 75th percentiles is one measure of the variability of energy expenditures.

Total expenditures include the expenditures for electricity, natural gas, LPG, fuel oil, and kerosene used in the home. They exclude the cost of any wood or coal that was burned in the home, as well as the cost of motor gasoline used in automobiles or in other pieces of machinery that run on gasoline.

This section gives percentiles for total energy expenditures. For households that do not pay for their energy directly (for example, when the rent includes the cost of electricity or other fuels), the cost of those fuels is estimated. Households where the expenditures were estimates are included in the process of estimating the percentiles.

The procedure used to estimate the sampling error for the 1997 Residential Energy Consumption Survey was balanced half-sample replication. Although the procedure has some theoretical limitations when used to estimate the sampling error for percentiles, the complexity of the sample design prevented the use of a procedure that did not have these limitations. The resulting estimate of standard errors for the national median is \$16 (Table 3.2). Hence, the 95 percent confidence interval for the median is \$1,215 to \$1,279.

Table 3.2. Standard Errors for Total Energy Expenditures by U.S. Census Division, 1997

Census Division	Percentile				
	10th	25th	Median	75th	90th
National	\$13	\$13	\$16	\$18	\$26
New England	48	79	33	74	120
Middle Atlantic	28	28	33	60	61
East North Central	51	38	39	58	76
West North Central	73	40	49	40	67
South Atlantic	28	39	47	53	63
East South Central	21	33	47	53	43
West South Central	44	47	44	73	101
Mountain	47	59	57	65	65
Pacific	16	24	37	45	86

Source: Energy Information Administration; 1997 Residential Energy Consumption Survey.

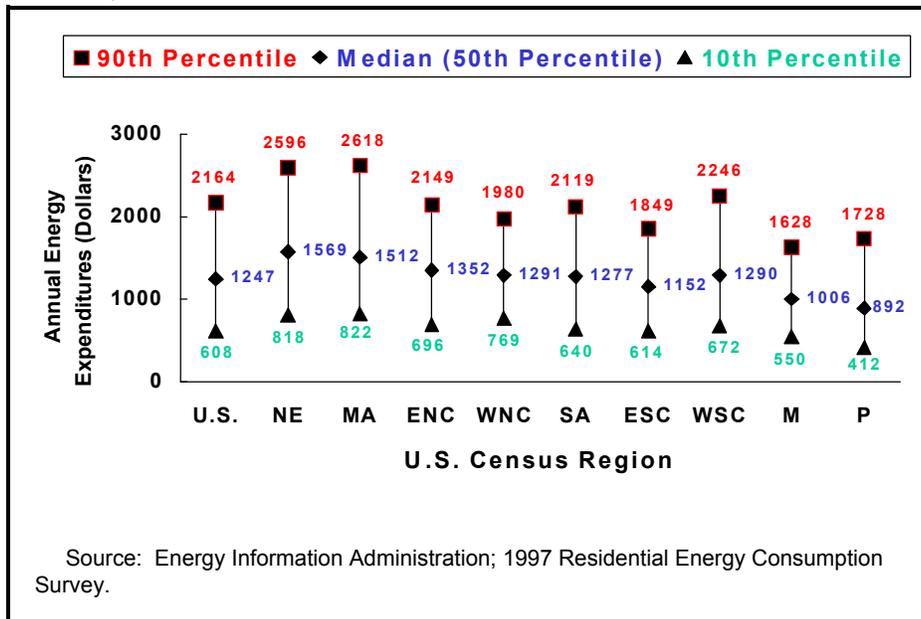
A review of the percentiles for each of the Census divisions shows that there are substantial differences among the divisions in their median expenditures (Figure 3.2 and Table 3.3). At the high end, the median for the New England Census Division is \$1,569, and at the low end, the median for the Pacific Census Division is \$892. The amount of variation in expenditures within Census divisions is even larger. In other words, the difference between the 10th and 90th percentiles within each division exceeds the difference between the median for the New England Census Division and the median for the Pacific Census Division. The “within” division differences can be partially explained by characteristics of the housing unit and households. Two of these are the size of the housing unit and the income of the household.

Table 3.3. Annual Energy Expenditures Percentiles by U.S. Census Division, 1997

Census Division	Percentile				
	10th	25th	Median	75th	90th
National	\$608	\$885	\$1,247	\$1,676	\$2,164
New England	818	1,160	1,569	2,056	2,596
Middle Atlantic	822	1,071	1,512	2,062	2,618
East North Central	696	1,003	1,352	1,748	2,149
West North Central	769	1,002	1,291	1,639	1,980
South Atlantic	640	915	1,277	1,662	2,119
West South Central	614	890	1,152	1,503	1,849
East South Central	672	910	1,290	1,719	2,246
Mountain	550	720	1,006	1,286	1,628
Pacific	412	616	892	1,261	1,728

Source: Energy Information Administration; 1997 Residential Energy Consumption Survey.

Figure 3.2. Annual Energy Expenditures Percentiles by U.S. Census Division, 1997



United States = U.S.
 New England = NE
 Middle Atlantic = MA
 East North Central = ENC

South Atlantic = SA
 East South Central = ESC
 West South Central = WSC
 Mountain = M

When percentiles are calculated for energy expenditures by size of home, they show the expected trend from lower expenditures in smaller homes to higher expenditures in larger homes (Figure 3.3 and Table 3.4). They also show that there is an overlap in the energy expenditures: the 90th percentile for total energy expenditures in homes with one to three rooms (\$1,143) is approximately equal to the 10th percentile in homes with eight or more rooms (\$1,138).

The overlap is even more pronounced when households are grouped by income (Figure 3.4 and Table 3.5). For example, the 75th percentile of energy expenditures for households with incomes of less than \$10,000 (\$1,280) is approximately equal to the 25th percentile for households with incomes of \$75,000 or more (\$1,272). The fact that the estimated percentiles do not always increase as the income increases is the result of both the large overlap and the sampling error of the estimates.

Table 3.4. Annual Energy Expenditures Percentiles by Number of Rooms, 1997

Number of Rooms	Percentile				
	10th	25th	Median	75th	90th
National	\$608	\$885	\$1,247	\$1,676	\$2,164
1 to 3 Rooms	334	469	648	878	1,143
4 Rooms	517	698	943	1,240	1,581
5 Rooms	694	924	1,192	1,511	1,844
6 Rooms	859	1,072	1,378	1,748	2,171
7 Rooms	980	1,228	1,541	1,929	2,336
8 or More Rooms	1,138	1,416	1,777	2,273	2,856

Source: Energy Information Administration; 1997 Residential Energy Consumption Survey.

Table 3.5. Annual Energy Expenditures Percentiles by Household Income, 1997

Household Income	Percentile				
	10th	25th	Median	75th	90th
National	\$608	\$885	\$1,247	\$1,676	\$2,164
Less than \$10,000	424	612	896	1,280	1,635
\$10,000 to \$14,999	505	693	1,012	1,353	1,752
\$15,000 to \$19,999	533	772	1,112	1,542	1,858
\$20,000 to \$24,999	606	851	1,176	1,519	1,855
\$25,000 to \$29,999	638	921	1,199	1,564	1,986
\$30,000 to \$34,999	708	972	1,322	1,755	2,195
\$35,000 to \$49,999	901	1,180	1,534	1,909	2,365
\$50,000 to \$74,999	952	1,272	1,721	2,262	2,833
\$75,000 or more					

Source: Energy Information Administration; 1997 Residential Energy Consumption Survey.

Figure 3.3. Annual Energy Expenditures Percentiles by Number of Rooms, 1997

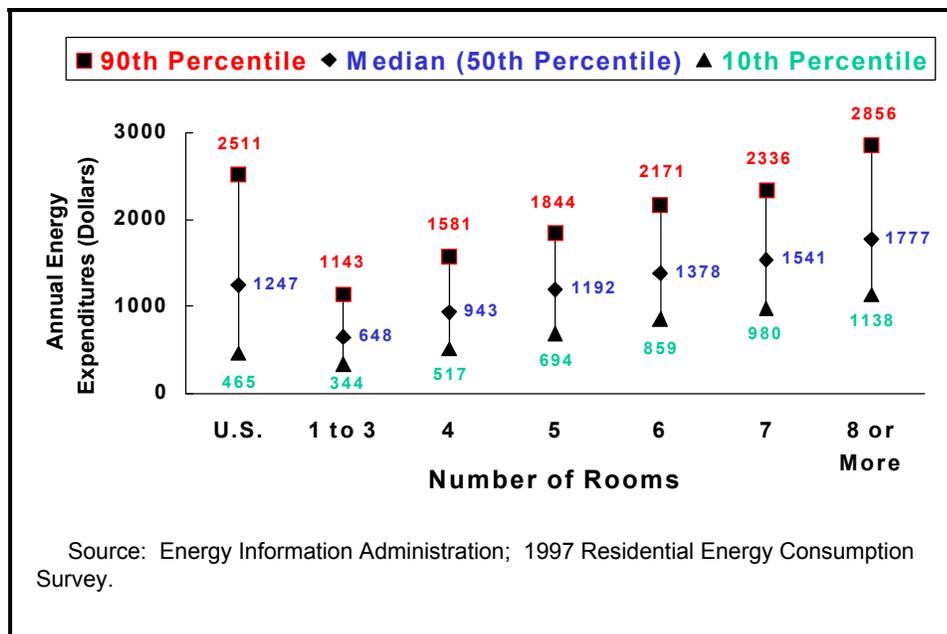
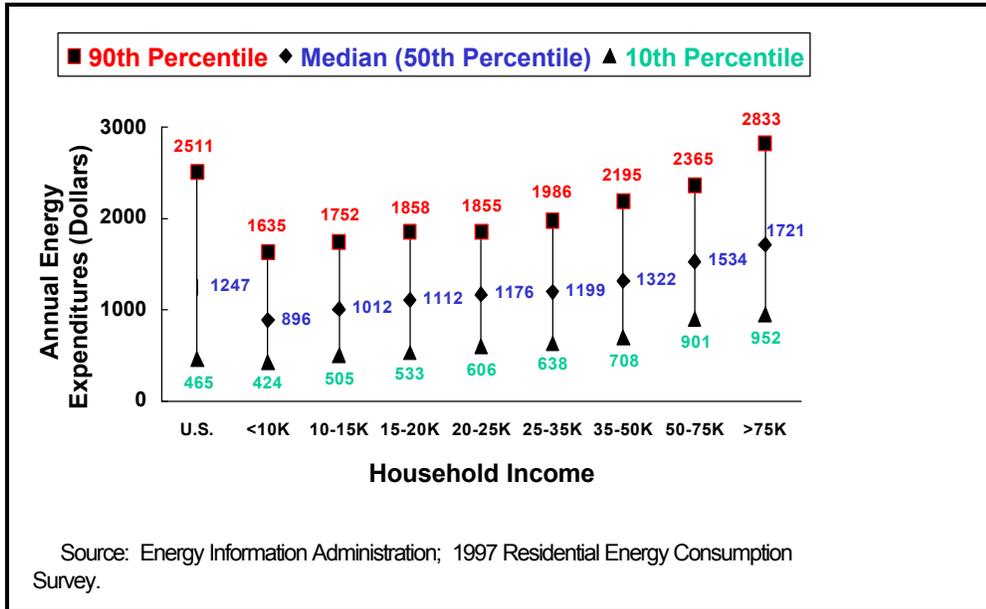


Figure 3.4. Annual Energy Expenditures Percentiles by Household Income, 1997



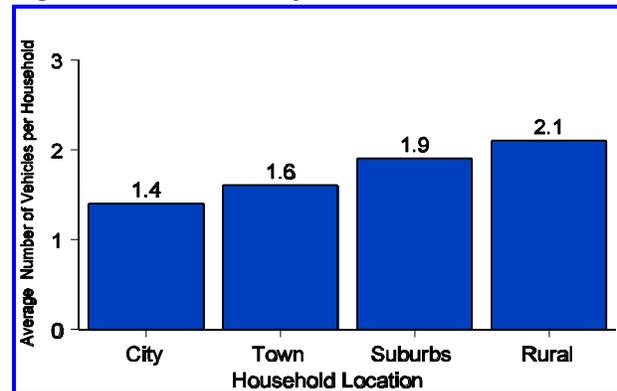
Residential Vehicles, 1997

Residential transportation represents almost one-half of total transportation energy. The 102 million U.S. households and 169 million regular drivers own or had regular use of 168 million vehicles, an average of 1.7 vehicles per household. That average was up slightly from an average of 1.6 vehicles per household in 1993.

Rural Households Owned the Most Vehicles

Households in rural locations were likely to have more vehicles than households in cities. Households located in cities averaged 1.4 vehicles per household, whereas households located in rural areas averaged 2.1 vehicles per household (See Figure 3.5). Similarly, households in suburbs were likely to have more vehicles than households in towns. Households located in suburbs averaged 1.9 vehicles per household, whereas households in towns averaged 1.6 vehicles per household.

Figure 3.5. Vehicles by Location, 1997

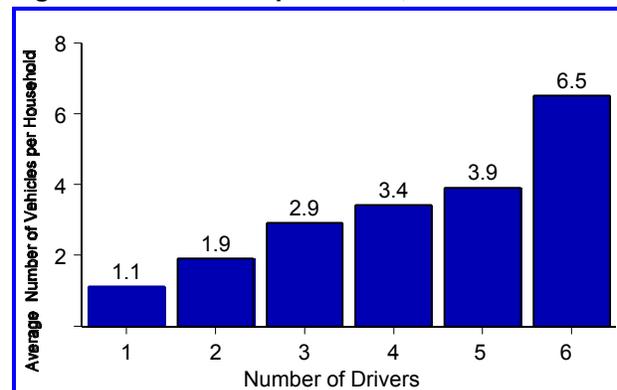


Source: Energy Information Administration; 1997 Residential Energy Consumption Survey.

Most Households Have About One Vehicle per Driver

The number of vehicles per household was also related to the number of regular drivers in the household (See Figure 3.6). Regular drivers were those who drove a car at least once a month. On average, most households had one vehicle per driver until the number of drivers reached four. Households with four and five drivers had about one fewer vehicle than driver. On average, households with six drivers also had one vehicle per driver.

Figure 3.6. Vehicles per Driver, 1997

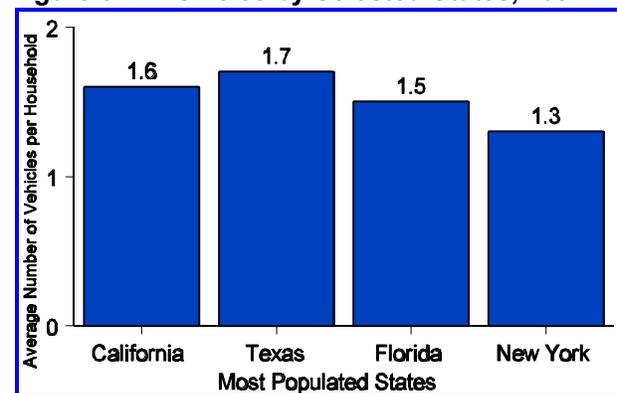


Source: Energy Information Administration; 1997 Residential Energy Consumption Survey.

New Yorkers Have Fewer Vehicles per Household than the U.S. Average

A look at the number of vehicles per household in the four most populous States shows that in Texas, the average number of vehicles per household was 1.7, the same as the national per-household number. For the three remaining most populous States, the average per household number was below the national average. At 1.6 vehicles per household, California was just a little lower than the national average. Florida and New York are even lower, 1.5 and 1.3 vehicles per household, respectively (See Figure 3.7).

Figure 3.7. Vehicles by Selected States, 1997

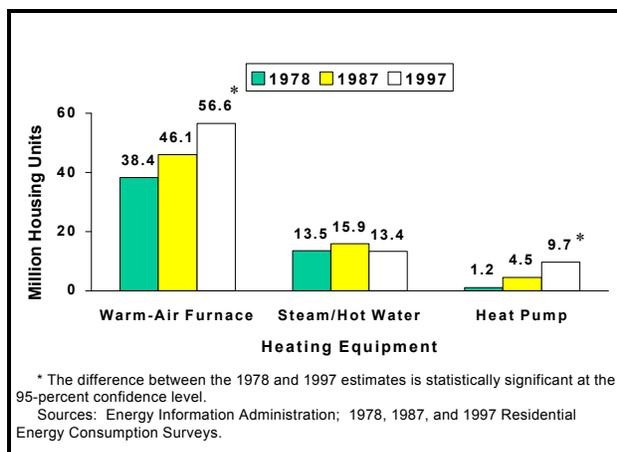


Source: Energy Information Administration; 1997 Residential Energy Consumption Survey.

Out With the Old . . . In With the New: Changes in the Types of Residential Heating Equipment

Over the 1978-1997 period, warm-air furnaces have been the most frequently used type of main central heating system in U.S. housing units, followed by steam/hot water systems and heat pumps (Figure 3.8).

Figure 3.8. Predominate Main Central Heating Systems in U.S. Housing Units, 1978, 1987, and 1997



In 1978, heat pumps were relatively rare, used in only 1.2 million housing units. By 1997, the use of heat pumps increased eightfold to 9.7 million. Between 1978 and 1997 the number of warm-air furnaces in use increased by 47 percent, from 38.4 million housing units to 56.6 million housing units. Over the same period, the number of housing units using a steam/hot-water system was unchanged. However, compared to the 15.9 million steam/hot water systems in use in 1987, the 13.4 million in use in 1997 represents a 16 percent decrease.

These changes reflect both changes in construction of housing units, with duct work replacing pipes and radiators, and the new heating equipment and technology.

Out Go the Steam/Hot Water Systems

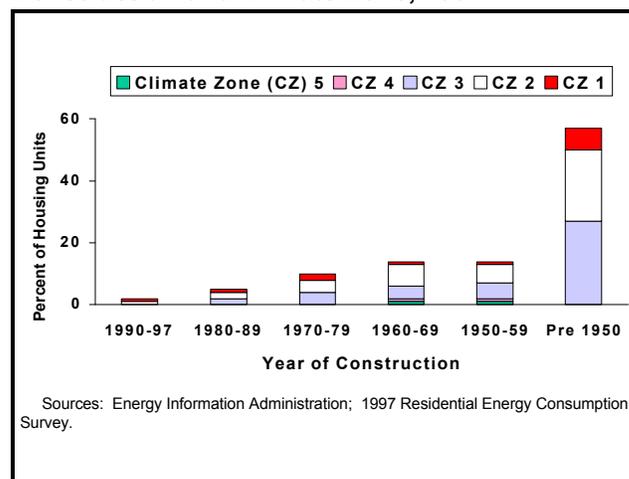
In 1978, when the first RECS was conducted, 18 percent of housing units used a steam/hot water system as their main space-heating equipment. In the 1997 RECS, the comparable percentage was 13 percent of housing units.

The combined distribution of steam/hot water systems by year of construction and climate zone (CZ) reveals that most steam/hot water systems were in older housing units located in colder climates (Figure 3.9).

(Climate Zones are climatically distinct geographic areas determined according to the 30-year average [1961-1990] of annual heating and cooling degree-days. Heating and cooling degree-days are a measure of how cold or how hot a location is over a one-year period, relative to a base temperature of 65 degrees F. See Appendix E for a detailed map of the areas of the United States included in each climate zone and the precise definition of each climate zone.)

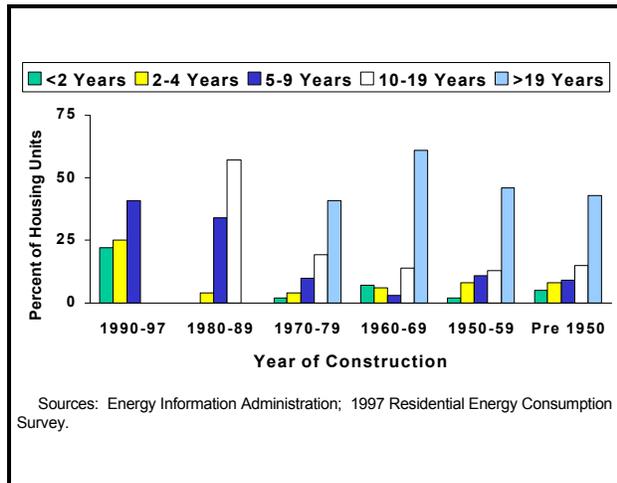
Only 1 percent of the steam/hot water systems were located in housing units built in the 1990's; of these none were located in the two most southern climate zones (CZ 4 and CZ 5) that include the States in the Deep South, most of California, and parts of Arizona and New Mexico. A majority, 57 percent of the systems, were in housing units built before 1950, virtually all of which were located in the three most northern climate zones (CZ 1, CZ 2, and CZ 3), which include most of the northern two-thirds of the United States.

Figure 3.9. Steam/Hot Water Systems by Year of Construction and Climate Zone, 1997



The modal age (the age category that included more systems than any other age category) of the steam/hot water equipment in place in 1997 was 19 or more years (Figure 3.10). Regardless of the age, a majority of the systems was found in housing units built before 1950. Most new systems were installed in older housing units. Of the 3.0 million housing units with a system less than 10 years old, 88 percent were in housing units built before 1980. Of the 614,600 systems that were less than 2 years old, only 7 percent were installed in housing units built in the 1990-97 period.

Figure 3.10. Steam/Hot Water Heating Equipment by Age and Year of Construction, 1997



When considering the replacement of space-heating equipment, the first factor is the heat distribution system.

A housing unit that uses steam/hot water as its main space-heating system is not a candidate for any type of warm-air system because the pre-existing pipes and radiators are an incompatible distribution system. Without changing the distribution system, the choice of a replacement heating system is limited to one using the same distribution system. Otherwise, the alternative is the installation of ducts that would support a central warm-air system or the use of space heaters in individual rooms. For new construction, the installation of duct work and vents for a warm-air system is less expensive than the installation of the piping and radiators required for a steam/hot water system, thus accounting for the installation of so few systems of this latter type in the 1990s. In addition, the increased population of central air-conditioning in new construction requires the installation of duct systems.

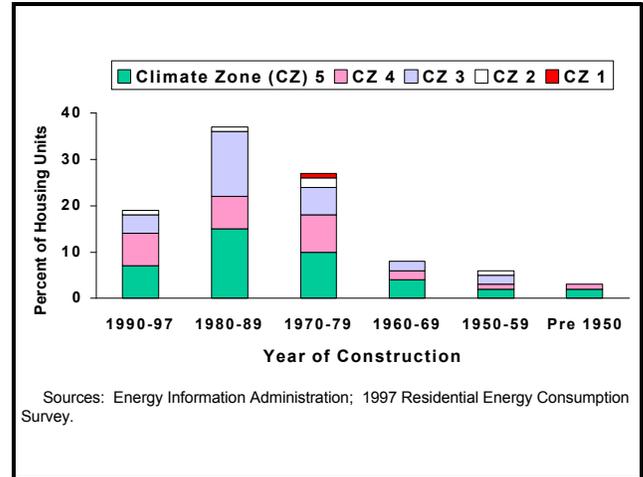
In Come the Heat Pumps

In 1978, when the first RECS was conducted, 2 percent of housing units used heat pumps as their main space-heating equipment. In the 1997, the comparable percentage was 10 percent of housing units.

The combined distribution of heat pumps by year of construction and climate zone reveals that most were in newer housing units located in warmer climates (Figure 3.11).

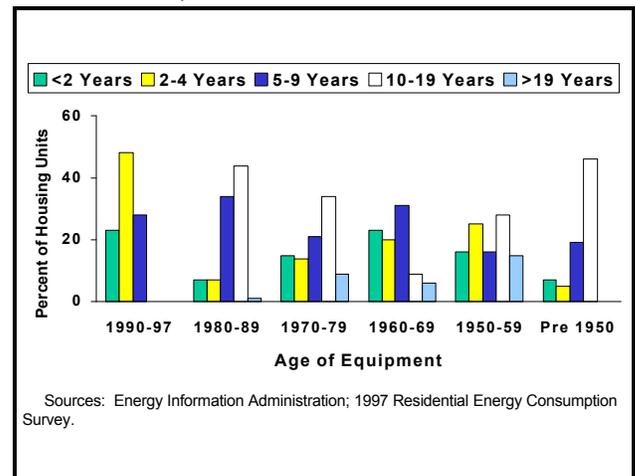
Only 18 percent of the heat pumps were located in housing units built before 1970, and only 10 percent were located in the two most northern climate zones (CZ 1 and CZ 2). This later finding is consistent with the limited effectiveness of heat pumps in colder climates. A majority, 82 percent of the systems, were in housing units built after 1969, virtually all of which were located in the three most southern climate zones (CZ 3, CZ 4, and CZ 5).

Figure 3.11. Heat Pumps by Year of Construction and Climate Zone, 1997



The modal age of heat pumps in 1997 was 10-19 years (Figure 3.12). In addition to the installation in more recently built homes, e.g., the 1990-97 period, many heat pumps were installed in homes older than the heating equipment, indicating that the heat pumps were installed as replacement equipment.

Figure 3.12. Heat Pumps by Age and Year of Construction, 1997



4. 1997 RECS Detailed Data Tables

Two sets of detailed data tables are presented in this report. The first set describes *Housing Characteristics* of 1997 U.S. housing units and the second set describes the *Energy Consumption and Expenditures* of those housing units. *Reference Guides* for each set of tables are provided.

Due to space limitations in this volume, not all of the large number of detailed data tables that have been prepared are presented in this report. For both sets of tables, only those tables not shaded in the *Reference Guides* are included. Also, only the *Housing Characteristics* tables that present data in terms of counts of millions of U.S. households (the tables with an “a” suffix) are included. The complete set of tables are available on the “Households” Web site at <http://www.eia.doe.gov/emeu/consumption>.

Organization and Categories of Data in the Tables

Topical Groups

The *Housing Characteristics* tables are organized into seven topical groups:

- 1. Housing Unit Characteristics**—Location, type, ownership, age, size, and year of construction of U.S. Housing Units.
- 2. Household Characteristics**—Household demographic and income characteristics.
- 3. Space Heating**—Types of heating fuel and equipment used for main and secondary space heating purposes.
- 4. Air-Conditioning**—Selected household characteristics, including location, number of rooms cooled, and air-conditioning usage.
- 5. Appliances**—Frequency and characteristics of energy-intensive appliances found in most households.
- 6. Usage Indicators**—The usage of heating and cooling equipment, including thermostat settings at various times of the day, equipment using hot water, and other appliances.
- 7. Home Office Equipment**—Presence of office equipment in households.

The *Consumption and Expenditures* tables are organized into five topical groups:

- 1. Total Energy**—Total and per-household consumption of major fuels, by Btu and physical units, and end use. Expenditures data include total and per-household expenditures for each major fuel, the cost of each of the major fuels per million Btu and per physical unit, and the total and per-household expenditures by end-use.
- 2. Space Heating**—Total and per-household consumption of major fuels for space heating by Btu and physical units. Expenditures data include total and per-household expenditures for each major fuel used for space heating. Also presented are heating degree days and heated square footage data, both determinants of space-heating fuel consumption and expenditures.
- 3. Electric Air-Conditioning**—Total and per-household electric air-conditioning consumption by kWh and Btu. Expenditures data include total and per-household expenditures. Cooling degree-days and cooled square footage data, both determinants of space-heating fuel consumption and expenditures, are included.
- 4. Water Heating**—Total and per-household consumption of major fuels for water heating by Btu and physical units. Expenditures data include total and per-household expenditures for each major fuel used for water heating.

5. Appliances—Total and per-household consumption of electricity for refrigerators and lighting, and major fuels for all other appliances by Btu and physical units. Expenditures data include total and per-household expenditures.

Table Headings

The data for each topical group for both the *Housing Characteristics* tables and the *Consumption and Expenditures* tables are presented by:

- 1. Climate Zone**—Each of the five main U.S. Climate Zones, which are climatically distinct areas determined according to the 30-year average of the annual heating and cooling degree-days (available only on our Web site).
- 2. Year of Construction**—Units constructed before 1939, each decade through 1989, and 1990-1997.
- 3. Household Income**—Four income brackets and low income households.
- 4. Type of Housing Unit**—Four main types of housing units: single-family homes, two to four unit multifamily units, five or more unit multifamily units, and mobile homes.
- 5. Type of Housing Unit Owner-Occupied (*Housing Characteristics only*)**—Type of housing units for owner-occupied units (available only on our Web site).
- 6. Type of Housing Unit Renter (*Housing Characteristics only*)**—Type of housing units for rented units (available only on our Web site).
- 5. Household Demographics (*Consumption and Expenditures only*)**—Total and per-household consumption and expenditures by household size, household income, and demographic characteristics of the householder.
- 6. Usage Indicators (*Consumption and Expenditures Only*)**—Total and per-household consumption and expenditures by indicators that affect energy consumption and expenditures, including size of the housing unit, occupancy during the day, activities in the housing unit, thermostat settings, and use of air-conditioning and appliances.
- 7. Four Most Populated States**—Four most populated States: New York, Florida, Texas, and California (available only on our Web site).
- 8. Urban/Rural Location**—Housing units in cities, towns, suburbs, and rural locations as characterized by the respondent in the household interview (available only on our Web site).
- 9. U.S. Census Regions and Divisions-Northeast**—The Northeast Census Region and the two Census Divisions within that Region (available only on our Web site).
- 10. U.S. Census Regions and Divisions-Midwest**—The Midwest Census Region and the two Census Divisions within that Region (available only on our Web site).
- 11. U.S. Census Regions and Divisions-South**—The South Census Region and the three Census Divisions within that Region (available only on our Web site).
- 12. U.S. Census Regions and Divisions-West**—The West Census Region and the two Census Divisions within that Region (available only on our Web site).
- 13. U.S. Census Regions**—The four U.S. Census Regions.

Type of Data

Each *Housing Characteristic* table is presented in two ways:

- a. **Number of Households**—Counts of millions of U.S. households.
- b. **Percent of Households**—Percent of U.S. households (available only on our Web site).

With the exception of the Household Demographics and Usage Indicators tables, which include the suffix “u” and present both total and per-household consumption and expenditures data, each *Consumption and Expenditures* table is presented in two ways:

- c. **Consumption**—Fuels in terms of Btu and physical units.
- e. **Expenditures**—Fuels in terms of U.S. dollars.

Explanation of the Numbering Scheme

The table numbering scheme was designed to permit easy navigation through the many tables. The following example describes the meaning of each of the components of the table numbers and the hierarchical scheme.

Table CE3-2e. Electric Air-Conditioning Energy Expenditures in U.S. Households by Year of Construction, 1997

	Total	Year of Construction						RSE Row Factors
		1990 to 1997	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor	0.5	1.5	1.2	1.0	1.1	1.1	0.9	
Dollars per Household								
Electric Air-Conditioning Expenditures per Household								
Electric Air-Conditioning	140	179	177	157	134	121	87	5.5
Central Air-Conditioning	175	191	192	184	162	150	128	5.8
Room/Wall Air-Conditioning	76	62	71	83	81	90	68	8.4

CE The first two letters, **CE**, identifies the major type of table, either *Housing Characteristics* (HC) or, as in this example, an *Energy Consumption and Expenditures* (**CE**) table.

CE3 The third digit, **3**, identifies the topical group of the table. In this example, the **3** identifies this as a *Consumption and Expenditures* (**CE**), *Electric Air-Conditioning* (**3**) table.

CE3-2 The fourth digit that follows the dash, **2**, identifies the table heading within the topical group. In this example, the **2** identifies this as a table presenting *Consumption and Expenditures* (**CE**), *Electric Air-Conditioning* (**3**), *Year of Construction* (**-2**) data.

CE3-2e Finally, the fifth digit, **e**, identifies the type of data presented in the table. In this example, the **e** identifies this as a table presenting *Energy Consumption and Expenditures* (**CE**), *Electric Air-Conditioning* (**3**), *Year of Construction* (**-2**), *Energy Expenditures* (**e**) data. The alternative suffix would be a **c**, identifying the data as *Energy Consumption* data.

Reliability of the Data

Row and Column Factors

The tables provide row factors in the far-right column and column factors on the top line of each table. These row and column factors are a quick and easy way to measure the reliability of the data presented in this report. These factors can be used to determine the Relative Standard Error (RSE) for each estimate, which, in turn, can be used to determine the standard error of the estimate and to determine whether the difference between any two estimates is statistically significant. However, because the RSE's are only approximate, standard errors, confidence intervals, and statistical tests must also be regarded as only approximate.

The table extract below shows that the 1997 per-household expenditures for space heating in housing units constructed in the 1980s, where the main space-heating fuel was electricity, were \$225. The RSE Column Factor for this estimate is 1.2 and the RSE Row Factor is 6.3.

Table CE2-2e. Space-Heating Energy Expenditures in U.S. Households by Year of Construction, 1997

	Total	Year of Construction						RSE Row Factors
		1990 to 1997	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor	0.5	1.5	1.2	1.0	1.1	1.1	0.9	
Space-Heating Expenditures per-household, Where the Main Space-Heating Fuel is:								
Electricity	270	246	225	295	275	271	389	6.3
Natural Gas	446	371	357	378	380	436	562	4.0
Fuel Oil	629	695	638	544	536	605	579	7.6
Kerosene	350	Q	350	267	Q	Q	400	17.9
LPG	567	579	501	511	540	415	598	8.0

Calculation of Error Measures

Relative Standard Error (RSE)

To obtain the RSE factor for the \$225 electricity estimate, multiply the row factor by the column factor.

$$\begin{array}{r}
 6.3 \quad \text{Row Factor} \\
 \times 1.2 \quad \text{Column Factor} \\
 \hline
 7.6 \quad \text{RSE Factor}
 \end{array}$$

Standard Errors

Because the estimates presented in the Detailed Data Tables are based on a sample of residential housing units, they are subject to sampling error, or standard error.

To calculate the standard error for the \$225 electricity estimate, multiply the estimate by the RSE factor (divided by 100).

$$\begin{array}{r}
 \$ 225 \quad \text{Electricity Estimate} \\
 \times .076 \quad \text{RSE Factor calculated above divided by 100} \\
 \hline
 \$ 17 \quad \text{Standard Error of the \$225 Estimate}
 \end{array}$$

Confidence Intervals

For each of the estimates given in the tables, a confidence range can be determined with the estimate at the mid-point.

To determine the 95 percent confidence range for the \$225 electricity estimate to approximate two standard errors, multiply the standard error calculated above by 1.96.

\$ 17	Standard Error of the \$225 Estimate
<u>x1.96</u>	Factor for 2 Standard Errors
\$ 33	Confidence Interval below/above the Estimate

To determine the bottom of the confidence range around the \$225 estimate, subtract \$33 from the estimate.

\$225	Electricity Estimate
<u>- 33</u>	Confidence Interval below/above the Estimate
\$192	Bottom of the Range around the Estimate

To determine the top of the confidence range around the \$225 estimate, add \$33 to the estimate.

\$225	Electricity Estimate
<u>+ 33</u>	Confidence Interval below/above the Estimate
\$258	Top of the Range around the Estimate

Therefore, in this example, the value for the estimate for expenditures per household for electricity for space-heating in housing units constructed in the 1980s, where the main space-heating fuel was electricity, would fall between \$192 and \$258, 95 percent of the time.

Statistical Significance Between Two Statistics

The difference between any two estimates given in the detailed tables may or may not be statistically significant. Statistical significance for the difference between two independent variables is computed as:

$$S_{x_1-x_2} = \sqrt{[S_{x_1}]^2 + [S_{x_2}]^2}$$

where S is the standard error, x_1 is the first estimate, and x_2 is the second estimate. The result of this computation is to be multiplied by 1.96, and if this result is less than the difference between the two estimates, the difference is statistically significant.

For example, in the 1997 RECS, in housing units constructed in the 1980s, \$225 per household were spent for electricity for space heating where the main space-heating fuel was electricity, and \$357 per household were spent for natural gas for space heating where the main space-heating fuel was natural gas, an estimated difference of \$132. The standard error for the \$225 estimate (x_1) is \$17.01, and the standard error for the \$357 units estimate (x_2) is \$17.14:

$$S_{x_1-x_2} = \sqrt{17.01^2 + 17.14^2}$$

$$S_{x_1-x_2} = 24.15$$

Multiplying \$24.15 by 1.96 yields \$47. Because the estimated difference of \$132 is greater than \$47, the difference between the 1997 electricity and natural gas space heating expenditures estimates is statistically significant.

1997 RECS Household Characteristics Detailed Data Tables Reference Guide

This *Reference Guide* summarizes data presented in the detailed tables and shows the table identifiers for each of the tables. The suffix "a" that accompanies the table number refers to the table that presents data in terms of counts of millions of U.S. households; the suffix "b" refers to the table that presents data in terms of the percent of U.S. households. Due to space limitations in the report, all the "b" tables, those presenting percent of U.S. households data, and the data tables in the shaded areas of the *Reference Guide* are not included, but are available on the "Households" Web site at <http://www.eia.doe.gov/emeu/consumption>.

Topical Group	Housing Unit/Household Characteristic Headings												
	1. Climate Zone	2. Year of Con- struc- tion	Type of Housing Unit				U.S. Census Regions and Divisions						13. U.S. Census Regions
			3. House- hold Income	4. All	5 Owned	6. Rented	7. Four Most Popu- lated States	8. Urban/ Rural Loca- tion	9. North- east	10. Midwest	11. South	12. West	
1. Housing Unit Characteristics	HC1-1a/b	HC1-2a/b	HC1-3a/b	HC1-4a/b	HC1-5a/b	HC1-6a/b	HC1-7a/b	HC1-8a/b	HC1-9a/b	HC1-10a/b	HC1-11a/b	HC1-12a/b	HC1-13a/b
2. Household Characteristics	HC2-1a/b	HC2-2a/b	HC2-3a/b	HC2-4a/b	HC2-5a/b	HC2-6a/b	HC2-7a/b	HC2-8a/b	HC2-9a/b	HC2-10a/b	HC2-11a/b	HC2-12a/b	HC2-13a/b
3. Space Heating	HC3-1a/b	HC3-2a/b	HC3-3a/b	HC3-4a/b	HC3-5a/b	HC3-6a/b	HC3-7a/b	HC3-8a/b	HC3-9a/b	HC3-10a/b	HC3-11a/b	HC3-12a/b	HC3-13a/b
4. Air-Conditioning	HC4-1a/b	HC4-2a/b	HC4-3a/b	HC4-4a/b	HC4-5a/b	HC4-6a/b	HC4-7a/b	HC4-8a/b	HC4-9a/b	HC4-10a/b	HC4-11a/b	HC4-12a/b	HC4-13a/b
5. Appliances	HC5-1a/b	HC5-2a/b	HC5-3a/b	HC5-4a/b	HC5-5a/b	HC5-6a/b	HC5-7a/b	HC5-8a/b	HC5-9a/b	HC5-10a/b	HC5-11a/b	HC5-12a/b	HC5-13a/b
6. Usage Indicators	HC6-1a/b	HC6-2a/b	HC6-3a/b	HC6-4a/b	HC6-5a/b	HC6-6a/b	HC6-7a/b	HC6-8a/b	HC6-9a/b	HC6-10a/b	HC6-11a/b	HC6-12a/b	HC6-13a/b
7. Home Office Equipment	HC5-1a/b	HC7-2a/b	HC7-3a/b	HC7-4a/b	HC7-5a/b	HC7-6a/b	HC7-7a/b	HC7-8a/b	HC7-0a/b	HC7-10a/b	HC7-11a/b	HC6-12a/b	HC713a/b

a = Counts of U.S. Households

b = Percent of U.S. Household

Note: Percent of U.S. Households (b) tables and those in the shaded areas above can be accessed at <http://www.eia.doe.gov/emeu/consumption>.

1997 RECS Consumption and Expenditures Detailed Data Tables Reference Guide

This *Reference Guide* summarizes data presented in the detailed tables and shows the table identifiers for each of the tables. The suffix "c" that accompanies the table number refers to the table that presents data in terms of energy consumption; the suffix "e" refers to the table that presents data in terms of expenditures for energy; and the suffix "u" refers to tables that present data in terms of household demographics/energy usage indicators. Due to space limitations in the report, data tables in the shaded areas of the *Reference Guide* are not included, but are available on the "Households" Web site, <http://www.eia.doe.gov/emeu/consumption>.

Topical Group	Housing Unit/Household Characteristic Headings												
	1. Climate Zone	2. Year of Con- struc- tion	3. House- hold Income	4. Type of Hous- ing Unit	5. House- hold Demo- graph- ics	6. Usage Indica- tors	7. Four Most Popu- lated States	8. Urban/ Rural Loca- tion	U.S. Census Regions and Divisions				13. U.S. Census Regions
									9. North- east	10. Midwest	11. South	12. West	
1. Total Energy	CE1-1c/e	CE1-2c/e	CE1-3c/e	CE1-4c/e	CE1-5u	CE1-6u	CE1-7c/e	CE1-8c/e	CE1-9c/e	CE1-10c/e	CE1-11c/e	CE1-12c/e	CE1-13c/e
2. Space Heating	CE2-1c/e	CE2-2c/e	CE2-3c/e	CE2-4c/e	CE2-5u	CE2-6u	CE2-7c/e	CE2-8c/e	CE2-9c/e	CE2-10c/e	CE2-11c/e	CE2-12c/e	CE2-13c/e
3. Electric Air- Conditioning	CE3-1c/e	CE3-2c/e	CE3-3c/e	CE3-4c/e	CE3-5u	CE3-6u	CE3-7c/e	CE3-8c/e	CE3-9c/e	CE3-10c/e	CE3-11c/e	CE3-12c/e	CE3-13c/e
4. Water Heating	CE4-1c/e	CE4-2c/e	CE4-3c/e	CE4-4c/e	CE4-5u	CE4-6u	CE4-7c/e	CE4-8c/e	CE4-9c/e	CE4-10c/e	CE4-11c/e	CE4-12c/e	CE4-13c/e
5. Appliances	CE5-1c/e	CE5-2c/e	CE5-3c/e	CE5-4c/e	CE5-5u	CE5-6u	CE5-7c/e	CE5-8c/e	CE5-9c/e	CE5-10c/e	CE5-11c/e	CE5-12c/e	CE5-13c/e

c = Energy Consumption

e = Energy Expenditures

u = Household Demographics/Energy Usage Indicators

Note: Tables in the shaded areas above can be accessed at <http://www.eia.doe.gov/emeu/consumption>.

Housing Characteristics Tables

Housing Unit Tables

Table HC1-2a. Housing Unit Characteristics by Year of Construction, Million U.S. Households, 1997

Housing Unit Characteristics	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.7	1.2	1.0	1.1	1.1	0.9	
Total	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.2
Census Region and Division								
Northeast	19.7	1.2	2.3	2.6	2.6	2.7	8.3	8.9
New England	5.3	0.2	0.6	0.7	0.9	0.7	2.2	13.2
Middle Atlantic	14.4	0.9	1.8	1.9	1.7	2.0	6.1	11.0
Midwest	24.1	2.0	2.9	4.0	3.2	2.7	9.3	9.4
East North Central	16.9	1.2	1.9	3.0	2.3	2.0	6.5	11.2
West North Central	7.2	0.8	1.0	1.0	0.8	0.7	2.8	17.0
South	35.9	4.6	8.2	7.8	5.1	4.2	5.9	6.8
South Atlantic	18.7	2.4	5.1	4.0	2.2	2.2	2.9	9.5
East South Central	6.3	0.9	1.1	1.5	0.9	0.8	1.2	14.9
West South Central	10.8	1.3	2.0	2.3	2.0	1.2	1.9	11.4
West	21.8	1.9	3.9	5.1	3.6	2.9	4.4	8.1
Mountain	6.2	0.6	1.0	1.6	1.1	0.8	1.1	14.4
Pacific	15.6	1.4	2.8	3.5	2.5	2.1	3.3	9.5
Metropolitan Statistical Area								
Urban	78.6	7.1	14.0	15.3	11.5	10.4	20.4	5.0
Central City	36.8	2.7	4.9	6.1	5.6	5.1	12.4	8.2
Suburban	41.9	4.4	9.1	9.2	5.9	5.4	7.9	7.9
Rural	22.8	2.6	3.3	4.2	3.0	2.1	7.6	8.3
Climate Zone²								
Fewer than 2,000 CDD and--								
More than 7,000 HDD	9.3	0.9	1.1	1.5	0.9	0.9	4.0	19.7
5,500 to 7,000 HDD	28.0	2.4	3.4	5.1	3.9	3.7	9.6	11.7
4,000 to 5,499 HDD	22.5	1.6	4.2	3.8	3.0	2.6	7.2	13.4
Fewer than 4,000 HDD	19.5	2.2	3.4	4.0	3.1	2.5	4.4	13.2
2,000 CDD or More and --								
Fewer than 4,000 HDD	22.2	2.6	5.3	5.2	3.6	2.8	2.7	10.6
Estimated Heated Floorspace Category (square feet)³								
Fewer than 600	7.9	0.5	1.1	1.5	1.3	0.8	2.7	12.9
600 to 999	21.5	1.1	2.9	5.2	3.2	2.6	6.4	8.4
1,000 to 1,599	30.4	3.0	5.2	4.9	4.6	4.7	7.9	7.3
1,600 to 1,999	15.3	1.5	3.0	2.9	2.2	2.0	3.8	8.8
2,000 to 2,399	7.9	0.9	1.4	1.9	1.0	0.8	1.8	11.5
2,400 to 2,999	5.3	0.9	1.7	1.1	0.5	0.3	0.8	16.2
3,000 or More	4.1	1.3	0.8	0.7	0.3	0.2	0.8	20.1
No Estimate Provided	9.1	0.5	1.3	1.3	1.4	1.1	3.5	13.3
Ownership of Unit								
Owned	68.5	7.6	12.0	12.8	9.2	8.9	18.0	4.7
Rented	33.0	2.1	5.3	6.8	5.2	3.7	9.9	7.1

See footnotes at end of table.

Table HC1-2a. Housing Unit Characteristics by Year of Construction, Million U.S. Households, 1997 (Continued)

Housing Unit Characteristics	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.7	1.2	1.0	1.1	1.1	0.9	
Type and Ownership of Housing Unit								
Single-Family Detached	63.8	6.3	9.6	10.6	9.0	9.9	18.4	5.0
Owned	55.6	5.8	8.8	9.4	7.8	8.4	15.4	5.4
Rented	8.1	0.4	0.8	1.2	1.1	1.5	3.0	12.7
Single-Family Attached	9.9	0.9	2.4	1.7	1.0	0.7	3.4	14.6
Owned	5.5	0.5	1.6	1.0	0.3	0.3	1.9	21.7
Rented	4.5	0.4	0.8	0.7	0.6	0.4	1.5	17.6
Multifamily (2 to 4 units)	5.6	Q	0.7	0.9	0.9	0.4	2.5	16.4
Owned	0.9	Q	Q	0.2	Q	Q	0.6	35.0
Rented	4.7	Q	0.6	0.7	0.8	0.4	2.0	17.6
Multifamily (5 or more units)	15.8	1.1	3.0	4.2	2.7	1.3	3.4	12.2
Owned	1.2	Q	Q	0.6	0.2	Q	Q	37.1
Rented	14.6	1.0	2.9	3.7	2.5	1.2	3.3	12.6
Mobile Home	6.3	1.3	1.7	2.1	0.9	0.2	0.2	17.4
Owned	5.3	1.2	1.4	1.7	0.8	Q	Q	14.4
Rented	1.1	Q	0.2	0.4	0.2	Q	Q	27.9
Year of Construction								
1939 or Before	18.7	--	--	--	--	--	18.7	8.2
1940 to 1949	9.2	--	--	--	--	--	9.2	8.1
1950 to 1959	12.5	--	--	--	--	12.5	--	5.7
1960 to 1969	14.4	--	--	--	14.4	--	--	5.9
1970 to 1979	19.6	--	--	19.6	--	--	--	5.7
1980 to 1989	17.3	--	17.3	--	--	--	--	7.5
1990 to 1997 ¹	9.7	9.7	--	--	--	--	--	8.3
Urban/Rural Location⁴								
City	48.2	3.2	6.9	8.9	6.7	6.7	15.9	6.4
Town	18.2	1.6	3.1	3.2	2.6	1.9	5.8	10.3
Suburbs	18.6	2.5	4.4	3.7	2.9	2.8	2.3	10.6
Rural or Open Country	16.5	2.4	3.0	3.7	2.2	1.2	4.0	9.3
Total Number of Rooms (Excluding Bathrooms)								
1 or 2	3.1	Q	0.5	0.7	0.4	0.2	1.0	22.3
3	9.2	0.4	1.3	2.3	1.8	0.8	2.5	12.6
4	18.3	1.6	3.3	3.8	2.9	2.3	4.5	9.3
5	21.3	2.4	3.9	4.0	2.8	2.7	5.4	7.2
6	20.0	1.5	3.1	3.3	2.6	3.0	6.5	7.9
7	14.2	1.2	2.4	2.6	2.2	2.3	3.6	9.3
8	8.4	1.0	1.4	1.6	1.1	0.8	2.4	13.2
9 or More	7.0	1.4	1.4	1.2	0.6	0.4	2.0	14.4
Bedrooms								
None or 1	13.2	0.6	1.7	2.9	2.2	1.2	4.5	11.2
2	28.8	2.1	4.9	5.7	4.2	3.4	8.4	6.8
3	41.0	4.3	7.5	7.7	5.5	6.2	9.9	5.7
4 or More	18.6	2.8	3.1	3.2	2.5	1.7	5.2	9.6

See footnotes at end of table.

Table HC1-2a. Housing Unit Characteristics by Year of Construction, Million U.S. Households, 1997 (Continued)

Housing Unit Characteristics	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.7	1.2	1.0	1.1	1.1	0.9	
Other Rooms (Excluding Bathrooms)								
None or 1	5.1	0.4	1.0	1.3	0.7	0.4	1.3	16.5
2	38.6	4.0	6.6	8.0	6.6	4.8	8.7	6.0
3	31.0	2.2	4.9	5.5	3.9	4.4	10.2	6.7
4	17.6	1.6	3.4	3.2	2.3	2.0	5.0	9.2
5 or More	9.2	1.6	1.4	1.6	1.0	0.9	2.7	12.1
Full Bathrooms								
None or 1	59.4	2.4	6.2	11.0	9.4	8.7	21.6	5.3
2	35.9	5.7	9.7	7.2	4.4	3.4	5.5	6.7
3 or More	6.2	1.7	1.3	1.3	0.7	0.5	0.8	16.8
Half Bathrooms								
None	73.0	6.1	11.3	13.7	10.5	9.8	21.7	5.0
1	26.5	3.6	5.6	5.5	3.7	2.6	5.6	7.5
2 or More	Q	Q	Q	Q	Q	Q	Q	NF
Number of Stories								
Single-Family Homes	73.7	7.1	11.9	12.3	9.9	10.7	21.8	4.6
1 Story	41.1	3.6	5.7	7.6	7.3	8.1	8.9	6.2
2 Stories	26.9	3.2	4.9	3.4	2.0	2.2	11.2	8.7
3 Stories	3.2	Q	0.5	0.6	0.3	Q	1.5	19.7
Split-Level	2.4	Q	0.8	0.7	0.4	0.2	Q	22.3
Other	Q	Q	Q	Q	Q	Q	Q	NF
Mobile Homes	6.3	1.3	1.7	2.1	0.9	0.2	0.2	17.4
Number of Floors in Apartment Buildings								
1 or 2 Floors	21.4	1.3	3.7	5.2	3.6	1.7	6.0	10.4
3 or 4 Floors	10.9	0.7	2.3	2.7	1.9	1.0	2.3	13.1
5 to 10 Floors	5.4	0.2	0.7	1.2	0.9	0.3	2.1	25.4
11 to 20 Floors	2.1	Q	Q	0.5	0.2	0.2	0.7	26.6
More than 20 Floors	0.8	Q	Q	Q	0.2	Q	Q	37.5
	2.2	Q	0.5	0.5	0.3	Q	0.7	27.0
Foundation/Basement of Single-Family Homes (More than one may apply)								
Basement	33.2	2.5	3.5	4.3	4.0	4.5	14.4	7.6
Crawlspace	22.5	1.8	2.3	3.6	3.3	4.1	7.4	9.6
Concrete Slab	23.0	3.1	6.3	5.4	3.5	2.6	2.1	9.2
Not Asked (Mobile Homes and Multi-Family Units)	27.7	2.6	5.4	7.3	4.5	1.9	6.1	8.5
Garage/Carport								
Yes	54.5	6.2	9.8	10.0	7.8	7.7	13.0	5.5
1-Car Garage	16.2	0.8	2.1	2.3	2.3	3.3	5.4	10.8
2-Car Garage	29.7	4.0	6.5	6.2	4.1	3.1	5.7	7.9
3-Car Garage	2.8	1.0	0.5	0.3	Q	Q	0.7	16.3
Covered Carport	6.4	0.3	0.7	1.4	1.3	1.3	1.4	14.4
No	25.6	2.3	3.8	4.4	3.1	3.1	9.0	7.6
Not Asked (Apartments)	21.4	1.3	3.7	5.2	3.6	1.7	6.0	10.4

See footnotes at end of table.

Table HC1-2a. Housing Unit Characteristics by Year of Construction, Million U.S. Households, 1997 (Continued)

Housing Unit Characteristics	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.7	1.2	1.0	1.1	1.1	0.9	
Fuels Used For Any Use (more than one often used)								
Electricity	101.4	9.7	17.3	19.6	14.4	12.5	27.9	4.2
Natural Gas	61.9	5.2	7.5	9.5	9.6	9.2	20.9	6.1
Wood	15.0	1.6	3.7	3.4	2.2	1.4	2.8	9.8
Fuel Oil	10.0	0.3	0.6	1.0	1.5	1.5	5.0	14.6
LPG	8.1	0.9	1.2	1.7	1.1	0.7	2.5	14.0
Kerosene	3.5	0.2	0.5	0.8	0.4	0.3	1.4	18.4
Solar	0.7	Q	Q	0.3	Q	Q	Q	39.4
Main Heating Fuel								
Natural Gas	53.5	4.7	6.2	8.1	8.3	8.1	18.1	6.5
Electricity	29.6	3.9	9.3	8.5	3.4	2.2	2.3	8.4
Fuel Oil	9.5	0.3	0.5	1.0	1.5	1.4	4.7	14.6
LPG	4.6	0.6	0.7	1.0	0.6	0.5	1.4	17.1
Wood	2.2	Q	0.4	0.5	0.4	0.2	0.7	22.5
Kerosene	1.0	Q	0.1	0.3	Q	Q	0.3	30.6
Solar	Q	Q	Q	Q	Q	Q	Q	NF
Other/None	1.2	Q	Q	0.3	0.2	Q	0.4	34.8

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

² One of five climatically distinct areas, determined according to the 30-year average (1961-1990) of the annual heating and cooling degree-days. For this report, the heating or cooling degree-days are a measure of how cold or how hot a location is over a period of one year, relative to a base temperature of 65 degrees Fahrenheit. A household is assigned to a climate zone according to the 30-year average annual degree-days for an appropriate nearby weather station.

³ Estimates provided by the household interview respondents, who were asked which category best described the total heated floorspace in the home.

⁴ Based on the household respondent's description rather than the Federal Government definition.

-- = Data not applicable.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

Table HC1-3a. Housing Unit Characteristics by Household Income, Million U.S. Households, 1997

Housing Unit Characteristics	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.4	1.0	0.9	1.1	1.3	1.0	
Total	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
Census Region and Division								
Northeast	19.7	2.5	4.6	6.2	6.3	2.5	6.4	5.0
New England	5.3	0.4	1.4	1.7	1.7	0.4	1.9	7.0
Middle Atlantic	14.4	2.1	3.2	4.5	4.6	2.1	4.6	6.2
Midwest	24.1	2.5	6.5	8.0	7.1	2.9	7.2	4.9
East North Central	16.9	1.8	4.6	5.5	5.0	2.1	5.3	5.2
West North Central	7.2	0.7	1.9	2.5	2.1	0.8	1.9	10.7
South	35.9	5.6	10.9	10.1	9.3	5.7	12.4	4.9
South Atlantic	18.7	2.8	5.3	5.5	5.2	2.9	6.4	7.1
East South Central	6.3	1.2	2.0	1.9	1.2	1.2	2.3	6.4
West South Central	10.8	1.7	3.6	2.7	2.9	1.6	3.8	9.3
West	21.8	2.7	7.1	6.8	5.2	3.6	8.1	6.3
Mountain	6.2	0.8	2.0	2.1	1.3	0.9	1.9	9.6
Pacific	15.6	1.9	5.1	4.7	3.9	2.7	6.2	7.8
Metropolitan Statistical Area								
Urban	78.6	9.9	21.1	24.0	23.6	11.0	25.0	3.1
Central City	36.8	6.1	11.3	11.1	8.3	6.6	14.2	5.9
Suburban	41.9	3.8	9.8	12.9	15.4	4.5	10.9	6.5
Rural	22.8	3.4	8.0	7.1	4.3	3.6	9.1	6.8
Climate Zone²								
Fewer than 2,000 CDD and--								
More than 7,000 HDD	9.3	0.8	2.8	3.3	2.3	1.0	2.8	18.6
5,500 to 7,000 HDD	28.0	2.9	7.2	9.2	8.8	3.3	8.2	9.7
4,000 to 5,499 HDD	22.5	3.2	5.7	6.9	6.7	3.1	7.6	9.9
Fewer than 4,000 HDD	19.5	2.9	6.4	5.8	4.5	3.7	7.6	11.8
2,000 CDD or More and --								
Fewer than 4,000 HDD	22.2	3.5	7.2	5.9	5.6	3.6	7.9	9.4
Estimated Heated Floorspace Category (square feet)³								
Fewer than 600	7.9	2.9	3.1	1.6	0.3	2.7	4.9	10.8
600 to 999	21.5	4.3	8.6	6.0	2.6	4.6	10.2	6.4
1,000 to 1,599	30.4	2.8	9.7	10.8	7.0	3.7	9.9	5.7
1,600 to 1,999	15.3	0.6	3.2	5.4	6.1	0.9	2.8	7.8
2,000 to 2,399	7.9	0.2	1.2	2.5	4.0	0.3	1.1	12.9
2,400 to 2,999	5.3	Q	0.3	1.4	3.4	0.2	0.5	17.5
3,000 or More	4.1	Q	0.3	0.9	2.8	Q	0.4	19.4
No Estimate Provided	9.1	2.2	2.7	2.5	1.7	2.2	4.4	10.7
Ownership of Unit								
Owned	68.5	5.1	17.6	21.9	23.9	5.7	17.1	3.8
Rented	33.0	8.2	11.5	9.3	4.0	9.0	17.0	5.0

See footnotes at end of table.

Table HC1-3a. Housing Unit Characteristics by Household Income, Million U.S. Households, 1997 (Continued)

Housing Unit Characteristics	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.4	1.0	0.9	1.1	1.3	1.0	
Type and Ownership of Housing Unit								
Single-Family Detached	63.8	5.1	15.5	20.4	22.8	6.1	16.3	4.0
Owned	55.6	3.7	12.8	17.8	21.3	4.1	12.5	4.5
Rented	8.1	1.4	2.7	2.5	1.5	2.0	3.8	9.3
Single-Family Attached	9.9	1.5	3.1	3.0	2.3	1.6	3.7	10.2
Owned	5.5	0.4	1.6	1.7	1.7	0.5	1.5	16.0
Rented	4.5	1.1	1.5	1.3	0.6	1.2	2.3	12.1
Multifamily (2 to 4 units)	5.6	1.5	2.1	1.3	0.7	1.5	3.0	12.6
Owned	0.9	Q	0.2	0.3	0.3	Q	0.3	29.9
Rented	4.7	1.4	1.9	1.0	0.4	1.4	2.7	14.4
Multifamily (5 or more units)	15.8	4.2	5.3	4.7	1.7	4.0	8.0	8.8
Owned	1.2	0.2	0.3	0.5	Q	Q	0.5	27.5
Rented	14.6	4.0	4.9	4.2	1.5	3.9	7.5	8.8
Mobile Home	6.3	1.0	3.2	1.7	0.5	1.4	3.0	13.2
Owned	5.3	0.7	2.7	1.5	0.4	1.0	2.3	14.3
Rented	1.1	0.3	0.5	0.2	Q	0.4	0.7	23.4
Year of Construction								
1939 or Before	18.7	3.2	5.8	5.7	4.0	3.5	7.7	7.6
1940 to 1949	9.2	1.4	3.3	2.7	1.8	1.6	4.0	9.2
1950 to 1959	12.5	1.7	4.1	3.9	2.9	2.1	4.7	7.0
1960 to 1969	14.4	1.8	4.4	4.8	3.5	2.2	4.7	7.9
1970 to 1979	19.6	2.5	5.2	6.3	5.6	2.7	6.1	6.7
1980 to 1989	17.3	1.8	4.5	4.7	6.3	1.8	4.7	9.1
1990 to 1997 ⁴	9.7	0.9	1.9	3.0	3.9	0.8	2.2	12.6
Urban/Rural Location⁵								
City	48.2	8.0	15.4	14.5	10.3	8.8	19.0	4.6
Town	18.2	2.7	5.7	5.3	4.5	2.9	7.1	9.2
Suburbs	18.6	0.9	3.3	5.8	8.6	1.0	3.0	9.2
Rural or Open Country	16.5	1.7	4.7	5.5	4.5	2.0	5.0	8.7
Total Number of Rooms (Excluding Bathrooms)								
1 or 2	3.1	1.3	1.3	0.4	Q	1.1	2.0	13.4
3	9.2	2.9	3.4	2.3	0.6	2.5	5.0	9.3
4	18.3	3.5	7.0	5.6	2.2	3.7	8.3	6.9
5	21.3	2.7	7.5	7.0	3.9	3.4	8.3	6.1
6	20.0	1.9	5.6	6.8	5.7	2.5	6.2	6.6
7	14.2	0.5	2.7	5.1	5.9	0.9	2.5	8.6
8	8.4	0.2	0.9	2.5	4.8	0.2	1.0	12.6
9 or More	7.0	Q	0.7	1.3	4.8	0.3	0.8	13.9
Bedrooms								
None or 1	13.2	4.4	4.8	3.0	0.9	3.6	7.3	8.1
2	28.8	5.0	10.8	9.0	4.0	5.1	12.2	5.3
3	41.0	3.1	10.7	13.8	13.4	4.5	11.1	4.9
4 or More	18.6	0.9	2.8	5.3	9.6	1.4	3.5	7.9

See footnotes at end of table.

Table HC1-3a. Housing Unit Characteristics by Household Income, Million U.S. Households, 1997 (Continued)

Housing Unit Characteristics	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.4	1.0	0.9	1.1	1.3	1.0	
Other Rooms (Excluding Bathrooms)								
None or 1	5.1	1.7	2.1	1.0	0.2	1.5	2.9	11.6
2	38.6	7.4	14.0	11.9	5.3	8.1	17.3	4.2
3	31.0	3.1	9.0	10.3	8.6	3.9	10.0	5.5
4	17.6	0.7	3.1	5.7	8.1	0.7	2.6	8.0
5 or More	9.2	0.3	1.0	2.2	5.7	0.4	1.2	12.7
Full Bathrooms								
None or 1	59.4	11.5	21.3	17.8	8.7	12.0	27.0	3.4
2	35.9	1.6	7.3	12.0	15.1	2.4	6.5	5.5
3 or More	6.2	Q	0.5	1.3	4.2	0.3	0.6	17.7
Half Bathrooms								
None	73.0	11.9	23.4	22.6	15.2	12.7	28.4	3.0
1	26.5	1.3	5.5	7.9	11.7	1.8	5.4	6.5
2 or More	Q	Q	Q	Q	Q	Q	Q	NF
Number of Stories								
Single-Family Homes	73.7	6.6	18.6	23.4	25.1	7.8	20.1	3.6
1 Story	41.1	5.0	12.7	13.3	10.2	5.6	13.6	5.0
2 Stories	26.9	1.4	5.1	8.8	11.7	1.9	5.7	6.9
3 Stories	3.2	Q	0.5	0.7	1.9	Q	0.6	16.4
Split-Level	2.4	Q	0.3	0.7	1.4	Q	Q	19.9
Other	Q	Q	Q	Q	Q	Q	Q	NF
Mobile Homes	6.3	1.0	3.2	1.7	0.5	1.4	3.0	13.2
Number of Floors in Apartment Buildings								
1 or 2 Floors	21.4	5.7	7.4	6.0	2.3	5.5	11.0	7.0
3 or 4 Floors	10.9	2.8	4.3	3.0	0.8	2.8	5.8	10.5
5 to 10 Floors	5.4	1.0	1.9	1.8	0.8	1.1	2.3	18.5
11 to 20 Floors	2.1	0.8	0.5	0.5	0.3	0.7	1.2	19.9
More than 20 Floors	0.8	0.5	0.1	Q	Q	0.4	0.6	30.9
	2.2	0.7	0.6	0.6	0.4	0.5	1.1	20.1
Foundation/Basement of Single-Family Homes (More than one may apply)								
Basement	33.2	2.1	7.2	11.1	12.9	2.3	7.8	6.3
Crawlspace	22.5	2.6	6.8	7.2	5.9	3.1	7.1	7.5
Concrete Slab	23.0	2.1	5.7	6.6	8.5	2.6	6.1	7.3
Not Asked (Mobile Homes and Multi-Family Units)	27.7	6.7	10.6	7.7	2.8	6.9	14.0	6.0
Garage/Carport								
Yes	54.5	3.3	12.4	17.5	21.3	3.7	11.6	4.6
1-Car Garage	16.2	1.5	4.8	5.6	4.3	1.5	4.9	8.0
2-Car Garage	29.7	1.1	5.2	9.4	14.1	1.5	4.3	7.4
3-Car Garage	2.8	Q	0.3	0.7	1.7	Q	0.4	18.8
Covered Carport	6.4	0.7	2.2	2.1	1.5	0.7	2.1	11.7
No	25.6	4.4	9.4	7.6	4.3	5.5	11.5	6.1
Not Asked (Apartments)	21.4	5.7	7.4	6.0	2.3	5.5	11.0	7.0

See footnotes at end of table.

Table HC1-3a. Housing Unit Characteristics by Household Income, Million U.S. Households, 1997 (Continued)

Housing Unit Characteristics	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.4	1.0	0.9	1.1	1.3	1.0	
Fuels Used For Any Use (more than one often used)								
Electricity	101.4	13.3	29.1	31.1	27.9	14.6	34.0	2.7
Natural Gas	61.9	8.0	17.0	19.0	17.9	9.1	20.4	4.3
Wood	15.0	0.7	3.0	4.7	6.7	1.1	3.0	9.4
Fuel Oil	10.0	1.3	2.5	3.2	3.0	1.4	3.4	10.4
LPG	8.1	1.0	2.4	2.7	1.9	1.2	2.8	12.7
Kerosene	3.5	0.4	1.2	1.2	0.6	0.6	1.4	14.5
Solar	0.7	Q	Q	0.2	0.3	Q	Q	39.1
Main Heating Fuel								
Natural Gas	53.5	6.2	14.7	16.6	15.9	7.2	16.8	4.8
Electricity	29.6	4.4	9.1	8.5	7.6	4.4	10.4	6.6
Fuel Oil	9.5	1.3	2.4	3.0	2.8	1.3	3.3	10.4
LPG	4.6	0.6	1.5	1.8	0.8	0.7	1.6	14.9
Wood	2.2	0.3	0.8	0.6	0.5	0.3	0.8	18.3
Kerosene	1.0	0.2	0.3	0.4	Q	0.3	0.5	24.0
Solar	Q	Q	Q	Q	Q	Q	Q	NF
Other/None	1.2	0.3	0.4	0.2	0.2	0.4	0.7	24.8

¹ Below 150 percent of poverty line or 60 percent of median State income.
² One of five climatically distinct areas, determined according to the 30-year average (1961-1990) of the annual heating and cooling degree-days. For this report, the heating or cooling degree-days are a measure of how cold or how hot a location is over a period of one year, relative to a base temperature of 65 degrees Fahrenheit. A household is assigned to a climate zone according to the 30-year average annual degree-days for an appropriate nearby weather station.
³ Estimates provided by the household interview respondents, who were asked which category best described the total heated floorspace in the home.
⁴ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.
⁵ Based on the household respondent's description rather than the Federal Government definition.
 NF = No applicable RSE row factor.
 Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.
 Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC1-4a. Housing Unit Characteristics by Type of Housing Unit,
Million U.S. Households, 1997**

Housing Unit Characteristics	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.5	1.7	1.3	1.8	
Total	101.5	73.7	5.6	15.8	6.3	4.0
Census Region and Division						
Northeast	19.7	13.8	1.7	3.8	0.5	7.9
New England	5.3	3.8	0.7	0.7	0.1	15.5
Middle Atlantic	14.4	10.0	1.0	3.1	0.4	8.9
Midwest	24.1	18.4	1.7	2.8	1.1	8.1
East North Central	16.9	12.5	1.5	2.2	0.7	8.3
West North Central	7.2	5.9	0.3	0.6	0.4	17.3
South	35.9	26.7	1.4	4.8	3.0	7.8
South Atlantic	18.7	13.6	0.7	2.9	1.5	11.7
East South Central	6.3	4.8	0.3	0.4	0.8	14.6
West South Central	10.8	8.2	0.4	1.5	0.7	9.5
West	21.8	14.9	0.8	4.4	1.7	9.3
Mountain	6.2	4.5	0.2	0.8	0.7	15.8
Pacific	15.6	10.4	0.6	3.5	1.1	11.5
Metropolitan Statistical Area						
Urban	78.6	55.8	4.5	14.8	3.6	5.1
Central City	36.8	23.8	3.0	8.8	1.2	8.9
Suburban	41.9	32.0	1.5	6.0	2.3	9.0
Rural	22.8	18.0	1.1	1.0	2.7	8.6
Climate Zone¹						
Fewer than 2,000 CDD and--						
More than 7,000 HDD	9.3	7.7	0.5	0.6	0.5	25.4
5,500 to 7,000 HDD	28.0	20.5	2.2	4.0	1.4	12.7
4,000 to 5,499 HDD	22.5	15.8	1.3	4.3	1.1	13.9
Fewer than 4,000 HDD	19.5	13.7	0.8	3.5	1.5	14.2
2,000 CDD or More and --						
Fewer than 4,000 HDD	22.2	16.0	0.8	3.4	2.0	12.9
Estimated Heated Floorspace Category (square feet)²						
Fewer than 600	7.9	1.9	1.3	3.7	0.9	10.3
600 to 999	21.5	9.5	2.3	7.2	2.5	7.2
1,000 to 1,599	30.4	25.0	0.9	2.6	1.8	8.5
1,600 to 1,999	15.3	14.4	Q	0.3	0.4	10.1
2,000 to 2,399	7.9	7.7	Q	Q	Q	10.6
2,400 to 2,999	5.3	5.2	Q	Q	Q	14.6
3,000 or More	4.1	4.0	Q	Q	Q	21.0
No Estimate Provided	9.1	5.9	0.9	1.9	0.4	12.9
Year of Construction						
1939 or Before	18.7	14.5	1.8	2.4	Q	10.1
1940 to 1949	9.2	7.3	0.8	1.1	Q	11.2
1950 to 1959	12.5	10.7	0.4	1.3	0.2	10.8
1960 to 1969	14.4	9.9	0.9	2.7	0.9	9.8
1970 to 1979	19.6	12.3	0.9	4.2	2.1	8.0
1980 to 1989	17.3	11.9	0.7	3.0	1.7	11.4
1990 to 1997 ³	9.7	7.1	Q	1.1	1.3	16.2
Urban/Rural Location⁴						
City	48.2	31.4	3.9	11.2	1.8	6.8
Town	18.2	13.8	1.2	2.2	1.0	11.9
Suburbs	18.6	15.4	0.4	2.0	0.7	12.5
Rural or Open Country	16.5	13.2	0.1	0.4	2.8	12.9

See footnotes at end of table.

Table HC1-4a. Housing Unit Characteristics by Type of Housing Unit, Million U.S. Households, 1997 (Continued)

Housing Unit Characteristics	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.5	1.7	1.3	1.8	
Total Number of Rooms (Excluding Bathrooms)						
1 or 2	3.1	0.4	0.3	2.1	0.2	18.4
3	9.2	1.6	1.6	5.6	0.4	10.2
4	18.3	7.8	2.0	5.8	2.7	7.9
5	21.3	16.4	1.0	1.8	2.1	7.9
6	20.0	18.5	0.5	0.5	0.6	10.1
7	14.2	13.8	Q	Q	0.2	10.3
8	8.4	8.3	Q	Q	Q	11.8
9 or More	7.0	6.9	Q	Q	Q	12.4
Bedrooms						
None or 1	13.2	2.6	2.1	8.1	0.4	9.1
2	28.8	16.4	2.5	6.7	3.1	6.8
3	41.0	36.8	0.8	0.8	2.6	7.3
4 or More	18.6	17.9	0.2	0.2	0.3	14.2
Other Rooms (Excluding Bathrooms)						
None or 1	5.1	1.4	0.4	2.5	0.7	12.6
2	38.6	19.9	3.6	10.9	4.2	5.4
3	31.0	26.5	1.3	2.1	1.1	7.7
4	17.6	16.9	0.3	0.2	0.2	14.3
5 or More	9.2	9.1	Q	Q	Q	10.7
Full Bathrooms						
None or 1	59.4	37.3	5.1	13.5	3.5	4.5
2	35.9	30.3	0.5	2.3	2.8	8.1
3 or More	6.2	6.1	Q	Q	Q	17.2
Half Bathrooms						
None	73.0	48.2	5.1	14.0	5.7	4.6
1	26.5	23.6	0.5	1.8	0.6	9.0
2 or More	Q	Q	Q	Q	Q	NF
Number of Stories						
Single-Family Homes	73.7	73.7	--	--	--	2.8
1 Story	41.1	41.1	--	--	--	5.7
2 Stories	26.9	26.9	--	--	--	7.2
3 Stories	3.2	3.2	--	--	--	18.0
Split-Level	2.4	2.4	--	--	--	23.2
Other	Q	Q	--	--	--	NF
Mobile Homes	6.3	Q	--	--	6.3	9.1
Number of Floors in Apartment Buildings						
1 or 2 Floors	21.4	--	5.6	15.8	--	5.6
3 or 4 Floors	10.9	--	4.1	6.8	--	7.9
5 to 10 Floors	5.4	--	0.7	4.7	--	17.1
11 to 20 Floors	2.1	--	Q	2.0	--	14.7
More than 20 Floors	0.8	--	Q	0.8	--	27.3
	2.2	--	0.8	1.4	--	16.2

See footnotes at end of table.

Table HC1-4a. Housing Unit Characteristics by Type of Housing Unit, Million U.S. Households, 1997 (Continued)

Housing Unit Characteristics	Total	Type of Housing Unit			Mobile Home	RSE Row Factors
		Single-Family	Multifamily			
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.5	1.7	1.3	1.8	
Foundation/Baseament of Single-Family Homes (More than one may apply)						
Basement	33.2	33.2	--	--	--	7.1
Crawlspace	22.5	22.5	--	--	--	9.5
Concrete Slab	23.0	23.0	--	--	--	8.8
Not Asked (Mobile Homes and Multi-Family Units)	27.7	--	5.6	15.8	6.3	5.2
Garage/Carport						
Yes	54.5	52.9	--	--	1.6	5.0
1-Car Garage	16.2	16.0	--	--	0.3	11.5
2-Car Garage	29.7	29.4	--	--	0.3	9.4
3-Car Garage	2.8	2.7	--	--	Q	18.0
Covered Carport	6.4	5.4	--	--	1.0	12.9
No	25.6	20.8	--	--	4.7	7.3
Not Asked (Apartments)	21.4	Q	5.6	15.8	Q	5.6
Fuels Used For Any Use (more than one often used)						
Electricity	101.4	73.7	5.6	15.8	6.3	4.0
Natural Gas	61.9	47.0	3.8	8.8	2.3	6.1
Wood	15.0	14.0	Q	0.2	0.7	12.9
Fuel Oil	10.0	7.5	0.5	1.8	Q	14.1
LPG	8.1	6.2	Q	Q	1.7	14.5
Kerosene	3.5	2.7	Q	Q	0.6	15.1
Solar	0.7	0.6	Q	Q	Q	52.3
Main Heating Fuel						
Natural Gas	53.5	42.5	3.4	5.5	2.1	7.2
Electricity	29.6	17.7	1.6	7.9	2.4	8.6
Fuel Oil	9.5	7.1	0.5	1.8	Q	14.1
LPG	4.6	3.5	Q	Q	1.0	17.0
Wood	2.2	1.9	Q	Q	0.3	21.3
Kerosene	1.0	0.5	Q	Q	0.4	26.4
Solar	Q	Q	Q	Q	Q	NF
Other/None	1.2	0.5	Q	0.5	Q	32.5

¹ One of five climatically distinct areas, determined according to the 30-year average (1961-1990) of the annual heating and cooling degree-days. For this report, the heating or cooling degree-days are a measure of how cold or how hot a location is over a period of one year, relative to a base temperature of 65 degrees Fahrenheit. A household is assigned to a climate zone according to the 30-year average annual degree-days for an appropriate nearby weather station.

² Estimates provided by the household interview respondents, who were asked which category best described the total heated floorspace in the home.

³ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

⁴ Based on the household respondent's description rather than the Federal Government definition.

-- = Data not applicable.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

Table HC1-13a. Housing Unit Characteristics by Census Region, Million U.S. Households, 1997

Housing Unit Characteristics	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.1	1.2	1.0	1.2	
Total	101.5	19.7	24.1	35.9	21.8	NF
Census Region and Division						
Northeast	19.7	19.7	--	--	--	NF
New England	5.3	5.3	--	--	--	NF
Middle Atlantic	14.4	14.4	--	--	--	NF
Midwest	24.1	--	24.1	--	--	NF
East North Central	16.9	--	16.9	--	--	NF
West North Central	7.2	--	7.2	--	--	NF
South	35.9	--	--	35.9	--	NF
South Atlantic	18.7	--	--	18.7	--	NF
East South Central	6.3	--	--	6.3	--	NF
West South Central	10.8	--	--	10.8	--	NF
West	21.8	--	--	--	21.8	NF
Mountain	6.2	--	--	--	6.2	NF
Pacific	15.6	--	--	--	15.6	NF
Metropolitan Statistical Area						
Urban	78.6	16.3	17.8	25.3	19.3	1.6
Central City	36.8	6.0	8.7	12.2	9.9	7.7
Suburban	41.9	10.3	9.1	13.1	9.4	6.5
Rural	22.8	3.5	6.3	10.5	2.5	6.2
Climate Zone¹						
Fewer than 2,000 CDD and-- More than 7,000 HDD	9.3	2.0	5.4	--	1.8	16.8
5,500 to 7,000 HDD	28.0	9.6	14.7	NC	3.7	12.3
4,000 to 5,499 HDD	22.5	8.1	3.9	8.0	2.4	12.9
Fewer than 4,000 HDD	19.5	--	--	9.2	10.3	10.3
2,000 CDD or More and -- Fewer than 4,000 HDD	22.2	--	--	18.7	3.5	7.7
Estimated Heated Floorspace Category (square feet)²						
Fewer than 600	7.9	1.9	1.7	2.1	2.2	9.6
600 to 999	21.5	4.4	5.1	6.8	5.1	6.0
1,000 to 1,599	30.4	5.1	6.9	11.8	6.5	5.2
1,600 to 1,999	15.3	2.4	4.2	5.7	3.0	6.8
2,000 to 2,399	7.9	1.4	1.8	3.0	1.7	9.3
2,400 to 2,999	5.3	1.0	1.4	1.8	1.2	12.8
3,000 or More	4.1	0.7	1.0	1.8	0.6	16.8
No Estimate Provided	9.1	2.9	1.9	2.9	1.4	11.9

See footnotes at end of table.

**Table HC1-13a. Housing Unit Characteristics by Census Region,
Million U.S. Households, 1997 (Continued)**

Housing Unit Characteristics	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.1	1.2	1.0	1.2	
Ownership of Unit						
Owned	68.5	12.8	17.3	25.4	13.1	2.6
Rented	33.0	7.0	6.8	10.5	8.8	5.3
Type and Ownership of Housing Unit						
Single-Family Detached	63.8	10.7	16.6	23.9	12.6	3.0
Owned	55.6	9.9	14.9	20.7	10.2	3.5
Rented	8.1	0.8	1.8	3.2	2.3	10.3
Single-Family Attached	9.9	3.1	1.8	2.7	2.3	12.3
Owned	5.5	1.9	0.9	1.7	0.9	17.6
Rented	4.5	1.2	0.9	1.0	1.4	13.9
Multifamily (2 to 4 units)	5.6	1.7	1.7	1.4	0.8	13.8
Owned	0.9	0.3	0.4	Q	Q	28.0
Rented	4.7	1.4	1.3	1.3	0.8	14.6
Multifamily (5 or more units)	15.8	3.8	2.8	4.8	4.4	9.7
Owned	1.2	0.3	Q	0.4	0.4	30.3
Rented	14.6	3.5	2.7	4.5	4.0	9.6
Mobile Home	6.3	0.5	1.1	3.0	1.7	16.2
Owned	5.3	0.4	1.0	2.5	1.5	17.4
Rented	1.1	Q	0.1	0.5	0.3	26.3
Year of Construction						
1939 or Before	18.7	6.4	7.2	3.1	2.1	8.8
1940 to 1949	9.2	1.9	2.1	2.8	2.3	9.2
1950 to 1959	12.5	2.7	2.7	4.2	2.9	7.3
1960 to 1969	14.4	2.6	3.2	5.1	3.6	7.6
1970 to 1979	19.6	2.6	4.0	7.8	5.1	6.5
1980 to 1989	17.3	2.3	2.9	8.2	3.9	10.5
1990 to 1997 ³	9.7	1.2	2.0	4.6	1.9	12.0
Urban/Rural Location⁴						
City	48.2	6.9	11.4	16.4	13.5	4.8
Town	18.2	5.2	4.5	5.3	3.2	10.9
Suburbs	18.6	4.3	4.5	6.9	2.9	9.0
Rural or Open Country	16.5	3.4	3.6	7.2	2.2	10.3
Total Number of Rooms (Excluding Bathrooms)						
1 or 2	3.1	0.6	0.6	0.6	1.3	16.4
3	9.2	2.2	1.5	2.8	2.6	9.6
4	18.3	3.6	4.3	5.8	4.6	7.6
5	21.3	3.4	4.8	8.7	4.3	5.3
6	20.0	3.9	4.8	7.4	3.9	5.6
7	14.2	2.8	3.6	5.4	2.5	7.2
8	8.4	1.7	2.6	2.7	1.4	9.9
9 or More	7.0	1.5	1.9	2.5	1.3	10.5

See footnotes at end of table.

**Table HC1-13a. Housing Unit Characteristics by Census Region,
Million U.S. Households, 1997 (Continued)**

Housing Unit Characteristics	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.1	1.2	1.0	1.2	
Bedrooms						
None or 1	13.2	3.3	2.7	3.5	3.7	8.0
2	28.8	5.6	6.7	9.8	6.7	5.1
3	41.0	7.1	9.8	16.5	7.5	4.1
4 or More	18.6	3.8	4.9	6.0	3.9	6.9
Other Rooms (Excluding Bathrooms)						
None or 1	5.1	1.0	0.7	1.3	2.0	13.2
2	38.6	7.0	8.4	13.7	9.6	3.7
3	31.0	6.3	7.3	11.2	6.1	4.7
4	17.6	3.7	4.8	6.5	2.5	6.6
5 or More	9.2	1.8	2.8	3.1	1.5	9.3
Full Bathrooms						
None or 1	59.4	14.2	15.5	18.1	11.5	2.9
2	35.9	5.0	7.3	15.2	8.5	4.5
3 or More	6.2	0.5	1.3	2.5	1.8	15.5
Half Bathrooms						
None	73.0	13.1	16.5	26.6	16.8	1.7
1	26.5	6.1	7.0	8.8	4.7	4.6
2 or More	Q	Q	Q	Q	Q	NF
Number of Stories						
Single-Family Homes	73.7	13.8	18.4	26.7	14.9	2.4
1 Story	41.1	3.8	8.1	19.0	10.1	5.2
2 Stories	26.9	8.4	8.3	6.2	3.9	6.3
3 Stories	3.2	1.1	0.9	0.8	0.4	13.8
Split-Level	2.4	0.3	1.1	0.6	0.4	20.4
Other	Q	Q	Q	Q	Q	NF
Mobile Homes	6.3	0.5	1.1	3.0	1.7	16.2
Number of Floors in Apartment Buildings						
1 or 2 Floors	21.4	5.5	4.5	6.2	5.2	7.9
3 or 4 Floors	10.9	1.6	2.2	4.1	3.0	12.2
5 to 10 Floors	5.4	1.5	1.3	1.3	1.3	22.3
11 to 20 Floors	2.1	1.4	Q	0.2	Q	17.4
More than 20 Floors	0.8	0.5	Q	Q	Q	25.8
More than 20 Floors	2.2	0.6	0.6	0.5	0.6	21.1
Foundation/Basement of Single-Family Homes (More than one may apply)						
Basement	33.2	11.3	14.1	4.9	2.9	6.7
CrawlSpace	22.5	1.4	3.9	10.8	6.4	8.9
Concrete Slab	23.0	1.9	2.3	12.3	6.5	8.8
Not Asked (Mobile Homes and Multi-Family Units)	27.7	6.0	5.6	9.2	6.9	6.4
Garage/Carport						
Yes	54.5	9.4	14.9	17.3	12.9	3.3
1-Car Garage	16.2	4.5	4.2	4.7	2.9	7.6
2-Car Garage	29.7	4.2	9.2	8.7	7.6	5.9
3-Car Garage	2.8	0.4	1.1	0.4	0.8	15.7
Covered Carport	6.4	0.3	0.6	3.9	1.7	13.0
No	25.6	4.9	4.6	12.3	3.8	6.9
Not Asked (Apartments)	21.4	5.5	4.5	6.2	5.2	7.9

See footnotes at end of table.

Table HC1-13a. Housing Unit Characteristics by Census Region, Million U.S. Households, 1997 (Continued)

Housing Unit Characteristics	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.1	1.2	1.0	1.2	
Fuels Used For Any Use (more than one often used)						
Electricity	101.4	19.7	24.1	35.9	21.8	NF
Natural Gas	61.9	11.8	18.5	16.4	15.1	3.9
Wood	15.0	2.5	2.6	5.7	4.2	8.7
Fuel Oil	10.0	7.5	1.1	1.2	0.3	18.2
LPG	8.1	1.6	2.3	3.2	1.0	16.1
Kerosene	3.5	1.0	0.4	1.9	0.2	16.1
Solar	0.7	Q	Q	0.3	0.2	31.7
Main Heating Fuel						
Natural Gas	53.5	9.2	17.9	13.7	12.7	4.8
Electricity	29.6	2.3	2.7	17.5	7.1	8.0
Fuel Oil	9.5	7.1	1.0	1.1	0.2	17.8
LPG	4.6	0.2	1.8	2.1	0.5	20.7
Wood	2.2	0.4	0.4	0.7	0.7	20.3
Kerosene	1.0	0.4	Q	0.4	Q	23.2
Solar	Q	Q	Q	Q	Q	NF
Other/None	1.2	0.1	Q	0.4	0.5	25.6

¹ One of five climatically distinct areas, determined according to the 30-year average (1961-1990) of the annual heating and cooling degree-days. For this report, the heating or cooling degree-days are a measure of how cold or how hot a location is over a period of one year, relative to a base temperature of 65 degrees Fahrenheit. A household is assigned to a climate zone according to the 30-year average annual degree-days for an appropriate nearby weather station.

² Estimates provided by the household interview respondents, who were asked which category best described the total heated floorspace in the home.

³ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

⁴ Based on the household respondent's description rather than the Federal Government definition.

-- = Data not applicable.

NC = No cases in sample.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

Household Tables

Table HC2-2a. Household Characteristics by Year of Construction, Million U.S. Households, 1997

Household Characteristics	Total	Year of Construction ¹						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.8	1.3	1.0	1.1	1.1	0.9	
Total	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.1
1997 Household Income Category								
Less than \$5,000	3.8	0.1	0.4	0.6	0.6	0.5	1.6	16.8
\$5,000 to \$9,999	9.6	0.7	1.4	1.9	1.2	1.2	3.1	12.2
\$10,000 to \$14,999	10.3	0.6	1.3	1.7	1.5	1.5	3.6	10.6
\$15,000 to \$19,999	10.4	0.6	1.8	1.9	1.6	1.5	3.0	10.6
\$20,000 to \$24,999	8.4	0.7	1.3	1.5	1.3	1.1	2.5	10.8
\$25,000 to \$34,999	15.6	1.3	2.2	3.4	2.6	1.9	4.3	8.3
\$35,000 to \$49,999	15.5	1.7	2.5	2.8	2.2	2.0	4.2	8.2
\$50,000 to \$74,999	16.4	2.0	3.7	3.4	1.9	1.9	3.6	8.7
\$75,000 or More	11.5	2.0	2.6	2.2	1.6	1.0	2.1	11.6
Below Poverty Line								
100 Percent	14.6	0.8	1.8	2.7	2.2	2.1	5.0	9.0
125 Percent	19.7	1.2	2.7	3.6	2.8	2.7	6.7	8.3
Eligible for Federal Assistance² ..	34.1	2.2	4.7	6.1	4.7	4.7	11.7	6.5
Age of Householder								
Under 25 Years	5.7	0.6	1.1	1.2	0.8	0.6	1.4	13.6
25 to 34 Years	18.5	2.2	3.2	3.7	2.8	1.9	4.8	7.7
35 to 44 Years	23.2	3.2	4.4	4.1	2.7	2.7	6.1	6.7
45 to 59 Years	25.6	2.0	4.6	5.9	3.5	2.9	6.7	6.8
60 Years and Over	28.5	1.7	4.1	4.6	4.7	4.5	8.9	7.2
Race of Householder								
White	78.5	8.1	13.6	16.1	10.9	9.4	20.3	4.3
Black	12.7	0.7	2.2	1.7	2.0	1.8	4.3	12.1
Other ³	10.3	0.9	1.5	1.8	1.6	1.3	3.3	11.9
Householder of Hispanic Descent								
Yes	9.4	0.8	1.3	1.8	1.3	1.4	2.8	13.5
No	92.1	8.9	16.0	17.8	13.1	11.1	25.2	4.3
Household Size								
1 Person	25.6	1.7	4.3	4.8	3.8	3.2	7.8	7.5
2 Persons	33.0	3.3	5.6	6.3	5.1	4.0	8.8	6.0
3 Persons	17.4	1.5	3.0	3.5	2.3	2.3	4.7	7.6
4 Persons	15.2	1.9	2.7	3.3	1.9	1.8	3.6	7.8
5 Persons	6.4	0.9	1.2	1.0	0.9	0.6	1.7	12.8
6 or More Persons	3.9	0.4	0.6	0.6	0.3	0.6	1.3	18.0
Household Owns or Has Regular Use of a Motor Vehicle								
No	12.9	0.6	1.3	2.2	1.8	1.6	5.4	10.3
Yes	88.6	9.1	16.0	17.4	12.7	10.9	22.5	4.4
1 Vehicle	33.5	2.8	5.6	6.1	4.9	4.3	9.9	6.3
2 Vehicles	38.1	4.8	7.1	7.6	5.6	4.6	8.5	5.5
3 Vehicles	12.0	1.2	2.3	2.4	1.6	1.6	2.8	9.5
4 or More Vehicles	5.0	0.4	1.0	1.3	0.6	0.4	1.4	15.1

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

² Below 150 percent of poverty line or 60 percent of median State income.

³ Includes 5.5 million householders who described themselves as Hispanic rather than White, Black, or other.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

Table HC2-3a. Household Characteristics by Household Income, Million U.S. Households, 1997

Household Characteristics	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.4	1.0	1.0	1.1	1.2	1.0	
Total	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
1997 Household Income Category								
Less than \$5,000	3.8	3.8	--	--	--	3.8	3.8	7.1
\$5,000 to \$9,999	9.6	9.6	--	--	--	7.1	9.6	5.4
\$10,000 to \$14,999	10.3	--	10.3	--	--	2.7	9.8	6.4
\$15,000 to \$19,999	10.4	--	10.4	--	--	1.0	6.1	7.2
\$20,000 to \$24,999	8.4	--	8.4	--	--	Q	2.8	7.1
\$25,000 to \$34,999	15.6	--	--	15.6	--	Q	2.0	6.5
\$35,000 to \$49,999	15.5	--	--	15.5	--	--	0.2	8.6
\$50,000 to \$74,999	16.4	--	--	--	16.4	--	--	4.8
\$75,000 or More	11.5	--	--	--	11.5	--	--	6.9
Below Poverty Line								
100 Percent	14.6	10.9	3.8	Q	--	14.6	14.6	4.3
125 Percent	19.7	12.9	6.5	0.3	--	14.6	19.7	6.0
Eligible for Federal Assistance¹ ..	34.1	13.3	18.6	2.1	--	14.6	34.1	4.2
Age of Householder								
Under 25 Years	5.7	1.4	2.4	1.4	0.4	1.6	3.1	10.7
25 to 34 Years	18.5	1.6	5.3	7.0	4.7	2.7	6.1	6.3
35 to 44 Years	23.2	1.7	4.9	7.4	9.1	2.5	6.1	5.5
45 to 59 Years	25.6	2.1	5.7	7.5	10.3	2.5	5.9	5.7
60 Years and Over	28.5	6.4	10.9	7.8	3.4	5.4	12.9	5.2
Race of Householder								
White	78.5	7.8	21.7	25.2	23.8	7.8	21.9	3.3
Black	12.7	3.4	3.8	3.2	2.3	3.7	6.5	8.5
Other ²	10.3	2.1	3.6	2.7	1.9	3.1	5.6	9.3
Householder of Hispanic Descent								
Yes	9.4	1.9	3.5	2.5	1.6	2.8	5.1	10.5
No	92.1	11.4	25.6	28.7	26.3	11.9	29.0	3.1
Household Size								
1 Person	25.6	6.9	9.6	6.3	2.8	4.8	10.6	5.0
2 Persons	33.0	2.9	9.5	11.2	9.3	2.7	8.3	5.1
3 Persons	17.4	1.5	4.1	5.5	6.3	2.0	5.4	6.3
4 Persons	15.2	1.1	3.3	4.8	6.0	2.2	5.0	6.1
5 Persons	6.4	0.4	1.5	2.1	2.4	1.6	2.6	10.2
6 or More Persons	3.9	0.5	1.1	1.2	1.2	1.4	2.1	13.1
Household Owns or Has Regular Use of a Motor Vehicle								
No	12.9	6.4	4.3	1.5	0.8	5.9	9.8	6.4
Yes	88.6	6.9	24.9	29.7	27.1	8.7	24.3	3.2
1 Vehicle	33.5	5.1	13.8	11.0	3.6	5.5	13.6	4.6
2 Vehicles	38.1	1.4	8.4	13.4	14.8	2.4	7.8	4.6
3 Vehicles	12.0	0.2	2.0	3.9	5.8	0.6	2.1	9.9
4 or More Vehicles	5.0	Q	0.7	1.3	2.9	0.2	0.8	14.0

¹ Below 150 percent of poverty line or 60 percent of median State income.

² Includes 5.5 million householders who described themselves as Hispanic rather than White, Black, or other.

-- = Data not applicable.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC2-4a. Household Characteristics by Type of Housing Unit,
Million U.S. Households, 1997**

Household Characteristics	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.4	0.5	1.8	1.4	1.9	
Total	101.5	73.7	5.6	15.8	6.3	3.8
1997 Household Income Category						
Less than \$5,000	3.8	1.9	0.3	1.2	0.4	15.5
\$5,000 to \$9,999	9.6	4.7	1.2	3.0	0.7	10.5
\$10,000 to \$14,999	10.3	6.1	0.9	2.3	1.0	10.1
\$15,000 to \$19,999	10.4	6.9	0.5	1.8	1.2	10.1
\$20,000 to \$24,999	8.4	5.6	0.7	1.2	0.9	10.0
\$25,000 to \$34,999	15.6	11.3	0.8	2.5	1.0	8.6
\$35,000 to \$49,999	15.5	12.1	0.5	2.2	0.6	9.7
\$50,000 to \$74,999	16.4	14.3	0.6	1.1	0.4	11.2
\$75,000 or More	11.5	10.8	Q	0.6	Q	13.1
Below Poverty Line						
100 Percent	14.6	7.8	1.5	4.0	1.4	8.3
125 Percent	19.7	10.5	1.9	5.4	1.9	7.5
Eligible for Federal Assistance¹ ..	34.1	20.1	3.0	8.0	3.0	6.1
Age of Householder						
Under 25 Years	5.7	1.8	0.8	2.5	0.6	11.9
25 to 34 Years	18.5	11.1	1.6	4.5	1.4	7.3
35 to 44 Years	23.2	18.2	1.1	2.6	1.3	6.8
45 to 59 Years	25.6	20.9	0.7	2.5	1.5	6.6
60 Years and Over	28.5	21.8	1.4	3.7	1.5	7.3
Race of Householder						
White	78.5	60.4	3.5	9.2	5.5	4.2
Black	12.7	8.4	1.3	2.7	0.3	10.6
Other ²	10.3	4.9	0.9	3.9	0.5	12.2
Householder of Hispanic Descent						
Yes	9.4	5.1	0.8	2.8	0.8	13.0
No	92.1	68.7	4.8	13.0	5.6	4.2
Household Size						
1 Person	25.6	14.2	2.2	7.2	1.9	6.2
2 Persons	33.0	25.5	1.5	4.1	1.9	5.8
3 Persons	17.4	13.5	0.7	2.2	1.0	8.3
4 Persons	15.2	12.2	0.7	1.5	0.8	8.1
5 Persons	6.4	5.2	0.2	0.5	0.5	12.3
6 or More Persons	3.9	3.1	0.2	0.3	0.3	19.9
Household Owns or Has Regular Use of a Motor Vehicle						
No	12.9	5.8	1.7	4.8	0.6	8.4
Yes	88.6	68.0	3.9	11.0	5.7	4.2
1 Vehicle	33.5	20.6	2.4	7.9	2.7	5.6
2 Vehicles	38.1	32.1	1.1	2.6	2.2	6.1
3 Vehicles	12.0	10.7	0.3	0.3	0.6	11.0
4 or More Vehicles	5.0	4.6	Q	0.2	0.2	17.3

¹ Below 150 percent of poverty line or 60 percent of median State income.

² Includes 5.5 million householders who described themselves as Hispanic rather than White, Black, or other.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

Table HC2-13a. Household Characteristics by Census Region, Million U.S. Households, 1997

Household Characteristics	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.2	1.2	1.0	1.3	
Total	101.5	19.7	24.1	35.9	21.8	NF
1997 Household Income Category						
Less than \$5,000	3.8	0.7	0.9	1.4	0.8	11.6
\$5,000 to \$9,999	9.6	1.8	1.6	4.2	1.9	9.0
\$10,000 to \$14,999	10.3	1.7	2.3	3.8	2.6	9.6
\$15,000 to \$19,999	10.4	1.4	2.2	3.9	2.9	7.8
\$20,000 to \$24,999	8.4	1.6	2.0	3.2	1.7	7.1
\$25,000 to \$34,999	15.6	3.3	3.8	5.3	3.3	6.0
\$35,000 to \$49,999	15.5	3.0	4.2	4.9	3.5	5.3
\$50,000 to \$74,999	16.4	3.8	4.5	5.6	2.5	6.5
\$75,000 or More	11.5	2.5	2.6	3.7	2.7	9.3
Below Poverty Line						
100 Percent	14.6	2.5	2.9	5.7	3.6	5.7
125 Percent	19.7	3.3	3.9	7.8	4.7	6.4
Eligible for Federal Assistance¹ ..	34.1	6.4	7.2	12.4	8.1	4.8
Age of Householder						
Under 25 Years	5.7	1.0	1.1	2.1	1.5	10.4
25 to 34 Years	18.5	3.1	4.8	6.3	4.2	5.8
35 to 44 Years	23.2	4.3	5.7	8.0	5.1	3.9
45 to 59 Years	25.6	5.1	5.9	9.5	5.0	4.2
60 Years and Over	28.5	6.1	6.5	9.9	5.9	4.6
Race of Householder						
White	78.5	16.0	20.8	26.2	15.4	1.8
Black	12.7	1.8	2.3	7.5	1.1	10.5
Other ²	10.3	1.9	1.0	2.1	5.3	11.8
Householder of Hispanic Descent						
Yes	9.4	1.7	0.9	2.7	4.1	14.1
No	92.1	18.1	23.1	33.1	17.7	1.3
Household Size						
1 Person	25.6	5.1	6.2	8.9	5.3	4.2
2 Persons	33.0	6.7	7.5	12.0	6.8	3.8
3 Persons	17.4	3.2	3.9	6.4	3.9	5.1
4 Persons	15.2	3.1	3.8	5.2	3.2	5.1
5 Persons	6.4	1.1	1.7	2.0	1.6	9.4
6 or More Persons	3.9	0.5	0.9	1.3	1.1	15.5
Household Owns or Has Regular Use of a Motor Vehicle						
No	12.9	3.6	2.7	4.1	2.5	6.3
Yes	88.6	16.1	21.4	31.8	19.3	1.0
1 Vehicle	33.5	6.5	7.3	12.2	7.5	3.7
2 Vehicles	38.1	6.7	10.0	13.6	7.8	3.2
3 Vehicles	12.0	2.1	2.8	4.4	2.7	7.2
4 or More Vehicles	5.0	0.8	1.3	1.6	1.3	10.8

¹ Below 150 percent of poverty line or 60 percent of median State income.

² Includes 5.5 million householders who described themselves as Hispanic rather than White, Black, or other.

NF = No applicable RSE row factor.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

Space Heating Tables

**Table HC3-2a. Space Heating by Year of Construction,
Million U.S. Households, 1997**

Space Heating Characteristics	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.5	1.2	1.0	1.1	1.1	0.9	
Total	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.2
Main Heating Fuel and Equipment								
Natural Gas	53.5	4.7	6.2	8.1	8.3	8.1	18.1	6.5
Central Warm-Air Furnace	38.4	4.6	5.8	6.5	6.1	5.3	10.1	7.7
For One Housing Unit	37.0	4.5	5.7	6.4	5.9	5.2	9.4	7.8
For Two or More Units	1.3	Q	Q	Q	0.2	Q	0.7	24.7
Steam or Hot-Water System	7.3	Q	0.2	0.9	0.9	0.8	4.4	17.1
For One Housing Unit	5.0	Q	0.2	0.5	0.6	0.7	3.0	20.2
For Two or More Units	2.3	Q	Q	0.3	0.3	Q	1.4	23.7
Floor, Wall, or Pipeless Furnace	4.1	Q	Q	0.4	0.7	1.1	1.7	18.5
Room Heater/Other	3.8	Q	0.1	0.3	0.6	0.8	1.9	21.3
Electricity	29.6	3.9	9.3	8.5	3.4	2.2	2.3	8.4
Built-In Electric Units	7.5	0.4	1.6	2.6	1.1	0.7	1.0	16.4
Central Warm-Air Furnace	10.7	1.5	3.8	3.2	1.1	0.6	0.5	14.7
For One Housing Unit	10.2	1.5	3.6	3.0	1.1	0.5	0.5	15.1
For Two or More Units	0.5	Q	0.2	0.2	Q	Q	Q	41.3
Heat Pump	9.7	1.9	3.7	2.4	0.9	0.6	0.3	17.1
Other	1.8	Q	0.2	0.3	0.3	0.4	0.5	22.0
Fuel Oil	9.5	0.3	0.5	1.0	1.5	1.4	4.7	14.6
Steam or Hot-Water System	5.2	0.1	0.2	0.5	0.8	0.8	2.8	20.0
For One Housing Unit	3.4	0.1	0.2	0.3	0.6	0.5	1.6	20.2
For Two or More Units	1.8	Q	Q	Q	0.2	0.3	1.2	26.9
Central Warm-Air Furnace	3.8	Q	0.3	0.4	0.6	0.6	1.8	20.0
Other	0.4	Q	Q	Q	Q	Q	0.2	34.6
Wood	2.2	Q	0.4	0.5	0.4	0.2	0.7	22.0
Heating Stove	1.5	Q	0.3	0.3	0.3	0.1	0.4	23.5
Other	0.7	Q	Q	Q	Q	Q	0.3	38.9
LPG	4.6	0.6	0.7	1.0	0.6	0.5	1.4	17.1
Central Warm-Air Furnace	3.2	0.5	0.6	0.7	0.3	0.2	0.8	22.0
Room Heater	0.9	Q	Q	0.2	0.2	0.2	0.3	29.1
Other	0.5	Q	Q	Q	Q	Q	0.2	34.6
Kerosene	1.0	Q	0.1	0.3	Q	Q	0.3	30.1
Other	0.4	Q	Q	Q	Q	Q	Q	60.5
None	0.8	Q	Q	0.2	Q	Q	0.2	36.4
Amount of Heat Provided by Main Heating Equipment								
All or Almost All	93.3	8.9	16.2	18.0	13.3	11.5	25.4	4.4
About Three-Fourths	4.2	0.4	0.5	0.9	0.6	0.5	1.4	19.0
Closer to One-Half	3.2	0.3	0.5	0.6	0.4	0.4	0.9	17.2
No Main Equipment	0.8	Q	Q	0.2	Q	Q	0.2	36.4

See footnotes at end of table.

**Table HC3-2a. Space Heating by Year of Construction,
Million U.S. Households, 1997 (Continued)**

Space Heating Characteristics	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.5	1.2	1.0	1.1	1.1	0.9	
Age of Main Heating Equipment								
Less than 2 Years	8.7	2.6	0.8	1.4	1.3	0.9	1.7	11.0
2 to 4 Years	12.1	3.4	0.8	1.9	1.5	1.5	2.9	9.4
5 to 9 Years	19.9	3.4	6.0	2.4	2.1	2.1	3.8	8.6
10 to 19 Years	25.0	Q	8.5	5.8	2.4	2.5	5.7	7.1
20 Years or More	26.0	Q	Q	5.7	5.7	4.4	10.0	6.2
Don't Know	9.0	0.2	1.1	2.0	1.2	1.1	3.5	13.8
No Main Equipment	0.8	Q	Q	0.2	Q	Q	0.2	36.4
Secondary Heating Fuel and Equipment (more than one may apply)								
No	67.2	6.4	11.1	13.3	9.4	8.4	18.6	4.8
Yes	34.3	3.3	6.2	6.3	5.0	4.2	9.3	6.3
Natural Gas	4.9	0.8	0.8	0.6	0.6	1.0	1.2	16.3
Fireplace	2.5	0.8	0.6	0.4	0.2	0.3	0.3	24.8
Room Heater	1.4	Q	Q	Q	0.2	0.5	0.5	24.2
Central Warm-Air Furnace	0.4	Q	Q	Q	Q	Q	Q	42.7
Other Equipment	0.8	Q	Q	Q	Q	0.2	0.4	29.2
Electricity	15.7	0.9	2.5	2.6	2.5	2.1	5.2	9.1
Portable Heater	12.3	0.6	1.9	1.8	2.0	1.7	4.2	10.2
Built-in Electric Units	2.7	0.2	0.5	0.4	0.3	0.3	0.9	21.3
Other Equipment	0.8	Q	Q	0.4	Q	Q	0.1	36.1
Fuel Oil	0.5	Q	Q	Q	Q	Q	0.3	28.1
Wood	12.9	1.5	3.3	2.9	1.8	1.2	2.2	10.0
Fireplace	9.7	1.2	2.8	2.2	1.4	0.9	1.2	11.9
Heating Stove	3.4	0.3	0.5	0.9	0.5	0.3	1.0	18.2
Other Equipment	0.3	Q	Q	Q	Q	Q	Q	47.8
LPG	1.3	Q	0.3	0.3	0.2	Q	0.3	25.4
Kerosene	2.6	Q	0.4	0.5	0.3	0.3	1.1	20.8
Other	0.3	Q	Q	Q	Q	Q	Q	47.0
Estimated Heated Floorspace Category (square feet)²								
Fewer than 600	7.9	0.5	1.1	1.5	1.3	0.8	2.7	12.9
600 to 999	21.5	1.1	2.9	5.2	3.2	2.6	6.4	8.4
1,000 to 1,599	30.4	3.0	5.2	4.9	4.6	4.7	7.9	7.3
1,600 to 1,999	15.3	1.5	3.0	2.9	2.2	2.0	3.8	8.8
2,000 to 2,399	7.9	0.9	1.4	1.9	1.0	0.8	1.8	11.5
2,400 to 2,999	5.3	0.9	1.7	1.1	0.5	0.3	0.8	16.2
3,000 or More	4.1	1.3	0.8	0.7	0.3	0.2	0.8	20.1
No Estimate Provided	9.1	0.5	1.3	1.3	1.4	1.1	3.5	13.3

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

² Estimates provided by the household interview respondents, who were asked which category best described the total heated floorspace in the home.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC3-3a. Space Heating by Household Income,
Million U.S. Households, 1997**

Space Heating Characteristics	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.4	1.0	0.9	1.0	1.3	1.0	
Total	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.8
Main Heating Fuel and Equipment								
Natural Gas	53.5	6.2	14.7	16.6	15.9	7.2	16.8	4.8
Central Warm-Air Furnace	38.4	2.9	9.5	12.9	13.1	3.5	9.3	6.3
For One Housing Unit	37.0	2.6	8.9	12.6	12.9	3.3	8.7	6.5
For Two or More Units	1.3	0.2	0.5	0.4	0.2	Q	0.6	21.6
Steam or Hot-Water System	7.3	1.2	1.9	2.0	2.1	1.3	2.8	11.9
For One Housing Unit	5.0	0.6	1.2	1.3	1.9	0.7	1.7	14.9
For Two or More Units	2.3	0.6	0.7	0.7	0.3	0.6	1.1	20.0
Floor, Wall, or Pipeless Furnace	4.1	0.9	1.6	1.2	0.4	1.1	2.3	15.1
Room Heater/Other	3.8	1.2	1.7	0.5	0.3	1.3	2.4	16.3
Electricity	29.6	4.4	9.1	8.5	7.6	4.4	10.4	6.6
Built-In Electric Units	7.5	1.6	2.6	2.0	1.2	1.4	3.2	12.2
Central Warm-Air Furnace	10.7	1.5	3.5	3.2	2.6	1.7	3.8	11.8
For One Housing Unit	10.2	1.4	3.3	3.0	2.5	1.7	3.5	12.0
For Two or More Units	0.5	Q	0.2	Q	Q	Q	0.2	37.7
Heat Pump	9.7	0.9	2.3	2.9	3.7	0.8	2.4	14.5
Other	1.8	0.4	0.7	0.4	0.2	0.5	1.0	17.8
Fuel Oil	9.5	1.3	2.4	3.0	2.8	1.3	3.3	10.4
Steam or Hot-Water System	5.2	0.9	1.3	1.5	1.6	0.9	1.9	12.2
For One Housing Unit	3.4	0.2	0.7	1.0	1.4	0.2	0.7	18.2
For Two or More Units	1.8	0.7	0.6	0.5	Q	0.7	1.2	12.8
Central Warm-Air Furnace	3.8	0.3	0.9	1.4	1.1	0.3	1.1	17.3
Other	0.4	Q	0.2	Q	Q	Q	0.3	26.3
Wood	2.2	0.3	0.8	0.6	0.5	0.3	0.8	18.3
Heating Stove	1.5	0.3	0.5	0.4	0.3	0.3	0.6	20.3
Other	0.7	Q	0.2	0.2	0.2	Q	0.2	33.6
LPG	4.6	0.6	1.5	1.8	0.8	0.7	1.6	14.9
Central Warm-Air Furnace	3.2	0.3	1.0	1.2	0.6	0.3	0.9	19.9
Room Heater	0.9	0.2	0.3	0.3	Q	0.2	0.4	24.7
Other	0.5	0.1	0.2	0.2	Q	0.1	0.3	25.8
Kerosene	1.0	0.2	0.3	0.4	Q	0.3	0.5	23.7
Other	0.4	Q	Q	0.1	Q	Q	0.2	48.7
None	0.8	0.2	0.4	0.1	Q	0.3	0.5	25.9
Amount of Heat Provided by Main Heating Equipment								
All or Almost All	93.3	12.5	26.8	28.8	25.2	13.4	31.3	2.9
About Three-Fourths	4.2	0.2	1.0	1.3	1.8	0.3	1.0	14.5
Closer to One-Half	3.2	0.4	1.0	0.9	0.8	0.6	1.2	14.2
No Main Equipment	0.8	0.2	0.4	0.1	Q	0.3	0.5	25.9

See footnotes at end of table.

Table HC3-3a. Space Heating by Household Income, Million U.S. Households, 1997 (Continued)

Space Heating Characteristics	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.4	1.0	0.9	1.0	1.3	1.0	
Age of Main Heating Equipment								
Less than 2 Years	8.7	0.9	2.2	3.0	2.5	1.1	2.5	9.2
2 to 4 Years	12.1	1.5	3.0	3.7	4.0	1.6	3.7	8.4
5 to 9 Years	19.9	1.9	4.7	6.2	7.1	2.3	5.4	7.0
10 to 19 Years	25.0	3.0	6.8	7.7	7.5	2.9	7.6	6.1
20 Years or More	26.0	3.6	8.8	8.0	5.6	3.8	9.8	5.2
Don't Know	9.0	2.3	3.1	2.4	1.2	2.6	4.6	9.4
No Main Equipment	0.8	0.2	0.4	0.1	Q	0.3	0.5	25.9
Secondary Heating Fuel and Equipment (more than one may apply)								
No	67.2	10.7	21.4	20.3	14.8	11.4	25.7	3.2
Yes	34.3	2.6	7.7	10.8	13.1	3.3	8.3	5.1
Natural Gas	4.9	0.6	0.9	1.4	2.0	0.5	1.3	15.1
Fireplace	2.5	Q	0.3	0.7	1.3	Q	0.4	23.6
Room Heater	1.4	0.2	0.4	0.4	0.4	0.2	0.5	25.1
Central Warm-Air Furnace	0.4	Q	Q	Q	0.2	Q	Q	31.5
Other Equipment	0.8	0.1	0.2	0.2	Q	0.2	0.4	25.9
Electricity	15.7	1.4	3.8	4.9	5.5	1.8	4.0	7.1
Portable Heater	12.3	1.3	3.2	3.8	4.1	1.6	3.4	7.4
Built-in Electric Units	2.7	Q	0.5	0.8	1.3	Q	0.5	18.1
Other Equipment	0.8	Q	0.2	0.3	Q	Q	0.2	30.3
Fuel Oil	0.5	Q	0.1	Q	0.2	Q	0.1	29.6
Wood	12.9	0.4	2.2	4.1	6.2	0.8	2.2	10.4
Fireplace	9.7	0.3	1.6	2.9	4.8	0.5	1.6	12.5
Heating Stove	3.4	Q	0.6	1.2	1.5	0.2	0.7	16.7
Other Equipment	0.3	Q	Q	Q	Q	Q	Q	39.2
LPG	1.3	Q	0.3	0.4	0.5	Q	0.3	25.5
Kerosene	2.6	0.2	0.9	0.8	0.6	0.4	1.0	15.7
Other	0.3	Q	Q	Q	0.2	Q	Q	32.6
Estimated Heated Floorspace Category (square feet)²								
Fewer than 600	7.9	2.9	3.1	1.6	0.3	2.7	4.9	10.8
600 to 999	21.5	4.3	8.6	6.0	2.6	4.6	10.2	6.4
1,000 to 1,599	30.4	2.8	9.7	10.8	7.0	3.7	9.9	5.7
1,600 to 1,999	15.3	0.6	3.2	5.4	6.1	0.9	2.8	7.8
2,000 to 2,399	7.9	0.2	1.2	2.5	4.0	0.3	1.1	12.9
2,400 to 2,999	5.3	Q	0.3	1.4	3.4	0.2	0.5	17.6
3,000 or More	4.1	Q	0.3	0.9	2.8	Q	0.4	19.6
No Estimate Provided	9.1	2.2	2.7	2.5	1.7	2.2	4.4	10.7

¹ Below 150 percent of poverty line or 60 percent of median State income.

² Estimates provided by the household interview respondents, who were asked which category best described the total heated floorspace in the home.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC3-4a. Space Heating by Type of Housing Unit,
Million U.S. Households, 1997**

Space Heating Characteristics	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.6	1.7	1.3	1.6	
Total	101.5	73.7	5.6	15.8	6.3	4.0
Main Heating Fuel and Equipment						
Natural Gas	53.5	42.5	3.4	5.5	2.1	7.2
Central Warm-Air Furnace	38.4	32.4	1.6	2.5	2.0	9.0
For One Housing Unit	37.0	31.8	1.3	2.0	2.0	9.7
For Two or More Units	1.3	0.6	0.2	0.5	Q	21.8
Steam or Hot-Water System	7.3	4.3	1.1	1.9	Q	13.2
For One Housing Unit	5.0	3.9	0.6	0.5	Q	17.9
For Two or More Units	2.3	0.4	0.5	1.4	Q	19.4
Floor, Wall, or						
Pipeless Furnace	4.1	2.9	0.4	0.7	Q	17.1
Room Heater/Other	3.8	2.9	0.4	0.4	Q	19.2
Electricity	29.6	17.7	1.6	7.9	2.4	8.6
Built-In Electric Units	7.5	3.9	0.7	2.8	Q	14.1
Central Warm-Air Furnace	10.7	5.3	0.6	3.2	1.6	14.2
For One Housing Unit	10.2	5.3	0.6	2.8	1.6	14.5
For Two or More Units	0.5	Q	Q	0.4	Q	35.6
Heat Pump	9.7	7.5	0.2	1.5	0.5	18.4
Other	1.8	1.0	0.1	0.4	0.3	21.0
Fuel Oil	9.5	7.1	0.5	1.8	Q	13.6
Steam or Hot-Water System	5.2	3.4	0.3	1.5	Q	14.1
For One Housing Unit	3.4	3.2	Q	Q	Q	18.9
For Two or More Units	1.8	0.2	0.2	1.4	Q	20.1
Central Warm-Air Furnace	3.8	3.4	0.1	0.2	Q	23.6
Other	0.4	0.4	Q	Q	Q	38.4
Wood	2.2	1.9	Q	Q	0.3	21.3
Heating Stove	1.5	1.3	Q	Q	0.2	21.9
Other	0.7	0.6	Q	Q	Q	38.8
LPG	4.6	3.5	Q	Q	1.0	16.9
Central Warm-Air Furnace	3.2	2.3	Q	Q	0.8	20.1
Room Heater	0.9	0.8	Q	Q	Q	30.9
Other	0.5	0.4	Q	Q	Q	36.6
Kerosene	1.0	0.5	Q	Q	0.4	26.4
Other	0.4	0.2	Q	0.2	Q	50.9
None	0.8	0.4	Q	0.3	Q	38.6
Amount of Heat Provided by Main Heating Equipment						
All or Almost All	93.3	67.0	5.5	15.0	5.8	4.3
About Three-Fourths	4.2	3.8	Q	Q	0.2	17.2
Closer to One-Half	3.2	2.6	Q	0.3	0.2	19.9
No Main Equipment	0.8	0.4	Q	0.3	Q	38.6

See footnotes at end of table.

**Table HC3-4a. Space Heating by Type of Housing Unit,
Million U.S. Households, 1997 (Continued)**

Space Heating Characteristics	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.6	1.7	1.3	1.6	
Age of Main Heating Equipment						
Less than 2 Years	8.7	6.8	0.3	0.6	1.0	12.3
2 to 4 Years	12.1	9.6	0.4	1.1	1.0	10.0
5 to 9 Years	19.9	15.5	0.8	2.2	1.3	9.5
10 to 19 Years	25.0	19.4	1.0	3.0	1.6	7.7
20 Years or More	26.0	18.7	1.6	4.8	1.0	7.8
Don't Know	9.0	3.4	1.5	3.7	0.3	12.0
No Main Equipment	0.8	0.4	Q	0.3	Q	38.6
Secondary Heating Fuel and Equipment (more than one may apply)						
No	67.2	43.8	4.7	14.3	4.5	4.5
Yes	34.3	30.0	1.0	1.5	1.8	7.6
Natural Gas	4.9	4.6	Q	Q	Q	16.5
Fireplace	2.5	2.5	Q	Q	Q	24.9
Room Heater	1.4	1.4	Q	Q	Q	28.4
Central Warm-Air Furnace	0.4	0.4	Q	Q	Q	40.0
Other Equipment	0.8	0.6	Q	Q	Q	35.4
Electricity	15.7	12.7	0.7	1.2	1.1	9.8
Portable Heater	12.3	9.8	0.5	1.1	0.9	10.2
Built-in Electric Units	2.7	2.5	Q	Q	Q	21.8
Other Equipment	0.8	0.5	Q	Q	Q	38.4
Fuel Oil	0.5	0.5	Q	Q	Q	33.1
Wood	12.9	12.2	Q	0.2	0.4	13.1
Fireplace	9.7	9.1	Q	0.2	0.3	14.6
Heating Stove	3.4	3.3	Q	Q	Q	18.7
Other Equipment	0.3	0.3	Q	Q	Q	44.9
LPG	1.3	1.2	Q	Q	0.1	25.5
Kerosene	2.6	2.3	Q	Q	0.2	17.4
Other	0.3	0.3	Q	Q	Q	43.5
Estimated Heated Floorspace Category (square feet)¹						
Fewer than 600	7.9	1.9	1.3	3.7	0.9	10.3
600 to 999	21.5	9.5	2.3	7.2	2.5	7.2
1,000 to 1,599	30.4	25.0	0.9	2.6	1.8	8.5
1,600 to 1,999	15.3	14.4	Q	0.3	0.4	10.1
2,000 to 2,399	7.9	7.7	Q	Q	Q	9.8
2,400 to 2,999	5.3	5.2	Q	Q	Q	13.5
3,000 or More	4.1	4.0	Q	Q	Q	19.4
No Estimate Provided	9.1	5.9	0.9	1.9	0.4	12.9

¹ Estimates provided by the household interview respondents, who were asked which category best described the total heated floorspace in the home.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC3-13a. Space Heating by Census Region,
Million U.S. Households, 1997**

Space Heating Characteristics	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.3	1.2	1.0	1.0	
Total	101.5	19.7	24.1	35.9	21.8	NF
Main Heating Fuel and Equipment						
Natural Gas	53.5	9.2	17.9	13.7	12.7	4.8
Central Warm-Air Furnace	38.4	5.1	14.9	9.7	8.7	6.5
For One Housing Unit	37.0	4.8	14.2	9.5	8.5	6.6
For Two or More Units	1.3	0.3	0.8	Q	0.2	19.1
Steam or Hot-Water System	7.3	3.6	2.5	0.5	0.7	13.9
For One Housing Unit	5.0	2.6	1.5	0.5	0.4	16.9
For Two or More Units	2.3	1.0	1.0	Q	0.3	21.0
Floor, Wall, or						
Pipeless Furnace	4.1	Q	0.2	1.3	2.5	17.9
Room Heater/Other	3.8	0.3	0.3	2.3	0.8	20.4
Electricity	29.6	2.3	2.7	17.5	7.1	8.0
Built-In Electric Units	7.5	1.3	1.3	2.1	2.7	14.3
Central Warm-Air Furnace	10.7	0.4	1.0	6.5	2.8	16.5
For One Housing Unit	10.2	0.3	1.0	6.2	2.7	16.8
For Two or More Units	0.5	Q	Q	0.3	Q	41.9
Heat Pump	9.7	0.4	0.3	8.0	1.0	17.4
Other	1.8	0.3	Q	0.8	0.6	19.4
Fuel Oil	9.5	7.1	1.0	1.1	0.2	17.8
Steam or Hot-Water System	5.2	4.8	Q	0.3	Q	14.4
For One Housing Unit	3.4	3.0	Q	0.3	Q	15.6
For Two or More Units	1.8	1.8	Q	Q	Q	11.2
Central Warm-Air Furnace	3.8	2.1	0.8	0.8	0.1	23.3
Other	0.4	0.2	Q	Q	Q	25.7
Wood	2.2	0.4	0.4	0.7	0.7	20.3
Heating Stove	1.5	0.3	0.2	0.5	0.6	21.7
Other	0.7	Q	Q	0.2	Q	33.0
LPG	4.6	0.2	1.8	2.1	0.5	20.7
Central Warm-Air Furnace	3.2	0.2	1.5	1.0	0.4	23.6
Room Heater	0.9	Q	Q	0.8	Q	21.0
Other	0.5	Q	0.2	0.2	Q	26.9
Kerosene	1.0	0.4	Q	0.4	Q	22.4
Other	0.4	0.1	Q	Q	Q	42.4
None	0.8	Q	Q	0.3	0.5	26.1
Amount of Heat Provided by Main Heating Equipment						
All or Almost All	93.3	18.4	22.9	32.8	19.2	0.9
About Three-Fourths	4.2	0.8	0.8	1.7	1.0	15.1
Closer to One-Half	3.2	0.5	0.4	1.1	1.2	14.1
No Main Equipment	0.8	Q	Q	0.3	0.5	26.1

See footnotes at end of table.

**Table HC3-13a. Space Heating by Census Region,
Million U.S. Households, 1997 (Continued)**

Space Heating Characteristics	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.3	1.2	1.0	1.0	
Age of Main Heating Equipment						
Less than 2 Years	8.7	1.4	1.8	3.9	1.7	9.5
2 to 4 Years	12.1	2.0	2.9	5.5	1.8	7.4
5 to 9 Years	19.9	3.5	4.7	8.4	3.3	6.2
10 to 19 Years	25.0	4.0	5.3	9.8	5.9	5.6
20 Years or More	26.0	6.3	6.7	5.4	7.6	5.2
Don't Know	9.0	2.5	2.6	2.6	1.2	12.2
No Main Equipment	0.8	Q	Q	0.3	0.5	26.1
Secondary Heating Fuel and Equipment (more than one may apply)						
No	67.2	13.6	16.5	22.4	14.7	2.6
Yes	34.3	6.1	7.5	13.5	7.1	5.1
Natural Gas	4.9	0.4	1.4	2.3	0.8	15.2
Fireplace	2.5	Q	0.8	1.1	0.5	22.7
Room Heater	1.4	Q	0.3	0.9	Q	19.4
Central Warm-Air Furnace	0.4	Q	Q	Q	Q	35.6
Other Equipment	0.8	Q	Q	0.3	0.2	28.7
Electricity	15.7	2.9	3.8	5.9	3.1	7.9
Portable Heater	12.3	2.1	3.2	4.7	2.3	7.8
Built-in Electric Units	2.7	0.7	0.6	0.7	0.7	20.1
Other Equipment	0.8	Q	Q	0.5	0.1	30.3
Fuel Oil	0.5	0.4	Q	Q	Q	20.3
Wood	12.9	2.2	2.2	5.0	3.6	8.4
Fireplace	9.7	1.1	1.7	4.2	2.7	9.7
Heating Stove	3.4	1.1	0.5	0.9	0.9	17.8
Other Equipment	0.3	Q	Q	0.3	Q	33.4
LPG	1.3	0.2	0.3	0.7	Q	24.7
Kerosene	2.6	0.5	0.4	1.5	Q	14.8
Other	0.3	Q	Q	Q	Q	39.2
Estimated Heated Floorspace Category (square feet)¹						
Fewer than 600	7.9	1.9	1.7	2.1	2.2	9.6
600 to 999	21.5	4.4	5.1	6.8	5.1	6.0
1,000 to 1,599	30.4	5.1	6.9	11.8	6.5	5.2
1,600 to 1,999	15.3	2.4	4.2	5.7	3.0	6.8
2,000 to 2,399	7.9	1.4	1.8	3.0	1.7	9.3
2,400 to 2,999	5.3	1.0	1.4	1.8	1.2	12.8
3,000 or More	4.1	0.7	1.0	1.8	0.6	16.8
No Estimate Provided	9.1	2.9	1.9	2.9	1.4	11.9

¹ Estimates provided by the household interview respondents, who were asked which category best described the total heated floorspace in the home.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

Air Conditioning Tables

Table HC4-2a. Air Conditioning by Year of Construction, Million U.S. Households, 1997

Air Conditioning Characteristics	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.8	1.3	0.9	1.1	1.0	0.9	
Households With Electric Air-Conditioning Equipment								
Households With Electric Air-Conditioning Equipment	73.6	8.3	14.8	14.8	10.2	8.9	16.5	4.7
Central Equipment Not Used	0.3	Q	Q	Q	Q	Q	Q	43.9
Room Air Conditioners Not Used ..	0.7	Q	Q	Q	Q	Q	0.3	29.1
Households Using Electric Air-Conditioning²								
Households Using Electric Air-Conditioning ²	72.6	8.3	14.6	14.7	10.0	8.9	16.1	4.7
Type of Electric Air-Conditioning Used								
Central Air-Conditioning ³	47.5	7.5	12.9	10.8	6.5	4.6	5.2	6.2
Without a Heat Pump	36.9	5.6	9.0	8.2	5.5	3.8	4.8	7.5
With a Heat Pump	10.6	1.9	3.9	2.6	1.0	0.8	0.3	15.2
Room Air-Conditioning	25.2	0.8	1.8	3.9	3.5	4.3	10.9	8.6
1 Unit	14.9	0.6	1.4	2.6	2.0	2.2	6.0	10.8
2 Units	7.2	Q	0.3	0.9	0.9	1.5	3.5	13.4
3 or More Units	3.0	Q	Q	0.4	0.5	0.6	1.5	19.9
Number of Rooms Air-Conditioned in Summer 1997								
One or Two	13.0	0.6	1.3	2.1	1.7	1.8	5.5	11.3
Three	8.2	0.3	1.4	2.2	1.3	0.9	2.2	13.2
Four	11.6	1.3	2.6	2.2	1.5	1.2	2.6	11.7
Five or More	39.8	6.0	9.3	8.2	5.5	5.0	5.8	6.3
Percentage of Rooms Air-Conditioned								
100%	50.2	7.5	12.3	11.2	7.2	5.6	6.6	5.8
50% to 99%	11.4	0.4	1.6	2.0	1.5	1.7	4.2	11.3
25% to 49%	7.0	0.2	0.6	1.1	0.8	1.1	3.2	14.8
1% to 24%	4.0	0.2	0.2	0.4	0.5	0.6	2.1	17.5
Large Tree(s) that Shade the Home								
Yes	35.5	2.2	6.7	7.4	5.6	4.8	8.8	7.1
No	37.2	6.1	8.0	7.3	4.4	4.1	7.3	6.9
Central Air-Conditioner Age (excludes systems for more than one housing unit)								
Less than 5 Years	13.1	4.7	1.5	2.4	1.6	1.3	1.7	9.8
5 to 9 Years	14.1	2.6	5.0	2.3	1.5	1.1	1.5	11.7
10 to 19 Years	12.8	Q	5.5	3.2	1.5	1.3	1.2	11.3
20 Years or More	3.9	Q	Q	1.5	1.3	0.6	0.5	17.1
Don't Know	2.7	Q	0.6	1.2	0.3	0.2	0.3	23.3
Central Air-Conditioning Use								
Only a Few Times	12.6	1.6	3.2	2.8	1.8	1.6	1.6	11.3
Quite a Bit	10.5	1.8	2.7	2.4	1.3	0.9	1.4	11.7
All Summer	24.4	4.2	7.0	5.6	3.5	2.0	2.1	8.3
Pays for Electricity for Central Air-Conditioning								
Yes	46.2	7.4	12.5	10.5	6.2	4.6	5.1	6.3
No	1.1	Q	0.3	0.3	0.3	Q	Q	38.3

See footnotes at end of table.

**Table HC4-2a. Air Conditioning by Year of Construction,
Million U.S. Households, 1997 (Continued)**

Air Conditioning Characteristics	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.8	1.3	0.9	1.1	1.0	0.9	
Age of Most-Used Room Air Conditioner								
Less than 5 Years	8.7	0.5	0.7	1.2	1.1	1.5	3.8	11.5
5 to 9 Years	6.9	0.2	0.4	1.0	0.9	1.0	3.3	14.5
10 or 19 Years	5.7	Q	0.5	0.9	0.7	1.1	2.5	14.0
20 or More Years	2.0	Q	Q	0.4	0.5	0.4	0.7	22.1
Don't Know	1.9	Q	Q	0.4	0.3	0.4	0.6	23.7
Pays for Electricity for Room Air-Conditioning								
Yes	23.4	0.8	1.4	3.5	3.3	4.1	10.3	8.8
No	1.7	Q	0.3	0.4	Q	0.2	0.6	31.7
Room Air-Conditioning Use								
Only a Few Times	13.2	0.3	1.1	1.9	1.7	2.2	6.0	11.7
Quite a Bit	6.5	0.2	0.3	0.9	1.0	1.1	2.9	14.2
All Summer	5.5	0.3	0.3	1.1	0.8	1.0	2.0	15.1

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

² The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

³ Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These are excluded from the count of 25.2 million households using only room air-conditioners.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC4-3a. Air Conditioning by Household Income,
Million U.S. Households, 1997**

Air Conditioning Characteristics	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.5	1.0	0.9	1.1	1.4	1.0	
Households With Electric Air-Conditioning Equipment								
Households With Electric Air-Conditioning Equipment	73.6	8.2	19.6	23.4	22.4	8.4	21.3	3.6
Central Equipment Not Used	0.3	Q	Q	Q	Q	Q	Q	35.0
Room Air Conditioners Not Used ..	0.7	Q	0.2	0.2	0.2	Q	0.3	30.0
Households Using Electric Air-Conditioning²								
Households Using Electric Air-Conditioning ²	72.6	8.1	19.3	23.1	22.2	8.3	20.9	3.6
Type of Electric Air-Conditioning Used								
Central Air-Conditioning ³	47.5	3.6	10.9	15.6	17.3	3.7	10.5	5.4
Without a Heat Pump	36.9	2.8	8.4	12.5	13.3	2.8	8.0	6.7
With a Heat Pump	10.6	0.9	2.5	3.2	4.1	0.8	2.5	12.5
Room Air-Conditioning	25.2	4.4	8.4	7.5	4.9	4.6	10.4	5.7
1 Unit	14.9	3.3	5.5	4.0	2.2	3.4	6.9	7.0
2 Units	7.2	1.0	2.1	2.6	1.5	1.1	2.7	10.2
3 or More Units	3.0	Q	0.8	0.9	1.2	0.2	0.8	18.7
Number of Rooms Air-Conditioned in Summer 1997								
One or Two	13.0	2.8	4.3	3.3	2.6	2.7	5.5	7.6
Three	8.2	1.6	2.8	2.7	1.1	1.5	3.4	9.2
Four	11.6	1.5	3.9	4.2	2.0	1.5	4.0	8.8
Five or More	39.8	2.2	8.2	12.9	16.5	2.6	8.0	5.8
Percentage of Rooms Air-Conditioned								
100%	50.2	4.9	12.7	16.3	16.4	4.7	13.1	4.8
50% to 99%	11.4	1.5	3.3	3.6	3.0	1.8	3.8	7.9
25% to 49%	7.0	1.3	2.1	1.9	1.6	1.2	2.7	11.0
1% to 24%	4.0	0.4	1.1	1.3	1.2	0.6	1.2	13.0
Large Tree(s) that Shade the Home								
Yes	35.5	3.1	9.1	11.8	11.5	3.3	8.7	5.9
No	37.2	5.0	10.2	11.3	10.7	5.0	12.1	5.7
Central Air-Conditioner Age (excludes systems for more than one housing unit)								
Less than 5 Years	13.1	1.0	2.8	4.5	4.9	1.0	2.9	9.1
5 to 9 Years	14.1	0.8	3.1	4.3	5.9	0.9	2.7	11.0
10 to 19 Years	12.8	1.0	2.9	4.2	4.6	0.9	2.7	9.7
20 Years or More	3.9	0.3	1.1	1.4	1.2	0.3	1.0	16.7
Don't Know	2.7	0.4	0.7	1.1	0.6	0.4	0.8	19.9
Central Air-Conditioning Use								
Only a Few Times	12.6	1.2	2.8	4.4	4.2	1.1	3.0	10.3
Quite a Bit	10.5	0.8	2.0	3.5	4.2	0.8	2.1	10.2
All Summer	24.4	1.7	6.0	7.8	9.0	1.8	5.4	7.4
Pays for Electricity for Central Air-Conditioning								
Yes	46.2	3.4	10.3	15.4	17.1	3.4	9.8	5.5
No	1.1	0.2	0.4	0.3	Q	Q	0.5	31.5

See footnotes at end of table.

Table HC4-3a. Air Conditioning by Household Income, Million U.S. Households, 1997 (Continued)

Air Conditioning Characteristics	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.5	1.0	0.9	1.1	1.4	1.0	
Age of Most-Used Room Air Conditioner								
Less than 5 Years	8.7	1.7	2.5	2.8	1.7	1.7	3.6	9.1
5 to 9 Years	6.9	1.0	2.2	2.1	1.6	1.1	2.6	10.4
10 or 19 Years	5.7	0.9	2.3	1.4	1.1	1.0	2.4	10.1
20 or More Years	2.0	0.3	0.7	0.7	0.3	0.3	0.8	16.4
Don't Know	1.9	0.5	0.6	0.5	0.3	0.5	1.0	18.0
Pays for Electricity for Room Air-Conditioning								
Yes	23.4	3.7	7.8	7.2	4.8	3.9	9.4	6.0
No	1.7	0.8	0.6	0.3	Q	0.7	1.0	22.5
Room Air-Conditioning Use								
Only a Few Times	13.2	2.3	4.7	3.9	2.4	2.4	5.5	7.6
Quite a Bit	6.5	0.9	1.8	2.4	1.3	1.0	2.2	11.0
All Summer	5.5	1.2	1.9	1.2	1.2	1.3	2.7	10.6

¹ Below 150 percent of poverty line or 60 percent of median State income.

² The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

³ Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These are excluded from the count of 25.2 million households using only room air-conditioners.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC4-4a. Air Conditioning by Type of Housing Unit,
Million U.S. Households, 1997**

Air Conditioning Characteristics	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.4	0.6	1.8	1.3	1.7	
Households With Electric Air-Conditioning Equipment	73.6	54.4	3.5	11.1	4.5	4.8
Central Equipment Not Used	0.3	0.2	Q	Q	Q	50.2
Room Air Conditioners Not Used ..	0.7	0.5	Q	Q	Q	37.3
Households Using Electric Air-Conditioning¹	72.6	53.8	3.4	10.9	4.5	4.8
Type of Electric Air-Conditioning Used						
Central Air-Conditioning ²	47.5	36.8	1.6	6.5	2.6	7.0
Without a Heat Pump	36.9	28.3	1.4	5.1	2.1	8.4
With a Heat Pump	10.6	8.4	Q	1.4	0.6	17.2
Room Air-Conditioning	25.2	17.1	1.8	4.4	1.9	7.8
1 Unit	14.9	8.7	1.4	3.4	1.3	9.3
2 Units	7.2	5.6	0.4	0.8	0.4	13.4
3 or More Units	3.0	2.7	Q	Q	Q	21.3
Number of Rooms Air-Conditioned in Summer 1997						
One or Two	13.0	7.3	1.2	3.7	0.9	9.2
Three	8.2	4.2	0.8	2.8	0.4	11.5
Four	11.6	6.0	0.8	3.4	1.5	10.5
Five or More	39.8	36.5	0.6	1.0	1.7	8.4
Percentage of Rooms Air-Conditioned						
100%	50.2	37.0	2.0	8.0	3.2	6.3
50% to 99%	11.4	9.1	0.5	1.1	0.7	11.1
25% to 49%	7.0	4.4	0.7	1.5	0.4	13.4
1% to 24%	4.0	3.4	0.2	0.2	Q	15.0
Large Tree(s) that Shade the Home						
Yes	35.5	29.6	1.0	3.0	1.9	8.3
No	37.2	24.3	2.5	7.9	2.6	6.9
Central Air-Conditioner Age (excludes systems for more than one housing unit)						
Less than 5 Years	13.1	10.7	0.3	0.9	1.2	12.0
5 to 9 Years	14.1	11.3	0.3	1.8	0.6	14.6
10 to 19 Years	12.8	10.5	0.4	1.4	0.5	12.7
20 Years or More	3.9	2.9	Q	0.7	0.2	19.1
Don't Know	2.7	1.1	0.5	1.0	Q	19.6
Central Air-Conditioning Use						
Only a Few Times	12.6	9.6	0.4	2.0	0.6	13.2
Quite a Bit	10.5	8.0	0.6	1.3	0.6	12.0
All Summer	24.4	19.2	0.6	3.2	1.5	9.3
Pays for Electricity for Central Air-Conditioning						
Yes	46.2	36.5	1.5	5.8	2.4	7.1
No	1.1	0.2	Q	0.5	Q	35.9

See footnotes at end of table.

**Table HC4-4a. Air Conditioning by Type of Housing Unit,
Million U.S. Households, 1997 (Continued)**

Air Conditioning Characteristics	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.4	0.6	1.8	1.3	1.7	
Age of Most-Used Room Air Conditioner						
Less than 5 Years	8.7	5.9	0.7	1.4	0.7	10.7
5 to 9 Years	6.9	4.8	0.6	1.0	0.4	12.8
10 or 19 Years	5.7	4.3	0.2	0.8	0.4	13.7
20 or More Years	2.0	1.2	Q	0.5	Q	20.6
Don't Know	1.9	0.8	Q	0.7	0.2	20.8
Pays for Electricity for Room Air-Conditioning						
Yes	23.4	16.8	1.6	3.3	1.8	8.1
No	1.7	0.3	0.2	1.1	Q	29.1
Room Air-Conditioning Use						
Only a Few Times	13.2	8.8	1.1	2.4	0.8	10.0
Quite a Bit	6.5	4.5	0.4	1.1	0.4	11.7
All Summer	5.5	3.8	0.2	0.9	0.6	13.8

¹ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

² Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These are excluded from the count of 25.2 million households using only room air-conditioners.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC4-13a. Air Conditioning by Census Region,
Million U.S. Households, 1997**

Air Conditioning Characteristics	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.5	1.3	1.0	0.8	1.7	
Households With Electric Air-Conditioning Equipment						
Air-Conditioning Equipment	73.6	12.5	18.8	33.4	8.9	3.1
Central Equipment Not Used	0.3	Q	Q	Q	0.2	25.6
Room Air Conditioners Not Used ..	0.7	0.3	0.2	Q	Q	24.4
Households Using Electric Air-Conditioning¹						
Air-Conditioning ¹	72.6	12.2	18.6	33.2	8.7	3.2
Type of Electric Air-Conditioning Used						
Central Air-Conditioning ²	47.5	4.4	12.3	24.9	5.9	5.1
Without a Heat Pump	36.9	3.9	11.9	16.4	4.7	7.1
With a Heat Pump	10.6	0.5	0.4	8.5	1.1	15.7
Room Air-Conditioning	25.2	7.8	6.3	8.3	2.8	6.7
1 Unit	14.9	4.0	4.4	4.2	2.3	8.2
2 Units	7.2	2.7	1.5	2.6	0.4	11.7
3 or More Units	3.0	1.1	0.4	1.5	Q	19.2
Number of Rooms Air-Conditioned in Summer 1997						
One or Two	13.0	4.7	3.3	3.3	1.8	8.1
Three	8.2	1.4	1.8	3.9	1.2	10.0
Four	11.6	1.9	3.1	5.3	1.3	10.1
Five or More	39.8	4.3	10.5	20.7	4.3	5.9
Percentage of Rooms Air-Conditioned						
100%	50.2	5.9	12.6	25.6	6.2	4.5
50% to 99%	11.4	2.3	3.1	5.0	1.1	9.0
25% to 49%	7.0	2.2	1.9	2.0	0.9	11.6
1% to 24%	4.0	1.8	1.0	0.7	0.5	13.3
Large Tree(s) that Shade the Home						
Yes	35.5	5.2	9.3	17.8	3.3	6.0
No	37.2	7.0	9.4	15.4	5.4	5.6
Central Air-Conditioner Age (excludes systems for more than one housing unit)						
Less than 5 Years	13.1	1.3	3.5	7.0	1.3	7.9
5 to 9 Years	14.1	1.4	3.6	7.3	1.8	11.4
10 to 19 Years	12.8	1.1	3.1	6.9	1.6	10.1
20 Years or More	3.9	0.4	1.3	1.5	0.7	16.4
Don't Know	2.7	Q	0.7	1.7	0.2	19.9
Central Air-Conditioning Use						
Only a Few Times	12.6	1.9	4.6	3.6	2.5	10.0
Quite a Bit	10.5	1.1	3.6	4.4	1.5	10.0
All Summer	24.4	1.4	4.2	17.0	1.9	7.2
Pays for Electricity for Central Air-Conditioning						
Yes	46.2	4.3	12.1	24.2	5.6	5.2
No	1.1	Q	0.2	0.6	0.3	32.4

See footnotes at end of table.

**Table HC4-13a. Air Conditioning by Census Region,
Million U.S. Households, 1997 (Continued)**

Air Conditioning Characteristics	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.5	1.3	1.0	0.8	1.7	
Age of Most-Used Room Air Conditioner						
Less than 5 Years	8.7	2.6	1.9	3.1	1.1	9.0
5 to 9 Years	6.9	2.4	1.7	2.3	0.5	12.4
10 or 19 Years	5.7	1.7	1.5	1.9	0.6	10.4
20 or More Years	2.0	0.6	0.5	0.5	0.4	16.4
Don't Know	1.9	0.5	0.6	0.5	0.3	19.0
Pays for Electricity for Room Air-Conditioning						
Yes	23.4	7.2	5.8	7.9	2.5	6.9
No	1.7	0.6	0.5	0.4	0.2	28.6
Room Air-Conditioning Use						
Only a Few Times	13.2	5.2	3.5	2.8	1.7	8.2
Quite a Bit	6.5	1.7	1.9	2.2	0.6	10.0
All Summer	5.5	0.8	0.9	3.3	0.4	12.4

¹ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

² Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These are excluded from the count of 25.2 million households using only room air-conditioners.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

Appliances Tables

**Table HC5-2a. Appliances by Year of Construction,
Million U.S. Households, 1997**

Appliance Types and Characteristics	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.7	1.3	1.0	1.1	1.1	0.9	
Total	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.1
Households With Electric Air-Conditioning Equipment	73.6	8.3	14.8	14.8	10.2	8.9	16.5	4.7
Central Equipment Not Used	0.3	Q	Q	Q	Q	Q	Q	44.6
Room Air Conditioners Not Used ..	0.7	Q	Q	Q	Q	Q	0.3	30.5
Households Using Electric Air-Conditioning²	72.6	8.3	14.6	14.7	10.0	8.9	16.1	4.7
Type of Electric Air-Conditioning Used								
Central Air-Conditioning ³	47.5	7.5	12.9	10.8	6.5	4.6	5.2	6.2
Without a Heat Pump	36.9	5.6	9.0	8.2	5.5	3.8	4.8	7.5
With a Heat Pump	10.6	1.9	3.9	2.6	1.0	0.8	0.3	15.2
Room Air-Conditioning	25.2	0.8	1.8	3.9	3.5	4.3	10.9	8.6
1 Unit	14.9	0.6	1.4	2.6	2.0	2.2	6.0	10.8
2 Units	7.2	Q	0.3	0.9	0.9	1.5	3.5	13.3
3 or More Units	3.0	Q	Q	0.4	0.5	0.6	1.5	19.4
Clothes Washer	78.5	8.7	14.4	14.2	10.1	10.2	21.0	4.3
Clothes Dryer	72.2	8.6	13.8	13.5	9.2	9.0	18.2	4.6
Electric	55.9	7.0	11.6	11.5	7.2	6.1	12.6	5.3
Natural Gas	15.4	1.6	2.1	1.8	1.9	2.8	5.3	12.1
LPG	0.8	Q	Q	0.1	Q	Q	0.3	30.3
Dishwasher	50.9	7.4	12.3	11.1	7.0	4.7	8.4	5.7
Ceiling Fans	61.0	7.3	11.1	11.4	8.6	7.2	15.3	4.8
1	23.6	2.8	3.7	4.7	3.8	2.6	6.1	7.8
2	14.0	1.6	2.3	2.6	1.7	1.6	4.2	9.4
3 or more	23.4	3.0	5.1	4.1	3.1	3.0	5.0	6.9
Freezer	33.7	3.4	5.3	6.0	4.8	4.1	10.0	5.8
1	30.7	3.3	5.0	5.5	4.1	3.8	9.1	6.2
2 or more	3.0	Q	0.4	0.5	0.7	0.3	0.9	17.9
Most-Used Freezer Defrost Method								
Frost-Free	10.7	1.3	1.9	1.8	1.6	1.3	2.8	9.3
Manual	23.0	2.1	3.4	4.2	3.2	2.8	7.2	6.9
Type of Freezer								
Upright	16.5	1.6	3.0	3.1	2.4	2.1	4.3	7.6
Chest	17.1	1.9	2.3	2.9	2.4	2.0	5.7	8.1
Age of Freezer								
Less than 2 Years	2.4	0.5	0.4	0.3	0.3	0.2	0.6	20.9
2 to 4 Years	4.2	0.7	0.7	0.7	0.4	0.4	1.3	17.1
5 to 9 Years	7.5	0.9	1.7	1.4	0.8	0.8	1.9	12.3
10 to 19 Years	12.3	1.0	1.9	2.2	1.9	1.5	3.9	9.4
20 Years or More	6.7	0.3	0.5	1.3	1.2	1.1	2.2	13.7
Don't Know	0.5	Q	Q	Q	Q	Q	0.2	35.4

See footnotes at end of table.

**Table HC5-2a. Appliances by Year of Construction,
Million U.S. Households, 1997 (Continued)**

Appliance Types and Characteristics	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.7	1.3	1.0	1.1	1.1	0.9	
Freezer Size								
Very Small (Less than 11 cf)	2.7	0.3	0.4	0.5	0.3	0.3	0.9	19.6
Small (11-14 cf)	6.7	0.8	1.2	1.3	0.9	0.6	1.9	12.4
Medium (15-18 cf)	13.5	1.4	2.3	2.3	2.0	1.6	3.9	9.4
Large (19-22 cf)	9.0	0.7	1.2	1.7	1.3	1.2	3.0	11.4
Very Large (23 or More cf)	1.7	0.2	0.3	0.2	0.3	0.4	0.4	23.9
Heaters (other)								
Hot Tub or Spa	4.0	0.9	1.0	0.9	0.4	0.3	0.5	17.2
Electric	2.7	0.5	0.5	0.7	0.3	0.3	0.4	20.5
Natural Gas	1.2	Q	0.4	0.2	Q	Q	Q	37.2
LPG/Other	Q	Q	Q	Q	Q	Q	Q	NF
Portable Space	14.1	0.7	2.2	2.1	2.2	1.9	5.0	9.5
Electric	12.3	0.6	1.9	1.8	2.0	1.7	4.2	10.2
Kerosene	2.1	Q	0.3	0.4	0.2	0.2	0.9	22.7
Swimming Pool	1.1	Q	Q	0.3	Q	Q	0.2	36.7
Natural Gas	0.7	Q	Q	Q	Q	Q	Q	56.1
Electric/LPG/Other	0.4	Q	Q	Q	Q	Q	Q	62.4
Waterbed Heaters	8.4	0.9	1.6	1.9	1.1	1.0	1.9	12.3
1	6.9	0.8	1.3	1.5	1.0	0.9	1.5	13.5
2 or More	1.5	Q	0.3	0.4	0.2	Q	0.4	24.6
Waterbed Heaters								
Used All Year	7.4	0.8	1.4	1.6	1.0	1.0	1.7	13.1
1	6.4	0.8	1.2	1.4	0.8	0.9	1.3	14.3
2 or More	1.0	Q	Q	0.2	0.2	Q	0.3	26.7
Oven	100.3	9.6	17.2	19.4	14.3	12.4	27.4	4.1
Electric	62.3	7.4	13.3	14.3	9.2	6.8	11.4	5.2
Natural Gas	33.7	1.8	3.2	4.2	4.3	5.4	14.8	8.3
LPG	4.2	0.4	0.7	0.8	0.7	0.2	1.3	17.9
Other	Q	Q	Q	Q	Q	Q	Q	NF
Self-Cleaning Oven	44.7	5.8	9.0	9.5	5.6	5.0	9.8	5.9
Continuous	10.1	1.3	1.8	2.1	1.3	1.3	2.4	10.4
Manual Start	34.6	4.5	7.2	7.4	4.4	3.7	7.5	6.6
Pumps (Electric)	20.1	2.6	3.3	4.6	2.7	2.0	5.0	8.6
Hot Tub or Spa	4.0	0.9	1.0	0.9	0.4	0.4	0.5	17.0
Swimming Pool	5.5	0.5	1.1	1.6	0.7	0.6	1.0	14.5
Well Water	14.3	1.8	2.1	3.2	1.9	1.3	3.9	11.5
Range	100.7	9.7	17.2	19.5	14.4	12.4	27.5	4.1
Electric	61.1	7.0	13.0	14.2	9.0	6.5	11.2	5.3
Natural Gas	35.2	2.1	3.5	4.4	4.6	5.7	15.0	8.2
LPG	4.4	0.5	0.7	0.9	0.8	0.2	1.4	17.9
Other	Q	Q	Q	Q	Q	Q	Q	NF
Refrigerators	101.3	9.7	17.3	19.5	14.4	12.5	27.8	4.1
1	85.9	8.1	14.5	17.0	11.8	10.3	24.3	4.3
2 or More	15.4	1.6	2.8	2.5	2.6	2.3	3.6	8.6

See footnotes at end of table.

**Table HC5-2a. Appliances by Year of Construction,
Million U.S. Households, 1997 (Continued)**

Appliance Types and Characteristics	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.7	1.3	1.0	1.1	1.1	0.9	
Most-Used Refrigerator								
Defrost Method								
Frost-Free	88.1	9.2	15.6	17.1	12.1	11.1	22.9	4.3
Manual	13.3	0.5	1.7	2.5	2.3	1.5	4.9	10.2
Type of Refrigerator								
2-Doors (top and bottom)	69.0	5.7	12.2	13.4	9.2	8.8	19.6	4.4
2-Doors (side-by-side)	20.7	3.3	3.6	4.1	3.0	2.5	4.3	8.0
Regular (single door)	10.8	0.7	1.3	2.0	2.1	1.2	3.6	12.6
Half-Size/Other	0.7	Q	Q	Q	Q	Q	0.3	31.6
Age of Refrigerator								
Less than 2 Years	13.4	2.4	1.7	2.8	1.5	1.4	3.6	8.7
2 to 4 Years	21.4	3.3	2.9	4.1	3.2	2.5	5.4	6.8
5 to 9 Years	30.3	3.0	6.2	5.3	4.2	3.7	7.9	6.3
10 to 19 Years	24.1	0.8	5.2	4.5	3.3	3.1	7.3	7.2
20 Years or More	7.1	Q	0.3	1.8	1.4	1.1	2.4	12.6
Don't Know	5.0	Q	0.9	1.1	0.8	0.7	1.3	16.8
Size of Refrigerator								
Very Small (Less than 11 cf)	0.9	Q	Q	0.2	0.1	Q	0.4	27.7
Small (11-14 cf)	7.7	0.3	1.2	1.5	1.1	1.0	2.6	12.4
Medium (15-18 cf)	45.7	3.7	8.0	9.0	6.6	5.6	12.8	5.1
Large (19-22 cf)	45.5	5.4	7.8	8.6	6.2	5.7	11.7	5.6
Very Large (23 or More cf)	1.5	Q	0.2	0.3	0.3	0.2	0.4	25.0
Through-the-Door Ice/Water Service								
Yes	13.2	2.7	2.5	2.6	1.7	1.4	2.2	9.9
No	88.3	7.0	14.8	17.0	12.8	11.1	25.7	4.5
Color Television Sets								
1	100.2	9.6	17.2	19.3	14.3	12.4	27.4	4.1
2	32.3	2.3	4.7	6.5	4.8	3.8	10.2	6.5
3	37.9	3.9	6.8	7.5	5.3	4.6	9.8	5.6
4	19.4	2.1	3.6	3.4	2.9	2.6	4.7	7.5
5 or More	7.8	0.9	1.5	1.5	0.8	1.1	2.0	12.0
5 or More	2.8	0.5	0.6	0.4	0.5	0.2	0.7	19.9
Video Cassette Recorders (VCR's)								
1	88.9	9.2	15.8	17.3	12.8	10.6	23.2	4.1
2	56.3	5.3	9.3	10.9	8.4	6.9	15.7	4.8
3	25.2	2.9	4.9	5.1	3.5	2.9	5.8	7.1
3 or More	7.3	0.9	1.6	1.3	0.9	0.8	1.7	12.6
Water Heaters								
Electric	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.1
For One Housing Unit	39.6	4.7	10.0	10.0	4.8	3.5	6.6	6.7
For Two or More Units	37.8	4.6	9.5	9.5	4.5	3.3	6.4	6.8
Natural Gas	1.8	Q	0.4	0.5	0.3	0.2	0.2	26.8
For One Housing Unit	52.6	4.6	6.3	8.2	8.3	7.7	17.4	6.5
For Two or More Units	46.5	4.4	6.1	6.7	7.0	7.3	15.0	6.9
Fuel Oil	6.2	Q	0.2	1.6	1.3	0.4	2.5	18.0
For One Housing Unit	5.1	Q	0.4	0.4	0.8	1.0	2.4	17.6
For Two or More Units	3.1	Q	0.3	0.3	0.5	0.7	1.2	18.8
LPG	2.0	Q	Q	Q	0.3	0.3	1.2	27.8
Other	3.2	0.2	0.5	0.6	0.4	0.3	1.2	18.0
No Water Heater	0.7	Q	Q	0.3	Q	Q	Q	40.3
No Water Heater	0.2	Q	Q	Q	Q	Q	Q	78.0

See footnotes at end of table.

**Table HC5-2a. Appliances by Year of Construction,
Million U.S. Households, 1997 (Continued)**

Appliance Types and Characteristics	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.7	1.3	1.0	1.1	1.1	0.9	
Water Heater (for one housing unit)	91.1	9.4	16.6	17.2	12.5	11.7	23.8	4.2
Age								
Less than 2 Years	11.2	2.5	1.7	1.7	1.4	1.2	2.6	10.1
2 to 4 Years	17.0	3.4	2.0	3.0	2.3	2.0	4.3	7.4
5 to 9 Years	25.3	3.1	6.1	4.2	3.3	2.9	5.7	7.2
10 to 19 Years	20.2	Q	5.3	4.0	2.6	2.9	5.4	7.7
20 Years or More	7.1	Q	Q	1.9	1.4	1.3	2.5	11.2
Don't Know	7.1	0.2	1.1	1.8	1.0	0.9	2.1	13.2
No Separate Heater	3.0	Q	0.3	0.5	0.5	0.5	1.1	21.4
No Water Heater	0.2	Q	Q	Q	Q	Q	Q	78.0
Water Heaters for								
Two or More Units	10.3	0.3	0.7	2.4	1.9	0.9	4.0	15.8
Size								
Small	15.5	0.9	2.8	3.3	2.5	2.0	4.1	9.2
Medium	47.1	4.5	8.5	8.2	6.3	6.7	12.8	5.3
Large	21.7	3.4	4.3	4.4	2.7	2.2	4.7	8.5
Don't Know	3.8	0.4	0.7	0.8	0.5	0.3	1.1	18.9
No Separate Heater	3.0	Q	0.3	0.5	0.5	0.5	1.1	21.4
No Water Heater	0.2	Q	Q	Q	Q	Q	Q	78.0
Water Heaters for								
Two or More Units	10.3	0.3	0.7	2.4	1.9	0.9	4.0	15.8
Other Appliances								
Heated Aquarium	3.9	0.4	0.8	0.8	0.4	0.5	1.0	16.4
Microwave Oven	84.2	8.6	15.1	16.4	12.0	10.4	21.7	4.3
Outdoor Gas Light ³	0.7	Q	Q	Q	Q	Q	0.2	36.5
Rechargeable Tools/ or Appliances	44.4	5.3	8.0	8.7	6.2	5.3	10.8	5.6
Stereo Equipment	69.8	7.4	13.0	13.8	9.8	8.2	17.6	4.6

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

² The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

³ Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These are excluded from the count of 25.2 million households using only room air-conditioners.

cf = Cubic feet.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC5-3a. Appliances by Household Income,
Million U.S. Households, 1997**

Appliance Types and Characteristics	Total	1997 Household Income				Below Poverty Line	Eli- gible for Fed- eral Assist- ance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.5	1.6	1.0	0.9	1.0	1.4	1.0	
Total	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
Households With Electric Air-Conditioning Equipment	73.6	8.2	19.6	23.4	22.4	8.4	21.3	3.6
Central Equipment Not Used	0.3	Q	Q	Q	Q	Q	Q	37.1
Room Air Conditioners Not Used ..	0.7	Q	0.2	0.2	0.2	Q	0.3	30.4
Households Using Electric Air-Conditioning²	72.6	8.1	19.3	23.1	22.2	8.3	20.9	3.6
Type of Electric Air-Conditioning Used								
Central Air-Conditioning ³	47.5	3.6	10.9	15.6	17.3	3.7	10.5	5.4
Without a Heat Pump	36.9	2.8	8.4	12.5	13.3	2.8	8.0	6.7
With a Heat Pump	10.6	0.9	2.5	3.2	4.1	0.8	2.5	12.5
Room Air-Conditioning	25.2	4.4	8.4	7.5	4.9	4.6	10.4	5.7
1 Unit	14.9	3.3	5.5	4.0	2.2	3.4	6.9	7.0
2 Units	7.2	1.0	2.1	2.6	1.5	1.1	2.7	10.2
3 or More Units	3.0	Q	0.8	0.9	1.2	0.2	0.8	18.9
Clothes Washer	78.5	7.0	20.1	25.4	26.1	8.5	21.6	3.3
Clothes Dryer	72.2	4.8	17.8	24.0	25.6	6.1	17.5	3.6
Electric	55.9	4.1	14.3	18.7	18.9	4.9	13.7	4.3
Natural Gas	15.4	0.6	3.2	5.1	6.5	1.2	3.5	9.5
LPG	0.8	Q	0.3	0.3	0.2	Q	0.2	28.6
Dishwasher	50.9	2.1	10.3	16.7	21.8	2.5	9.1	5.2
Ceiling Fans	61.0	5.2	16.1	20.0	19.6	6.0	16.4	3.9
1	23.6	2.8	7.2	7.9	5.7	3.3	8.0	5.9
2	14.0	1.0	3.8	4.7	4.5	1.0	3.7	8.3
3 or more	23.4	1.4	5.1	7.4	9.4	1.7	4.7	6.8
Freezer	33.7	3.4	8.7	10.9	10.6	3.9	9.5	5.3
1	30.7	3.1	8.0	10.0	9.5	3.6	8.8	5.5
2 or more	3.0	0.3	0.7	0.9	1.1	0.3	0.7	16.2
Most-Used Freezer Defrost Method								
Frost-Free	10.7	1.0	2.3	3.7	3.7	1.1	2.6	8.1
Manual	23.0	2.4	6.4	7.2	6.9	2.8	6.9	6.4
Type of Freezer								
Upright	16.5	1.3	4.0	5.1	6.1	1.4	3.9	7.2
Chest	17.1	2.2	4.7	5.8	4.4	2.4	5.6	7.2
Age of Freezer								
Less than 2 Years	2.4	0.2	0.7	0.7	0.8	0.3	0.8	17.7
2 to 4 Years	4.2	0.4	1.1	1.2	1.5	0.5	1.1	14.0
5 to 9 Years	7.5	0.9	1.7	2.5	2.4	1.1	2.1	10.7
10 to 19 Years	12.3	1.2	3.0	4.1	4.0	1.5	3.4	8.0
20 Years or More	6.7	0.6	2.2	2.2	1.8	0.5	2.0	11.8
Don't Know	0.5	Q	0.2	0.2	Q	Q	0.1	31.7

See footnotes at end of table.

**Table HC5-3a. Appliances by Household Income,
Million U.S. Households, 1997 (Continued)**

Appliance Types and Characteristics	Total	1997 Household Income				Below Poverty Line	Eli- gible for Fed- eral Assis- tance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.5	1.6	1.0	0.9	1.0	1.4	1.0	
Freezer Size								
Very Small (Less than 11 cf)	2.7	0.3	0.7	0.9	0.8	0.3	0.6	16.2
Small (11-14 cf)	6.7	0.7	1.8	2.2	2.0	0.8	2.0	11.1
Medium (15-18 cf)	13.5	1.5	3.8	4.3	3.9	1.6	4.1	7.9
Large (19-22 cf)	9.0	0.9	2.2	3.1	2.9	1.0	2.5	9.9
Very Large (23 or More cf)	1.7	Q	0.2	0.5	0.9	Q	0.3	21.5
Heaters (other)								
Hot Tub or Spa	4.0	Q	0.3	1.1	2.3	0.3	0.6	20.7
Electric	2.7	Q	0.3	0.7	1.6	Q	0.4	21.2
Natural Gas	1.2	Q	Q	0.3	0.7	Q	Q	33.1
LPG/Other	Q	Q	Q	Q	Q	Q	Q	NF
Portable Space	14.1	1.5	3.7	4.5	4.5	1.9	4.0	7.1
Electric	12.3	1.3	3.2	3.8	4.1	1.6	3.4	7.4
Kerosene	2.1	0.2	0.6	0.8	0.5	0.3	0.6	17.1
Swimming Pool	1.1	Q	Q	0.3	0.7	Q	Q	33.1
Natural Gas	0.7	Q	Q	Q	0.5	Q	Q	34.2
Electric/LPG/Other	0.4	Q	Q	Q	0.2	Q	Q	40.2
Waterbed Heaters	8.4	0.3	2.1	2.9	3.1	0.6	1.8	12.5
1	6.9	0.3	1.8	2.3	2.5	0.5	1.6	13.9
2 or More	1.5	Q	0.3	0.6	0.6	Q	0.2	23.2
Waterbed Heaters								
Used All Year	7.4	0.3	1.8	2.6	2.8	0.5	1.4	13.6
1	6.4	0.3	1.6	2.2	2.4	0.5	1.3	14.7
2 or More	1.0	Q	0.2	0.5	0.4	Q	Q	23.8
Oven	100.3	12.9	28.7	30.9	27.7	14.3	33.4	2.7
Electric	62.3	6.5	17.1	19.9	18.8	7.0	17.9	3.9
Natural Gas	33.7	5.6	10.2	9.8	8.1	6.5	13.7	5.3
LPG	4.2	0.7	1.5	1.2	0.8	0.7	1.7	15.7
Other	Q	Q	Q	Q	Q	Q	Q	NF
Self-Cleaning Oven	44.7	2.4	9.1	14.6	18.6	2.8	8.6	5.2
Continuous	10.1	0.7	2.6	3.3	3.5	0.8	2.4	9.8
Manual Start	34.6	1.7	6.5	11.3	15.1	2.1	6.3	6.2
Pumps (Electric)	20.1	1.2	4.2	6.3	8.3	1.6	4.3	8.6
Hot Tub or Spa	4.0	Q	0.3	1.1	2.4	0.3	0.6	20.6
Swimming Pool	5.5	Q	0.7	1.6	3.1	0.3	0.7	15.0
Well Water	14.3	1.1	3.6	4.5	5.2	1.4	3.6	10.8
Range	100.7	12.9	28.9	31.1	27.8	14.3	33.5	2.7
Electric	61.1	6.5	17.0	19.6	18.0	7.0	17.8	4.0
Natural Gas	35.2	5.6	10.4	10.2	8.9	6.6	13.9	5.2
LPG	4.4	0.7	1.5	1.3	0.9	0.8	1.8	15.4
Other	Q	Q	Q	Q	Q	Q	Q	NF
Refrigerators	101.3	13.2	29.1	31.1	27.9	14.6	34.0	2.7
1	85.9	12.5	26.4	26.0	21.1	13.6	31.1	2.9
2 or More	15.4	0.7	2.7	5.1	6.8	1.0	2.8	8.2

See footnotes at end of table.

**Table HC5-3a. Appliances by Household Income,
Million U.S. Households, 1997 (Continued)**

Appliance Types and Characteristics	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.5	1.6	1.0	0.9	1.0	1.4	1.0	
Most-Used Refrigerator								
Defrost Method								
Frost-Free	88.1	9.7	24.2	27.6	26.6	11.1	27.0	3.1
Manual	13.3	3.5	4.9	3.5	1.3	3.5	7.0	7.2
Type of Refrigerator								
2-Doors (top and bottom)	69.0	9.3	21.0	21.9	16.7	10.3	24.6	3.1
2-Doors (side-by-side)	20.7	1.2	4.2	5.9	9.5	1.6	4.1	7.6
Regular (single door)	10.8	2.5	3.7	3.1	1.6	2.5	5.0	8.7
Half-Size/Other	0.7	0.2	0.2	0.2	Q	0.2	0.3	25.6
Age of Refrigerator								
Less than 2 Years	13.4	1.6	3.4	4.3	4.1	1.7	4.0	7.3
2 to 4 Years	21.4	2.9	5.3	6.4	6.8	3.7	7.2	5.6
5 to 9 Years	30.3	3.4	8.8	9.3	8.8	3.9	9.7	4.7
10 to 19 Years	24.1	2.9	7.1	7.7	6.4	2.8	7.7	5.8
20 Years or More	7.1	1.2	2.6	2.0	1.2	1.1	2.7	10.0
Don't Know	5.0	1.2	1.8	1.4	0.7	1.3	2.6	12.6
Size of Refrigerator								
Very Small (Less than 11 cf)	0.9	0.4	0.2	0.2	Q	0.4	0.5	19.2
Small (11-14 cf)	7.7	2.1	2.7	2.2	0.7	1.9	4.0	9.7
Medium (15-18 cf)	45.7	6.8	15.3	14.3	9.3	7.8	17.2	3.7
Large (19-22 cf)	45.5	3.9	10.7	14.0	16.9	4.5	12.1	4.6
Very Large (23 or More cf)	1.5	Q	0.2	0.4	0.8	Q	0.2	22.4
Through-the-Door Ice/Water Service								
Yes	13.2	0.5	2.2	3.5	6.9	0.8	2.1	11.0
No	88.3	12.8	26.9	27.6	21.0	13.8	32.0	2.8
Color Television Sets								
1	100.2	12.8	28.7	30.9	27.8	14.3	33.2	2.7
2	32.3	7.4	11.8	8.5	4.6	6.9	14.8	4.7
3	37.9	4.1	11.0	13.0	9.9	5.1	12.1	4.5
4	19.4	1.0	4.5	6.4	7.5	1.7	4.7	6.6
5	7.8	0.2	1.1	2.6	3.9	0.4	1.2	11.7
5 or More	2.8	Q	0.3	0.5	1.9	Q	0.4	18.8
Video Cassette Recorders (VCR's)								
1	88.9	8.9	24.5	28.5	27.0	10.8	26.3	3.1
2	56.3	6.4	18.4	18.5	13.0	7.7	18.9	3.6
3	25.2	2.4	5.2	7.9	9.8	2.8	6.5	6.1
3 or More	7.3	Q	0.8	2.2	4.1	0.3	0.9	12.2
Water Heaters								
Electric	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
For One Housing Unit	39.6	5.4	12.6	12.4	9.2	5.7	13.8	5.4
For Two or More Units	37.8	5.0	11.9	12.0	8.9	5.4	12.8	5.5
Natural Gas	1.8	0.4	0.7	0.5	0.2	0.3	1.0	20.8
For One Housing Unit	52.6	6.2	14.1	16.0	16.2	7.3	16.8	4.9
For Two or More Units	46.5	4.7	11.9	14.3	15.7	5.6	13.5	5.7
Fuel Oil	6.2	1.6	2.2	1.8	0.6	1.7	3.3	11.3
For One Housing Unit	5.1	1.0	1.3	1.5	1.4	0.9	2.0	11.1
For Two or More Units	3.1	0.2	0.7	1.0	1.2	0.2	0.7	18.1
LPG	2.0	0.8	0.6	0.5	0.2	0.8	1.3	15.5
Other	3.2	0.4	1.0	1.0	0.8	0.5	1.1	15.8
No Water Heater	0.7	Q	Q	0.1	0.3	0.2	0.3	35.7
For One Housing Unit	0.2	Q	Q	Q	Q	Q	Q	65.0

See footnotes at end of table.

**Table HC5-3a. Appliances by Household Income,
Million U.S. Households, 1997 (Continued)**

Appliance Types and Characteristics	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.5	1.6	1.0	0.9	1.0	1.4	1.0	
Water Heater (for one housing unit)	91.1	10.4	25.5	28.3	26.9	11.7	28.3	3.3
Age								
Less than 2 Years	11.2	1.1	2.7	4.0	3.4	1.3	3.2	7.9
2 to 4 Years	17.0	2.0	4.3	4.8	5.9	2.4	5.2	6.4
5 to 9 Years	25.3	2.0	6.4	8.3	8.5	2.5	6.7	6.0
10 to 19 Years	20.2	1.9	6.3	6.4	5.7	2.1	6.0	6.5
20 Years or More	7.1	1.3	2.6	1.8	1.4	1.4	3.2	9.8
Don't Know	7.1	1.4	2.3	2.3	1.2	1.6	3.0	10.2
No Separate Heater	3.0	0.5	0.9	0.8	0.8	0.5	1.1	17.7
No Water Heater	0.2	Q	Q	Q	Q	Q	Q	65.0
Water Heaters for								
Two or More Units	10.3	2.8	3.6	2.8	1.0	2.9	5.7	8.6
Size								
Small	15.5	2.6	6.0	4.6	2.3	2.6	6.2	7.0
Medium	47.1	4.6	13.2	15.3	14.1	5.4	14.0	4.3
Large	21.7	1.8	4.5	6.6	8.7	2.4	5.4	7.6
Don't Know	3.8	0.8	1.0	1.0	1.0	0.7	1.6	15.6
No Separate Heater	3.0	0.5	0.9	0.8	0.8	0.5	1.1	17.7
No Water Heater	0.2	Q	Q	Q	Q	Q	Q	65.0
Water Heaters for								
Two or More Units	10.3	2.8	3.6	2.8	1.0	2.9	5.7	8.6
Other Appliances								
Heated Aquarium	3.9	0.4	0.8	1.2	1.4	0.4	1.0	14.4
Microwave Oven	84.2	8.0	23.7	27.0	25.5	9.3	24.5	3.3
Outdoor Gas Light ³	0.7	Q	Q	0.2	0.3	Q	Q	33.2
Rechargeable Tools/ or Appliances	44.4	2.0	9.3	15.1	17.9	2.8	8.8	4.8
Stereo Equipment	69.8	6.0	17.5	23.0	23.4	7.8	19.1	3.6

¹ Below 150 percent of poverty line or 60 percent of median State income.

² The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

³ Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These are excluded from the count of 25.2 million households using only room air-conditioners.

cf = Cubic feet.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC5-4a. Appliances by Type of Housing Unit,
Million U.S. Households, 1997**

Appliance Types and Characteristics	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.4	0.5	1.9	1.5	1.7	
Total	101.5	73.7	5.6	15.8	6.3	3.8
Households With Electric						
Air-Conditioning Equipment	73.6	54.4	3.5	11.1	4.5	4.8
Central Equipment Not Used	0.3	0.2	Q	Q	Q	57.3
Room Air Conditioners Not Used ..	0.7	0.5	Q	Q	Q	42.5
Households Using Electric						
Air-Conditioning¹	72.6	53.8	3.4	10.9	4.5	4.8
Type of Electric Air-Conditioning						
Used						
Central Air-Conditioning ²	47.5	36.8	1.6	6.5	2.6	7.0
Without a Heat Pump	36.9	28.3	1.4	5.1	2.1	8.4
With a Heat Pump	10.6	8.4	Q	1.4	0.6	17.5
Room Air-Conditioning	25.2	17.1	1.8	4.4	1.9	7.8
1 Unit	14.9	8.7	1.4	3.4	1.3	9.3
2 Units	7.2	5.6	0.4	0.8	0.4	13.4
3 or More Units	3.0	2.7	Q	Q	Q	24.3
Clothes Washer	78.5	68.0	2.2	3.4	5.0	4.9
Clothes Dryer	72.2	63.3	1.6	2.8	4.5	5.5
Electric	55.9	47.8	1.3	2.6	4.3	6.9
Natural Gas	15.4	14.7	0.3	0.2	0.3	16.9
LPG	0.8	0.8	Q	Q	Q	34.3
Dishwasher	50.9	41.7	1.0	6.3	1.8	6.7
Ceiling Fans	61.0	50.7	1.8	4.9	3.6	5.4
1	23.6	16.5	1.2	3.7	2.2	7.8
2	14.0	12.3	0.2	0.8	0.7	11.0
3 or more	23.4	21.9	0.3	0.5	0.7	10.6
Freezer	33.7	30.7	0.6	0.6	1.8	7.6
1	30.7	27.9	0.6	0.6	1.6	7.9
2 or more	3.0	2.8	Q	Q	Q	17.6
Most-Used Freezer						
Defrost Method						
Frost-Free	10.7	9.7	Q	0.3	0.5	11.1
Manual	23.0	21.0	0.5	0.3	1.2	9.2
Type of Freezer						
Upright	16.5	15.4	0.3	0.2	0.7	10.8
Chest	17.1	15.3	0.4	0.4	1.1	11.5
Age of Freezer						
Less than 2 Years	2.4	2.0	Q	Q	0.2	23.5
2 to 4 Years	4.2	3.6	Q	0.2	0.3	19.1
5 to 9 Years	7.5	6.7	0.2	Q	0.5	12.3
10 to 19 Years	12.3	11.7	Q	0.1	0.4	12.5
20 Years or More	6.7	6.3	Q	Q	0.3	14.4
Don't Know	0.5	0.4	Q	Q	Q	44.8

See footnotes at end of table.

**Table HC5-4a. Appliances by Type of Housing Unit,
Million U.S. Households, 1997 (Continued)**

Appliance Types and Characteristics	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.4	0.5	1.9	1.5	1.7	
Freezer Size						
Very Small (Less than 11 cf)	2.7	2.2	Q	Q	0.3	19.5
Small (11-14 cf)	6.7	5.9	Q	0.2	0.5	14.7
Medium (15-18 cf)	13.5	12.5	0.2	0.2	0.5	13.6
Large (19-22 cf)	9.0	8.4	Q	Q	0.4	11.9
Very Large (23 or More cf)	1.7	1.6	Q	Q	Q	24.2
Heaters (other)						
Hot Tub or Spa	4.0	3.9	Q	Q	Q	20.0
Electric	2.7	2.6	Q	Q	Q	21.3
Natural Gas	1.2	1.2	Q	Q	Q	55.7
LPG/Other	Q	Q	Q	Q	Q	NF
Portable Space	14.1	11.4	0.6	1.1	1.0	9.9
Electric	12.3	9.8	0.5	1.1	0.9	10.2
Kerosene	2.1	1.9	Q	Q	0.1	21.5
Swimming Pool	1.1	1.1	Q	Q	Q	51.7
Natural Gas	0.7	0.7	Q	Q	Q	56.0
Electric/LPG/Other	0.4	0.4	Q	Q	Q	62.3
Waterbed Heaters	8.4	7.1	0.3	0.6	0.4	14.5
1	6.9	5.7	0.3	0.6	0.3	15.5
2 or More	1.5	1.4	Q	Q	Q	23.6
Waterbed Heaters						
Used All Year	7.4	6.4	0.2	0.6	0.3	15.2
1	6.4	5.5	0.2	0.6	0.3	16.1
2 or More	1.0	1.0	Q	Q	Q	24.6
Oven	100.3	72.9	5.6	15.6	6.2	3.8
Electric	62.3	46.1	2.8	10.2	3.2	5.4
Natural Gas	33.7	24.0	2.7	5.3	1.8	7.4
LPG	4.2	2.8	Q	Q	1.3	18.7
Other	Q	Q	Q	Q	Q	NF
Self-Cleaning Oven	44.7	39.8	0.8	3.0	1.1	7.0
Continuous	10.1	8.5	0.2	1.0	0.4	12.8
Manual Start	34.6	31.2	0.7	2.0	0.7	7.8
Pumps (Electric)	20.1	18.7	0.1	Q	1.3	12.1
Hot Tub or Spa	4.0	3.9	Q	Q	Q	19.7
Swimming Pool	5.5	5.5	Q	Q	Q	15.7
Well Water	14.3	12.9	0.1	Q	1.3	15.8
Range	100.7	73.2	5.6	15.6	6.3	3.8
Electric	61.1	44.8	2.8	10.2	3.2	5.5
Natural Gas	35.2	25.3	2.7	5.4	1.8	7.3
LPG	4.4	3.0	Q	Q	1.3	18.4
Other	Q	Q	Q	Q	Q	NF
Refrigerators	101.3	73.7	5.6	15.7	6.3	3.8
1	85.9	59.0	5.4	15.5	6.0	4.1
2 or More	15.4	14.6	0.2	0.3	0.3	13.5

See footnotes at end of table.

**Table HC5-4a. Appliances by Type of Housing Unit,
Million U.S. Households, 1997 (Continued)**

Appliance Types and Characteristics	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.4	0.5	1.9	1.5	1.7	
Most-Used Refrigerator						
Defrost Method						
Frost-Free	88.1	67.4	3.9	11.9	4.9	4.0
Manual	13.3	6.3	1.7	3.8	1.4	9.1
Type of Refrigerator						
2-Doors (top and bottom)	69.0	48.0	4.1	12.2	4.7	4.2
2-Doors (side-by-side)	20.7	19.0	0.4	0.7	0.7	10.5
Regular (single door)	10.8	6.2	1.1	2.7	0.8	11.7
Half-Size/Other	0.7	0.4	Q	Q	Q	44.0
Age of Refrigerator						
Less than 2 Years	13.4	9.6	0.7	2.2	1.0	8.8
2 to 4 Years	21.4	15.5	1.2	3.5	1.2	7.0
5 to 9 Years	30.3	22.8	1.6	4.0	1.8	6.2
10 to 19 Years	24.1	19.1	1.1	2.6	1.3	7.2
20 Years or More	7.1	5.0	0.4	1.1	0.6	11.6
Don't Know	5.0	1.8	0.7	2.3	0.3	15.1
Size of Refrigerator						
Very Small (Less than 11 cf)	0.9	0.5	Q	0.3	Q	26.5
Small (11-14 cf)	7.7	3.6	0.8	2.6	0.7	10.4
Medium (15-18 cf)	45.7	29.5	3.1	9.4	3.7	4.9
Large (19-22 cf)	45.5	38.6	1.7	3.4	1.8	5.7
Very Large (23 or More cf)	1.5	1.5	Q	Q	Q	23.8
Through-the-Door Ice/Water Service						
Yes	13.2	12.6	Q	Q	0.4	12.3
No	88.3	61.1	5.5	15.7	6.0	4.0
Color Television Sets						
1	100.2	73.0	5.4	15.4	6.3	3.9
2	32.3	17.7	2.7	8.9	3.0	5.8
3	37.9	28.5	1.7	5.5	2.2	5.5
4	19.4	17.0	0.7	0.9	0.8	8.3
5 or More	7.8	7.2	0.2	Q	0.2	13.4
	2.8	2.6	Q	Q	Q	20.7
Video Cassette Recorders (VCR's)						
1	88.9	66.0	4.4	12.8	5.6	4.0
2	56.3	39.2	3.1	9.9	4.2	4.6
3 or More	25.2	20.2	1.1	2.6	1.3	7.7
	7.3	6.6	0.2	0.3	0.2	15.6
Water Heaters						
Electric	101.5	73.7	5.6	15.8	6.3	3.8
For One Housing Unit	39.6	26.6	1.8	6.9	4.3	7.3
For Two or More Units	37.8	26.3	1.6	5.6	4.3	7.6
Natural Gas	1.8	0.3	0.2	1.3	Q	22.1
For One Housing Unit	52.6	40.9	3.4	6.9	1.4	6.9
For Two or More Units	46.5	39.6	2.5	2.9	1.4	8.4
Fuel Oil	6.2	1.2	0.9	4.0	Q	13.6
For One Housing Unit	5.1	3.2	0.3	1.6	Q	15.9
For Two or More Units	3.1	2.9	Q	0.2	Q	22.6
LPG	2.0	0.2	0.3	1.5	Q	20.4
Other	3.2	2.6	Q	Q	0.5	19.1
No Water Heater	0.7	0.4	Q	0.3	Q	42.4
	0.2	Q	Q	Q	Q	84.4

See footnotes at end of table.

**Table HC5-4a. Appliances by Type of Housing Unit,
Million U.S. Households, 1997 (Continued)**

Appliance Types and Characteristics	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.4	0.5	1.9	1.5	1.7	
Water Heater (for one housing unit)	91.1	71.8	4.2	8.8	6.3	4.5
Age						
Less than 2 Years	11.2	9.1	0.3	0.7	1.0	11.3
2 to 4 Years	17.0	13.5	0.8	1.2	1.4	8.2
5 to 9 Years	25.3	20.8	1.1	2.1	1.4	8.7
10 to 19 Years	20.2	17.0	0.5	1.4	1.3	9.0
20 Years or More	7.1	5.6	0.2	0.6	0.7	13.2
Don't Know	7.1	4.0	0.9	1.7	0.5	12.3
No Separate Heater	3.0	1.8	0.2	1.0	Q	20.6
No Water Heater	0.2	Q	Q	Q	Q	84.4
Water Heaters for						
Two or More Units	10.3	1.8	1.4	7.0	Q	11.2
Size						
Small	15.5	9.8	0.9	2.4	2.3	8.9
Medium	47.1	39.0	1.8	3.3	3.0	5.8
Large	21.7	19.1	0.8	1.0	0.8	10.0
Don't Know	3.8	2.2	0.5	1.0	0.2	18.3
No Separate Heater	3.0	1.8	0.2	1.0	Q	20.6
No Water Heater	0.2	Q	Q	Q	Q	84.4
Water Heaters for						
Two or More Units	10.3	1.8	1.4	7.0	Q	11.2
Other Appliances						
Heated Aquarium	3.9	3.0	0.2	0.5	0.2	15.4
Microwave Oven	84.2	63.9	3.8	11.3	5.1	4.4
Outdoor Gas Light ²	0.7	0.6	Q	Q	Q	43.8
Rechargeable Tools/ or Appliances	44.4	37.6	1.1	3.5	2.1	5.3
Stereo Equipment	69.8	51.9	3.5	10.4	4.0	4.4

¹ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

² Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These are excluded from the count of 25.2 million households using only room air-conditioners.

cf = Cubic feet.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC5-13a. Appliances by Census Region,
Million U.S. Households, 1997**

Appliance Types and Characteristics	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.2	1.1	1.0	1.3	
Total	101.5	19.7	24.1	35.9	21.8	NF
Households With Electric						
Air-Conditioning Equipment	73.6	12.5	18.8	33.4	8.9	3.3
Central Equipment Not Used	0.3	Q	Q	Q	0.2	29.1
Room Air Conditioners Not Used ..	0.7	0.3	0.2	Q	Q	23.7
Households Using Electric						
Air-Conditioning¹	72.6	12.2	18.6	33.2	8.7	3.3
Type of Electric Air-Conditioning						
Used						
Central Air-Conditioning ²	47.5	4.4	12.3	24.9	5.9	5.1
Without a Heat Pump	36.9	3.9	11.9	16.4	4.7	7.1
With a Heat Pump	10.6	0.5	0.4	8.5	1.1	15.7
Room Air-Conditioning	25.2	7.8	6.3	8.3	2.8	6.7
1 Unit	14.9	4.0	4.4	4.2	2.3	8.2
2 Units	7.2	2.7	1.5	2.6	0.4	11.7
3 or More Units	3.0	1.1	0.4	1.5	Q	17.7
Clothes Washer	78.5	15.0	19.0	29.4	15.2	2.0
Clothes Dryer	72.2	13.2	18.2	26.6	14.2	2.2
Electric	55.9	9.5	12.1	23.8	10.5	3.6
Natural Gas	15.4	3.5	5.8	2.6	3.6	9.9
LPG	0.8	0.1	0.4	0.2	Q	23.6
Dishwasher	50.9	9.6	11.3	18.5	11.6	3.5
Ceiling Fans	61.0	10.1	15.3	25.5	10.0	2.8
1	23.6	5.1	6.4	6.8	5.3	5.5
2	14.0	2.3	3.8	5.7	2.1	6.4
3 or more	23.4	2.6	5.1	13.0	2.6	5.8
Freezer	33.7	5.1	10.1	13.2	5.3	4.2
1	30.7	4.8	9.2	11.9	4.8	4.4
2 or more	3.0	0.3	0.8	1.4	0.5	14.5
Most-Used Freezer						
Defrost Method						
Frost-Free	10.7	1.5	2.6	4.7	1.9	7.0
Manual	23.0	3.6	7.4	8.5	3.4	5.2
Type of Freezer						
Upright	16.5	2.7	4.1	6.0	3.7	5.2
Chest	17.1	2.3	6.0	7.2	1.6	7.1
Age of Freezer						
Less than 2 Years	2.4	0.4	0.7	1.0	0.3	17.4
2 to 4 Years	4.2	0.5	1.3	1.8	0.6	14.2
5 to 9 Years	7.5	1.0	2.1	3.1	1.4	9.8
10 to 19 Years	12.3	1.9	3.6	5.0	1.8	6.8
20 Years or More	6.7	1.1	2.2	2.1	1.2	11.6
Don't Know	0.5	Q	0.2	0.2	Q	28.8

See footnotes at end of table.

**Table HC5-13a. Appliances by Census Region,
Million U.S. Households, 1997 (Continued)**

Appliance Types and Characteristics	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.2	1.1	1.0	1.3	
Freezer Size						
Very Small (Less than 11 cf)	2.7	0.6	0.8	0.8	0.5	16.0
Small (11-14 cf)	6.7	1.1	2.4	2.5	0.8	10.2
Medium (15-18 cf)	13.5	1.8	3.9	5.7	2.1	7.1
Large (19-22 cf)	9.0	1.3	2.6	3.6	1.5	9.0
Very Large (23 or More cf)	1.7	0.3	0.4	0.5	0.4	17.3
Heaters (other)						
Hot Tub or Spa	4.0	0.5	0.7	1.4	1.3	14.2
Electric	2.7	0.5	0.5	0.9	0.8	16.8
Natural Gas	1.2	Q	Q	Q	0.4	24.8
LPG/Other	Q	Q	Q	Q	Q	NF
Portable Space	14.1	2.5	3.4	5.7	2.5	7.3
Electric	12.3	2.1	3.2	4.7	2.3	7.8
Kerosene	2.1	0.4	0.3	1.2	Q	16.7
Swimming Pool	1.1	0.2	Q	0.5	0.3	32.1
Natural Gas	0.7	Q	Q	0.4	0.2	38.3
Electric/LPG/Other	0.4	Q	Q	Q	Q	46.8
Waterbed Heaters	8.4	1.2	2.7	2.9	1.5	11.3
1	6.9	1.1	2.3	2.4	1.2	13.2
2 or More	1.5	Q	0.4	0.5	0.3	16.8
Waterbed Heaters Used All Year	7.4	1.1	2.4	2.5	1.4	12.0
1	6.4	1.0	2.1	2.2	1.1	13.9
2 or More	1.0	Q	0.3	0.2	0.3	17.4
Oven	100.3	19.6	23.8	35.4	21.4	NF
Electric	62.3	9.7	13.6	25.9	13.1	3.1
Natural Gas	33.7	8.9	9.1	7.9	7.8	5.6
LPG	4.2	1.0	1.1	1.6	0.5	18.8
Other	Q	Q	Q	Q	Q	NF
Self-Cleaning Oven	44.7	9.6	10.8	15.0	9.3	3.6
Continuous	10.1	1.9	2.4	3.9	1.8	8.8
Manual Start	34.6	7.7	8.4	11.1	7.5	4.3
Pumps (Electric)	20.1	5.1	4.9	6.9	3.1	8.5
Hot Tub or Spa	4.0	0.6	0.7	1.4	1.3	13.9
Swimming Pool	5.5	1.5	0.7	2.4	0.9	11.5
Well Water	14.3	3.7	4.2	4.9	1.5	13.0
Range	100.7	19.7	23.9	35.5	21.5	NF
Electric	61.1	9.5	13.4	25.4	12.7	3.3
Natural Gas	35.2	9.0	9.5	8.5	8.2	5.5
LPG	4.4	1.1	1.1	1.6	0.6	18.9
Other	Q	Q	Q	Q	Q	NF
Refrigerators	101.3	19.7	24.0	35.8	21.7	NF
1	85.9	16.7	19.7	31.1	18.4	1.2
2 or More	15.4	3.0	4.3	4.7	3.3	6.4

See footnotes at end of table.

**Table HC5-13a. Appliances by Census Region,
Million U.S. Households, 1997 (Continued)**

Appliance Types and Characteristics	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.2	1.1	1.0	1.3	
Most-Used Refrigerator						
Defrost Method						
Frost-Free	88.1	16.8	20.5	32.3	18.5	1.5
Manual	13.3	2.9	3.5	3.6	3.3	7.0
Type of Refrigerator						
2-Doors (top and bottom)	69.0	14.6	17.6	23.5	13.2	2.1
2-Doors (side-by-side)	20.7	3.0	4.2	8.0	5.5	6.4
Regular (single door)	10.8	1.9	2.0	4.1	2.8	10.1
Half-Size/Other	0.7	0.1	Q	0.2	0.2	27.8
Age of Refrigerator						
Less than 2 Years	13.4	2.4	3.1	4.8	3.1	6.1
2 to 4 Years	21.4	4.2	4.6	8.6	4.0	4.5
5 to 9 Years	30.3	5.7	7.0	10.6	7.0	4.3
10 to 19 Years	24.1	4.8	5.9	8.1	5.3	3.9
20 Years or More	7.1	1.5	1.9	2.2	1.4	8.7
Don't Know	5.0	1.1	1.4	1.6	0.9	15.1
Size of Refrigerator						
Very Small (Less than 11 cf)	0.9	0.3	0.2	0.2	0.2	23.8
Small (11-14 cf)	7.7	1.7	1.6	2.5	2.0	8.2
Medium (15-18 cf)	45.7	9.6	11.3	16.2	8.6	2.9
Large (19-22 cf)	45.5	7.8	10.5	16.5	10.7	3.5
Very Large (23 or More cf)	1.5	0.3	0.4	0.4	0.4	17.9
Through-the-Door Ice/Water Service						
Yes	13.2	1.7	2.5	5.9	3.1	9.4
No	88.3	18.1	21.6	30.0	18.7	1.3
Color Television Sets						
1	100.2	19.5	23.8	35.4	21.4	NF
2	32.3	6.3	7.7	10.5	7.9	4.2
3	37.9	7.1	8.7	14.0	8.1	3.1
4	19.4	4.1	4.9	6.6	3.8	5.0
5	7.8	1.5	1.9	3.2	1.2	9.7
5 or More	2.8	0.5	0.6	1.2	0.5	15.4
Video Cassette Recorders (VCR's)						
1	88.9	17.0	21.6	30.9	19.4	1.1
2	56.3	11.3	13.6	18.9	12.5	2.4
3	25.2	4.2	6.3	9.3	5.5	5.2
3 or More	7.3	1.4	1.8	2.7	1.5	9.6
Water Heaters						
Electric	101.5	19.7	24.1	35.9	21.8	NF
For One Housing Unit	39.6	5.1	6.4	20.9	7.2	5.9
For Two or More Units	37.8	4.8	6.0	20.3	6.8	5.9
Natural Gas	1.8	0.3	0.4	0.7	0.4	20.9
For One Housing Unit	52.6	9.1	16.3	13.4	13.9	4.6
For Two or More Units	46.5	7.6	14.0	12.9	12.0	5.4
Fuel Oil	6.2	1.6	2.2	0.5	1.9	14.1
For One Housing Unit	5.1	4.9	Q	Q	Q	10.2
For Two or More Units	3.1	2.9	Q	Q	Q	12.9
LPG	2.0	2.0	Q	Q	Q	13.1
Other	3.2	0.4	1.2	1.1	0.5	18.0
No Water Heater	0.7	0.2	Q	Q	0.2	33.2
For One Housing Unit	0.2	Q	Q	Q	Q	58.6

See footnotes at end of table.

**Table HC5-13a. Appliances by Census Region,
Million U.S. Households, 1997 (Continued)**

Appliance Types and Characteristics	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.2	1.1	1.0	1.3	
Water Heater (for one housing unit)	91.1	15.7	21.3	34.6	19.4	1.5
Age						
Less than 2 Years	11.2	2.0	2.7	4.2	2.4	8.2
2 to 4 Years	17.0	3.0	3.9	6.9	3.2	5.7
5 to 9 Years	25.3	4.1	5.6	10.3	5.3	4.7
10 to 19 Years	20.2	2.8	5.4	7.5	4.5	5.6
20 Years or More	7.1	1.2	1.6	2.4	1.9	9.8
Don't Know	7.1	0.9	1.8	3.0	1.5	10.5
No Separate Heater	3.0	1.8	Q	0.4	0.6	20.7
No Water Heater	0.2	Q	Q	Q	Q	58.6
Water Heaters for						
Two or More Units	10.3	4.0	2.8	1.2	2.3	11.4
Size						
Small	15.5	2.2	3.4	7.1	2.8	7.0
Medium	47.1	8.0	12.2	18.0	9.0	3.4
Large	21.7	3.1	4.5	7.9	6.1	6.6
Don't Know	3.8	0.7	0.9	1.3	0.8	16.9
No Separate Heater	3.0	1.8	Q	0.4	0.6	20.7
No Water Heater	0.2	Q	Q	Q	Q	58.6
Water Heaters for						
Two or More Units	10.3	4.0	2.8	1.2	2.3	11.4
Other Appliances						
Heated Aquarium	3.9	0.6	1.0	1.2	1.0	12.3
Microwave Oven	84.2	15.5	20.9	29.6	18.2	1.5
Outdoor Gas Light ²	0.7	Q	0.3	0.2	Q	29.9
Rechargeable Tools/ or Appliances	44.4	8.5	11.2	15.0	9.7	3.1
Stereo Equipment	69.8	13.2	16.1	24.3	16.2	1.5

¹ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

² Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These are excluded from the count of 25.2 million households using only room air-conditioners.

cf = Cubic feet.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

Usage Indicators Tables

**Table HC6-2a. Usage Indicators by Year of Construction,
Million U.S. Households, 1997**

Usage Indicators	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.7	1.3	1.0	1.1	1.1	0.9	
Total	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.1
Weekday Home Activities								
Home Used for Business								
Yes	7.4	0.9	1.4	1.3	1.0	0.6	2.1	13.5
No	94.1	8.8	15.9	18.3	13.4	11.9	25.8	4.2
Energy-Intensive Activity								
Yes	2.4	0.2	0.3	0.5	0.3	0.4	0.7	21.4
No	99.1	9.5	17.0	19.1	14.1	12.2	27.2	4.1
Someone Home All Day								
Yes	51.3	4.7	7.9	9.4	7.4	7.3	14.6	5.1
No	50.1	5.0	9.4	10.1	7.0	5.3	13.3	5.0
Heating								
Thermostat Available During Heating Season								
Yes	86.0	9.0	15.9	17.0	12.4	10.4	21.2	4.6
No	14.7	0.6	1.3	2.4	1.9	2.1	6.4	10.6
Do Not Heat Home	0.8	Q	Q	0.2	Q	Q	0.2	38.6
Set-Back or Clock Thermostat in Home								
Yes	44.9	5.5	9.7	8.6	6.6	4.7	9.8	7.0
No	56.6	4.2	7.6	10.9	7.9	7.9	18.1	6.0
Use of Set-Back/Clock Thermostat for Heating								
Programming Features Used	11.7	1.9	2.8	1.8	1.4	1.2	2.6	10.9
Only Manual Controls Used	33.2	3.6	6.9	6.8	5.2	3.5	7.2	8.4
Winter Temperature Settings								
Lower When No One Home								
Yes	45.5	4.5	7.9	9.0	6.7	5.6	11.8	5.2
No	56.0	5.2	9.4	10.6	7.8	7.0	16.1	5.1
Lower During Sleeping Hours								
Yes	47.4	4.6	8.5	9.3	6.9	6.4	11.8	5.1
No	54.0	5.1	8.8	10.3	7.5	6.2	16.1	5.2
Daytime Winter Temperature When Someone is at Home								
Heat is Turned On	93.9	9.3	16.3	18.0	13.3	11.4	25.4	4.3
63 Degrees or Less	3.8	0.4	0.5	0.6	0.6	0.4	1.2	17.8
64 to 66 Degrees	8.3	0.8	1.3	1.8	0.8	1.0	2.5	11.9
67 to 69 Degrees	23.4	2.4	3.8	4.7	3.1	2.9	6.3	7.5
70 Degrees	25.6	2.3	4.4	4.8	3.6	3.1	7.5	6.7
71 to 73 Degrees	14.7	1.6	2.4	2.6	2.3	1.9	3.9	8.5
74 Degrees or More	18.1	1.7	4.0	3.4	2.9	2.1	3.9	8.7
Heat Turned Off	2.1	Q	0.4	0.6	0.3	0.3	0.3	26.4
Unknown/No Answer	5.5	0.2	0.5	1.0	0.8	0.8	2.2	17.9

See footnotes at end of table.

**Table HC6-2a. Usage Indicators by Year of Construction,
Million U.S. Households, 1997 (Continued)**

Usage Indicators	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.7	1.3	1.0	1.1	1.1	0.9	
Daytime Winter Temperature When No One is at Home								
Heat is Turned On	84.9	8.7	14.7	15.9	11.8	10.1	23.7	4.5
63 Degrees or Less	19.7	1.9	3.0	3.8	3.0	2.2	5.7	7.8
64 to 66 Degrees	16.6	1.3	3.1	3.4	1.9	1.7	5.0	8.4
67 to 69 Degrees	18.0	2.3	3.1	3.3	2.3	2.3	4.7	8.6
70 Degrees	14.8	1.5	2.5	2.5	2.1	1.7	4.4	9.1
71 to 73 Degrees	7.6	0.8	1.2	1.3	1.0	1.3	2.0	12.4
74 Degrees or More	8.2	0.9	1.8	1.5	1.4	0.8	1.8	12.6
Heat Turned Off	10.4	0.7	2.0	2.4	1.7	1.7	1.8	11.0
Unknown/No Answer	6.2	0.3	0.6	1.2	0.9	0.7	2.4	16.3
Winter Temperature During Sleeping Hours								
Heat is Turned On	89.1	8.9	15.6	16.9	12.6	10.7	24.4	4.4
63 Degrees or Less	16.4	1.4	2.8	3.1	2.4	2.1	4.7	8.5
64 to 66 Degrees	16.9	1.6	2.9	3.7	2.0	2.1	4.5	7.9
67 to 69 Degrees	19.6	2.2	3.3	3.7	2.6	2.4	5.5	7.9
70 Degrees	17.6	1.7	3.1	3.2	2.6	2.0	5.2	8.4
71 to 73 Degrees	8.4	0.9	1.3	1.5	1.3	1.1	2.2	11.2
74 Degrees or More	10.2	1.1	2.3	1.7	1.8	1.0	2.3	12.6
Heat Turned Off	7.3	0.6	1.2	1.8	1.2	1.1	1.4	12.5
Unknown/No Answer	5.1	0.3	0.5	0.9	0.6	0.7	2.1	18.4
Air-Conditioning								
Central Air-Conditioning Use								
Use a Central System	47.8	7.5	12.9	10.8	6.6	4.6	5.2	6.2
All Summer	24.6	4.2	7.1	5.6	3.5	2.1	2.1	8.3
Quite a Bit	10.4	1.8	2.7	2.4	1.3	0.9	1.4	11.7
Only a Few Times	12.4	1.6	3.1	2.8	1.7	1.5	1.6	11.4
Not at All	0.3	Q	Q	Q	Q	Q	Q	46.8
No Central System	53.7	2.2	4.4	8.7	7.8	7.9	22.7	5.6
Use of Set-Back/Clock Thermostat for Cooling								
Programming Features Used	5.0	1.1	1.8	0.8	0.6	0.4	0.3	16.5
Only Manual Controls Used	13.5	2.2	4.0	3.0	2.0	1.1	1.3	12.5
Used Only for Heating	0.4	Q	Q	Q	Q	Q	Q	52.7
Window Air-Conditioning Use								
Use Window Units	26.5	0.8	2.0	4.1	3.7	4.5	11.4	8.4
All Summer	5.7	0.3	0.3	1.1	0.8	1.0	2.1	14.8
Quite a Bit	6.6	0.2	0.4	1.0	1.0	1.2	2.9	14.1
Only a Few Times	13.5	0.3	1.1	1.9	1.8	2.3	6.1	11.3
Not at All	0.7	Q	Q	Q	Q	Q	0.3	30.7
No Window Units	75.0	8.9	15.3	15.5	10.7	8.0	16.5	4.4
Hot Water								
Number of Showers/Baths Taken Each Week								
Fewer than 10	28.3	1.8	4.4	4.9	4.1	3.9	9.1	6.7
10 to 20	46.7	4.4	8.0	9.3	6.9	5.7	12.5	5.1
More than 20	26.4	3.5	4.9	5.3	3.4	2.9	6.3	6.3
Not Applicable	0.2	Q	Q	Q	Q	Q	Q	81.8

See footnotes at end of table.

**Table HC6-2a. Usage Indicators by Year of Construction,
Million U.S. Households, 1997 (Continued)**

Usage Indicators	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.7	1.3	1.0	1.1	1.1	0.9	
Hot Water (continued)								
Dishwasher Use								
Each Week								
Use a Dishwasher	50.9	7.4	12.3	11.1	7.0	4.7	8.4	5.7
Less Than 4 Times	28.7	4.0	7.2	6.3	4.1	2.5	4.7	7.2
4 to 6 Times	12.9	2.2	2.8	2.9	1.7	1.3	2.1	9.6
At Least Once Each Day	9.3	1.3	2.3	1.9	1.2	0.9	1.7	11.7
No Dishwasher	50.6	2.3	5.0	8.5	7.5	7.9	19.5	5.5
Loads of Laundry								
Washed Each Week								
Use a Clothes Washer	78.5	8.7	14.4	14.2	10.1	10.2	21.0	4.3
1 Load or Less	5.3	0.2	0.9	0.7	0.8	0.8	2.0	15.4
2 to 9 Loads	29.8	3.1	5.4	5.4	3.6	4.0	8.3	6.3
10 to 15 Loads	10.2	1.4	1.7	1.8	1.4	1.3	2.6	10.4
More than 15 Loads	3.3	0.4	0.6	0.6	0.4	0.3	1.0	17.7
No Washing Machine	22.9	1.0	3.0	5.3	4.3	2.4	6.9	8.9
Clothes Dryer Usage								
Use a Clothes Dryer	72.2	8.6	13.8	13.5	9.2	9.0	18.2	4.6
Every Time Clothes are Washed	57.1	7.3	11.9	10.5	7.0	7.1	13.3	5.3
Some, but not All, Loads	13.0	1.2	1.8	2.5	1.9	1.5	4.1	9.8
Used Infrequently	2.2	Q	0.2	0.4	0.3	0.4	0.8	20.6
No Dryer	29.3	1.1	3.5	6.1	5.3	3.6	9.7	8.0
Cooking								
Number of Hot Meals								
Cooked in the Home								
3 or More Times a Day	7.0	0.5	1.3	1.2	0.9	0.8	2.4	12.2
2 Times a Day	25.7	2.3	4.4	4.7	3.8	3.2	7.3	7.1
Once a Day	42.2	4.1	7.2	8.3	6.1	5.3	11.2	5.6
A Few Times Each Week	20.4	2.3	3.4	4.2	2.8	2.7	5.0	8.1
About Once a Week	3.1	0.3	0.6	0.5	0.4	0.2	1.1	18.3
Less Than Once a Week	3.0	Q	0.6	0.6	0.3	0.4	0.9	19.4
Conventional Oven Use								
More Than Once a Day	8.3	0.8	1.6	1.5	1.0	1.0	2.4	11.4
Once a Day	20.5	2.4	3.4	4.3	2.7	2.5	5.3	7.7
Between Once a Day and Once a Week	34.9	3.3	6.3	6.8	4.9	4.2	9.3	5.8
Once a Week	15.1	1.4	2.8	2.8	2.3	2.1	3.8	7.9
Less Than Once a Week	21.5	1.7	3.1	4.0	3.4	2.6	6.6	7.9
Amount of Food Cooked in Microwave Oven								
Use a Microwave Oven	84.2	8.6	15.1	16.4	12.0	10.4	21.7	4.3
Most or All	7.3	0.6	1.6	1.6	1.1	0.8	1.7	13.6
About Half	18.4	1.9	3.5	4.0	2.6	2.2	4.2	8.2
Some or Very Little	22.3	2.8	3.6	4.6	3.0	2.8	5.5	7.3
Only for Defrosting, Reheating, or Snacks	36.2	3.4	6.4	6.3	5.3	4.5	10.3	6.5
No Microwave Oven	17.3	1.1	2.2	3.1	2.5	2.2	6.2	10.0

See footnotes at end of table.

**Table HC6-2a. Usage Indicators by Year of Construction,
Million U.S. Households, 1997 (Continued)**

Usage Indicators	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.7	1.3	1.0	1.1	1.1	0.9	
Lights								
Outdoor Lights on All Night								
Used	26.3	2.5	5.0	5.0	3.6	3.5	6.7	6.9
Not Used	75.2	7.2	12.3	14.5	10.8	9.0	21.2	4.3
Gas Fireplace Usage During Winter Months								
Use a Gas Fireplace	2.7	0.8	0.7	0.4	0.3	0.3	0.3	24.0
Most Days	1.1	0.3	0.2	0.2	Q	Q	0.2	29.3
Almost Once a Week	0.7	0.3	0.2	Q	Q	Q	Q	30.6
Less Than 4 Times a Month	0.8	Q	Q	Q	Q	Q	Q	70.0
Personal Computer Usage	35.6	4.9	7.3	7.2	4.8	3.5	7.9	6.3
Hours PC Turned On Each Week								
Less Than 2 Hours	8.2	0.9	1.2	1.8	1.3	0.8	2.3	11.6
2 to 15 Hours	17.4	2.6	3.9	3.6	2.1	1.8	3.3	8.4
16 to 40 Hours	6.7	0.9	1.4	1.2	0.9	0.6	1.7	13.0
On All The Time	3.3	0.5	0.8	0.7	0.5	0.3	0.5	18.3
Use of PCs Turned on 16 Hours a Week or More								
Personal Use Only	4.8	0.6	0.9	1.0	0.7	0.4	1.1	14.9
Business Use Only	2.1	0.5	0.4	0.3	0.3	0.2	0.4	24.0
Both Personal and Business	3.1	0.3	0.9	0.7	0.4	0.2	0.7	19.9
Business Use of PCs Turned on 16 Hours a Week or More								
Use to Telecommute	2.1	0.3	0.5	0.4	0.3	Q	0.4	21.4
Other Business Use	3.1	0.5	0.7	0.5	0.4	0.3	0.7	20.6
Battery Operated Appliances/Tools								
Use Battery Operated Appliances/Tools	44.4	5.3	8.0	8.7	6.2	5.3	10.8	5.6
How Maintained When Not in Use								
Plugged in All The Time	12.5	1.5	2.5	2.8	1.7	1.4	2.6	9.8
Recharged As Needed	27.0	3.2	4.6	5.3	3.7	3.4	6.9	7.0
Both Ways are Used	4.9	0.6	0.9	0.7	0.8	0.5	1.4	15.5
Don't Use Any	57.1	4.5	9.3	10.8	8.2	7.2	17.1	4.8

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding column and row factors. • Because of rounding, data may not sum to totals. • See "Glossary" for definition of terms used in this report. • All temperatures listed are in degrees Fahrenheit.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC6-3a. Usage Indicators by Household Income,
Million U.S. Households, 1997**

Usage Indicators	Total	1997 Household Income				Below Poverty Line	Eli- gible for Fed- eral Assist- ance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.5	1.6	1.0	0.9	1.0	1.4	1.0	
Total	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
Weekday Home Activities								
Home Used for Business								
Yes	7.4	0.4	1.3	2.4	3.3	0.5	1.4	13.3
No	94.1	12.9	27.9	28.7	24.7	14.1	32.7	2.8
Energy-Intensive Activity								
Yes	2.4	Q	0.6	0.7	1.0	0.2	0.6	19.2
No	99.1	13.2	28.6	30.4	26.9	14.5	33.5	2.7
Someone Home All Day								
Yes	51.3	8.8	16.4	14.6	11.6	10.3	21.8	3.4
No	50.1	4.5	12.8	16.6	16.3	4.4	12.3	4.1
Heating								
Thermostat Available During Heating Season								
Yes	86.0	9.1	23.3	27.5	26.2	10.0	25.2	3.3
No	14.7	4.1	5.5	3.5	1.6	4.4	8.4	7.4
Do Not Heat Home	0.8	0.2	0.4	0.1	Q	0.3	0.5	25.9
Set-Back or Clock Thermostat in Home								
Yes	44.9	4.5	11.8	13.5	15.2	5.1	12.8	6.3
No	56.6	8.9	17.3	17.7	12.8	9.6	21.2	4.5
Use of Set-Back/Clock Thermostat for Heating								
Programming Features Used	11.7	0.5	1.8	3.6	5.7	0.6	2.2	10.5
Only Manual Controls Used	33.2	3.9	10.0	9.9	9.4	4.4	10.7	7.5
Winter Temperature Settings								
Lower When No One Home								
Yes	45.5	5.1	12.6	14.9	12.9	5.6	14.0	4.2
No	56.0	8.3	16.5	16.2	15.0	9.1	20.0	3.4
Lower During Sleeping Hours								
Yes	47.4	5.7	13.3	15.0	13.5	6.1	15.0	4.1
No	54.0	7.6	15.9	16.2	14.4	8.6	19.1	3.5
Daytime Winter Temperature When Someone is at Home								
Heat is Turned On	93.9	11.2	26.6	29.1	27.0	12.3	29.6	2.9
63 Degrees or Less	3.8	0.9	0.9	1.0	1.0	0.9	1.5	14.1
64 to 66 Degrees	8.3	0.8	2.2	2.9	2.3	1.0	2.4	9.8
67 to 69 Degrees	23.4	1.2	6.1	7.1	8.9	1.5	5.5	6.4
70 Degrees	25.6	3.4	7.8	7.7	6.8	3.8	8.6	5.4
71 to 73 Degrees	14.7	1.7	3.9	5.1	4.1	1.7	4.3	7.4
74 Degrees or More	18.1	3.3	5.6	5.3	3.9	3.3	7.2	6.0
Heat Turned Off	2.1	0.3	0.8	0.8	0.2	0.4	1.1	21.1
Unknown/No Answer	5.5	1.8	1.7	1.3	0.7	1.9	3.4	13.2

See footnotes at end of table.

Table HC6-3a. Usage Indicators by Household Income, Million U.S. Households, 1997 (Continued)

Usage Indicators	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.5	1.6	1.0	0.9	1.0	1.4	1.0	
Daytime Winter Temperature When No One is at Home								
Heat is Turned On	84.9	9.2	23.6	26.7	25.4	10.1	25.2	3.1
63 Degrees or Less	19.7	2.3	5.6	5.9	5.9	2.6	6.0	6.5
64 to 66 Degrees	16.6	1.4	4.1	5.5	5.5	1.7	4.7	6.3
67 to 69 Degrees	18.0	1.4	4.3	6.0	6.3	1.2	4.0	7.6
70 Degrees	14.8	1.8	5.0	4.3	3.7	2.2	5.2	6.7
71 to 73 Degrees	7.6	0.9	2.0	2.6	2.1	1.0	2.3	10.2
74 Degrees or More	8.2	1.4	2.5	2.4	2.0	1.5	3.0	9.4
Heat Turned Off	10.4	2.2	3.5	3.0	1.7	2.5	5.1	8.8
Unknown/No Answer	6.2	1.9	2.1	1.4	0.8	2.0	3.7	12.5
Winter Temperature During Sleeping Hours								
Heat is Turned On	89.1	9.9	24.9	28.0	26.3	10.9	27.0	3.0
63 Degrees or Less	16.4	2.0	4.7	4.7	5.0	2.2	5.2	7.3
64 to 66 Degrees	16.9	1.5	4.3	5.6	5.4	1.7	4.4	6.3
67 to 69 Degrees	19.6	1.6	4.9	6.0	7.1	1.6	5.2	7.0
70 Degrees	17.6	2.2	5.6	5.6	4.2	2.6	6.0	6.1
71 to 73 Degrees	8.4	0.8	2.3	3.0	2.3	0.8	2.4	9.7
74 Degrees or More	10.2	1.8	3.1	3.1	2.4	2.0	3.9	8.4
Heat Turned Off	7.3	1.7	2.6	1.9	1.0	1.9	3.9	10.5
Unknown/No Answer	5.1	1.7	1.6	1.2	0.6	1.8	3.2	13.7
Air-Conditioning								
Central Air-Conditioning Use								
Use a Central System	47.8	3.7	11.0	15.8	17.3	3.7	10.6	5.4
All Summer	24.6	1.7	6.0	7.8	9.1	1.8	5.4	7.4
Quite a Bit	10.4	0.8	2.0	3.4	4.2	0.8	2.1	10.2
Only a Few Times	12.4	1.2	2.8	4.3	4.0	1.1	3.0	10.4
Not at All	0.3	Q	Q	Q	Q	Q	Q	38.3
No Central System	53.7	9.6	18.1	15.4	10.6	10.9	23.5	3.5
Use of Set-Back/Clock Thermostat for Cooling								
Programming Features Used	5.0	Q	0.7	1.3	2.8	0.2	0.6	17.3
Only Manual Controls Used	13.5	1.1	3.4	4.2	4.8	1.2	3.3	10.8
Used Only for Heating	0.4	Q	Q	Q	0.2	Q	Q	38.1
Window Air-Conditioning Use								
Use Window Units	26.5	4.5	8.7	7.9	5.4	4.7	10.8	5.5
All Summer	5.7	1.2	2.0	1.3	1.2	1.3	2.7	10.6
Quite a Bit	6.6	0.9	1.8	2.5	1.4	1.0	2.2	10.9
Only a Few Times	13.5	2.3	4.7	4.0	2.5	2.4	5.5	7.4
Not at All	0.7	Q	0.2	0.2	0.2	Q	0.3	30.4
No Window Units	75.0	8.8	20.5	23.2	22.5	9.9	23.3	3.2
Hot Water								
Number of Showers/Baths Taken Each Week								
Fewer than 10	28.3	6.9	10.6	7.1	3.8	5.4	12.1	4.8
10 to 20	46.7	4.6	12.6	15.8	13.7	5.6	13.6	4.0
More than 20	26.4	1.8	5.9	8.3	10.4	3.6	8.3	5.2
Not Applicable	0.2	Q	Q	Q	Q	Q	Q	67.0

See footnotes at end of table.

**Table HC6-3a. Usage Indicators by Household Income,
Million U.S. Households, 1997 (Continued)**

Usage Indicators	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.5	1.6	1.0	0.9	1.0	1.4	1.0	
Hot Water (continued)								
Dishwasher Use Each Week								
Use a Dishwasher	50.9	2.1	10.3	16.7	21.8	2.5	9.1	5.2
Less Than 4 Times	28.7	1.5	6.8	9.9	10.4	1.6	5.4	6.6
4 to 6 Times	12.9	0.4	2.2	3.8	6.5	0.6	2.0	9.5
At Least Once Each Day	9.3	0.2	1.3	2.9	5.0	0.4	1.7	12.1
No Dishwasher	50.6	11.2	18.8	14.5	6.1	12.1	25.0	3.6
Loads of Laundry Washed Each Week								
Use a Clothes Washer	78.5	7.0	20.1	25.4	26.1	8.5	21.6	3.3
1 Load or Less	5.3	1.1	2.0	1.4	0.8	1.0	2.2	11.6
2 to 9 Loads	29.8	3.4	8.9	9.4	8.1	3.2	8.7	5.1
10 to 15 Loads	10.2	0.4	1.9	3.4	4.4	1.1	2.5	8.5
More than 15 Loads	3.3	0.2	0.7	0.9	1.6	0.4	1.0	15.2
No Washing Machine	22.9	6.3	9.0	5.8	1.8	6.2	12.5	6.2
Clothes Dryer Usage								
Use a Clothes Dryer	72.2	4.8	17.8	24.0	25.6	6.1	17.5	3.6
Every Time Clothes are Washed	57.1	3.8	13.4	18.8	21.1	4.7	13.3	4.2
Some, but not All, Loads	13.0	0.8	3.6	4.5	4.0	1.1	3.4	8.5
Used Infrequently	2.2	0.2	0.8	0.7	0.5	0.2	0.7	19.9
No Dryer	29.3	8.5	11.4	7.1	2.3	8.6	16.6	5.2
Cooking								
Number of Hot Meals Cooked in the Home								
3 or More Times a Day	7.0	1.6	2.4	1.8	1.2	2.2	4.0	9.0
2 Times a Day	25.7	3.8	8.2	7.5	6.1	4.7	10.2	5.2
Once a Day	42.2	4.4	10.9	13.7	13.1	4.7	12.2	4.6
A Few Times Each Week	20.4	2.4	5.5	6.2	6.3	2.4	5.6	6.7
About Once a Week	3.1	0.5	1.0	1.0	0.6	0.3	0.9	15.3
Less Than Once a Week	3.0	0.6	0.9	1.0	0.6	0.4	1.0	17.3
Conventional Oven Use								
More Than Once a Day	8.3	1.3	2.4	2.4	2.2	1.6	3.7	9.0
Once a Day	20.5	2.3	5.4	6.4	6.4	2.7	6.6	6.6
Between Once a Day and Once a Week	34.9	3.5	9.0	11.4	11.0	3.8	9.7	4.7
Once a Week	15.1	1.8	4.5	4.9	4.0	2.0	4.8	6.7
Less Than Once a Week	21.5	3.9	7.5	5.9	4.2	4.2	8.6	5.6
Amount of Food Cooked in Microwave Oven								
Use a Microwave Oven	84.2	8.0	23.7	27.0	25.5	9.3	24.5	3.2
Most or All	7.3	0.9	2.4	2.2	1.9	0.8	2.3	11.5
About Half	18.4	1.7	4.6	6.1	6.0	1.8	4.4	7.6
Some or Very Little	22.3	1.7	5.7	7.4	7.4	2.2	6.2	6.3
Only for Defrosting, Reheating, or Snacks	36.2	3.7	10.9	11.3	10.3	4.5	11.5	5.2
No Microwave Oven	17.3	5.3	5.5	4.1	2.4	5.3	9.5	6.8

See footnotes at end of table.

Table HC6-3a. Usage Indicators by Household Income, Million U.S. Households, 1997 (Continued)

Usage Indicators	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.5	1.6	1.0	0.9	1.0	1.4	1.0	
Lights								
Outdoor Lights on All Night								
Used	26.3	2.8	6.7	8.0	8.7	3.4	7.5	6.0
Not Used	75.2	10.5	22.4	23.1	19.2	11.2	26.6	3.0
Gas Fireplace Usage During Winter Months								
Use a Gas Fireplace	2.7	Q	0.3	0.8	1.4	Q	0.4	23.4
Most Days	1.1	Q	Q	0.3	0.6	Q	Q	25.1
Almost Once a Week	0.7	Q	Q	0.2	0.4	Q	Q	29.3
Less Than 4 Times a Month	0.8	Q	Q	Q	0.4	Q	Q	40.4
Personal Computer Usage	35.6	1.3	4.8	11.5	18.0	1.9	5.4	5.6
Hours PC Turned On Each Week								
Less Than 2 Hours	8.2	0.4	1.2	3.1	3.5	0.5	1.4	10.8
2 to 15 Hours	17.4	0.5	2.3	5.7	8.9	0.8	2.3	8.4
16 to 40 Hours	6.7	0.4	0.9	1.8	3.5	0.5	1.4	12.9
On All The Time	3.3	Q	0.3	0.9	2.1	0.1	0.3	18.7
Use of PCs Turned on 16 Hours a Week or More								
Personal Use Only	4.8	0.3	0.7	1.3	2.5	0.4	1.0	15.0
Business Use Only	2.1	Q	Q	0.4	1.4	Q	0.3	21.6
Both Personal and Business	3.1	Q	0.4	1.0	1.7	Q	0.5	19.0
Business Use of PCs Turned on 16 Hours a Week or More								
Use to Telecommute	2.1	Q	0.2	0.6	1.2	Q	0.2	21.6
Other Business Use	3.1	Q	0.3	0.8	1.8	Q	0.5	20.6
Battery Operated Appliances/Tools								
Use Battery Operated Appliances/Tools								
How Maintained When Not in Use	44.4	2.0	9.3	15.1	17.9	2.8	8.8	4.8
Plugged in All The Time	12.5	0.5	2.7	4.2	5.1	0.7	2.3	9.0
Recharged As Needed	27.0	1.2	5.9	9.4	10.5	1.8	5.6	6.4
Both Ways are Used	4.9	0.3	0.8	1.5	2.3	0.3	0.9	13.5
Don't Use Any	57.1	11.3	19.8	16.0	10.0	11.9	25.3	3.2

¹ Below 150 percent of poverty line or 60 percent of median State income.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding column and row factors. • Because of rounding, data may not sum to totals. • See "Glossary" for definition of terms used in this report. • All temperatures listed are in degrees Fahrenheit.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC6-4a. Usage Indicators by Type of Housing Unit,
Million U.S. Households, 1997**

Usage Indicators	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.4	0.5	1.9	1.4	1.9	
Total	101.5	73.7	5.6	15.8	6.3	3.8
Weekday Home Activities						
Home Used for Business						
Yes	7.4	6.1	Q	0.9	0.3	15.2
No	94.1	67.6	5.5	14.9	6.1	3.9
Energy-Intensive Activity						
Yes	2.4	2.0	Q	0.3	Q	22.9
No	99.1	71.8	5.6	15.6	6.2	3.9
Someone Home All Day						
Yes	51.3	38.9	2.8	6.4	3.2	5.2
No	50.1	34.8	2.8	9.4	3.2	4.6
Heating						
Thermostat Available During Heating Season						
Yes	86.0	65.4	4.5	10.7	5.4	4.6
No	14.7	8.0	1.1	4.8	0.8	9.8
Do Not Heat Home	0.8	0.4	Q	0.3	Q	42.0
Set-Back or Clock Thermostat in Home						
Yes	44.9	34.5	2.2	5.2	3.0	8.1
No	56.6	39.2	3.5	10.6	3.3	6.1
Use of Set-Back/Clock Thermostat for Heating						
Programming Features Used	11.7	10.3	0.3	0.5	0.5	12.9
Only Manual Controls Used	33.2	24.2	1.8	4.7	2.5	9.4
Winter Temperature Settings						
Lower When No One Home						
Yes	45.5	34.9	2.2	5.6	2.9	5.3
No	56.0	38.9	3.5	10.2	3.5	4.6
Lower During Sleeping Hours						
Yes	47.4	36.9	2.3	5.3	2.9	5.4
No	54.0	36.9	3.3	10.5	3.4	4.9
Daytime Winter Temperature When Someone is at Home						
Heat is Turned On	93.9	70.3	5.1	12.6	5.9	4.1
63 Degrees or Less	3.8	2.6	0.2	0.8	0.2	16.8
64 to 66 Degrees	8.3	5.9	0.5	1.3	0.6	11.0
67 to 69 Degrees	23.4	19.4	0.9	2.1	1.0	7.7
70 Degrees	25.6	19.1	1.4	3.3	1.8	6.8
71 to 73 Degrees	14.7	11.4	0.8	1.5	1.1	8.8
74 Degrees or More	18.1	11.9	1.3	3.6	1.3	8.1
Heat Turned Off	2.1	1.1	Q	0.8	Q	26.8
Unknown/No Answer	5.5	2.3	0.4	2.4	0.3	16.4

See footnotes at end of table.

**Table HC6-4a. Usage Indicators by Type of Housing Unit,
Million U.S. Households, 1997 (Continued)**

Usage Indicators	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.4	0.5	1.9	1.4	1.9	
Daytime Winter Temperature When No One is at Home						
Heat is Turned On	84.9	64.5	4.4	10.9	5.1	4.4
63 Degrees or Less	19.7	15.0	1.1	2.4	1.3	8.0
64 to 66 Degrees	16.6	12.9	0.8	1.8	1.1	8.2
67 to 69 Degrees	18.0	14.8	0.7	1.9	0.7	8.7
70 Degrees	14.8	10.9	0.7	2.1	1.0	9.1
71 to 73 Degrees	7.6	5.7	0.5	0.8	0.5	11.8
74 Degrees or More	8.2	5.3	0.6	1.8	0.5	11.9
Heat Turned Off	10.4	6.3	0.7	2.5	0.8	11.8
Unknown/No Answer	6.2	2.9	0.6	2.4	0.3	14.9
Winter Temperature During Sleeping Hours						
Heat is Turned On	89.1	67.3	4.7	11.7	5.4	4.3
63 Degrees or Less	16.4	13.0	0.7	1.8	1.0	8.9
64 to 66 Degrees	16.9	13.1	0.8	1.9	1.1	8.3
67 to 69 Degrees	19.6	15.9	0.8	1.9	1.0	8.2
70 Degrees	17.6	12.7	1.2	2.5	1.2	8.2
71 to 73 Degrees	8.4	6.2	0.5	1.1	0.6	10.5
74 Degrees or More	10.2	6.4	0.7	2.5	0.7	11.8
Heat Turned Off	7.3	4.4	0.5	1.7	0.7	14.0
Unknown/No Answer	5.1	2.1	0.4	2.3	0.2	17.3
Air-Conditioning						
Central Air-Conditioning Use						
Use a Central System	47.8	37.0	1.6	6.6	2.6	7.0
All Summer	24.6	19.4	0.6	3.2	1.5	9.2
Quite a Bit	10.4	7.9	0.6	1.3	0.6	12.1
Only a Few Times	12.4	9.4	0.4	2.0	0.5	13.4
Not at All	0.3	0.2	Q	Q	Q	55.9
No Central System	53.7	36.8	4.0	9.2	3.7	5.3
Use of Set-Back/Clock Thermostat for Cooling						
Programming Features Used	5.0	4.4	Q	0.3	0.2	19.7
Only Manual Controls Used	13.5	10.3	0.4	2.0	0.8	13.8
Used Only for Heating	0.4	0.3	Q	Q	Q	54.8
Window Air-Conditioning Use						
Use Window Units	26.5	18.0	1.9	4.6	1.9	7.5
All Summer	5.7	3.9	0.2	0.9	0.6	13.6
Quite a Bit	6.6	4.6	0.4	1.1	0.5	11.7
Only a Few Times	13.5	9.1	1.1	2.4	0.8	9.8
Not at All	0.7	0.5	Q	Q	Q	41.5
No Window Units	75.0	55.7	3.7	11.2	4.4	4.4
Hot Water						
Number of Showers/Baths Taken Each Week						
Fewer than 10	28.3	18.2	2.0	6.1	1.9	6.1
10 to 20	46.7	34.7	2.4	6.6	2.9	4.7
More than 20	26.4	20.7	1.2	3.0	1.5	6.9
Not Applicable	0.2	Q	Q	Q	Q	84.0

See footnotes at end of table.

**Table HC6-4a. Usage Indicators by Type of Housing Unit,
Million U.S. Households, 1997 (Continued)**

Usage Indicators	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.4	0.5	1.9	1.4	1.9	
Hot Water (continued)						
Dishwasher Use						
Each Week						
Use a Dishwasher	50.9	41.7	1.0	6.3	1.8	6.7
Less Than 4 Times	28.7	22.0	0.7	4.7	1.3	8.3
4 to 6 Times	12.9	11.4	0.1	1.0	0.3	11.7
At Least Once Each Day	9.3	8.3	Q	0.6	0.2	14.1
No Dishwasher	50.6	32.0	4.6	9.5	4.5	5.1
Loads of Laundry						
Washed Each Week						
Use a Clothes Washer	78.5	68.0	2.2	3.4	5.0	4.9
1 Load or Less	5.3	4.4	0.3	0.3	0.3	17.2
2 to 9 Loads	29.8	25.1	0.9	1.9	1.9	7.8
10 to 15 Loads	10.2	9.1	0.3	0.2	0.6	12.4
More than 15 Loads	3.3	3.0	Q	Q	0.2	16.8
No Washing Machine	22.9	5.8	3.4	12.4	1.3	7.5
Clothes Dryer Usage						
Use a Clothes Dryer	72.2	63.3	1.6	2.8	4.5	5.5
Every Time Clothes are Washed	57.1	49.7	1.3	2.5	3.5	6.6
Some, but not All, Loads	13.0	11.5	0.3	0.2	0.9	11.8
Used Infrequently	2.2	2.0	Q	Q	Q	21.8
No Dryer	29.3	10.5	4.0	13.0	1.8	6.5
Cooking						
Number of Hot Meals						
Cooked in the Home						
3 or More Times a Day	7.0	4.7	0.5	1.3	0.5	11.5
2 Times a Day	25.7	19.0	1.1	3.8	1.8	7.1
Once a Day	42.2	31.6	2.1	5.8	2.6	5.5
A Few Times Each Week	20.4	14.8	1.2	3.5	0.8	8.2
About Once a Week	3.1	1.8	0.5	0.6	0.3	15.4
Less Than Once a Week	3.0	1.9	0.2	0.6	0.3	18.1
Conventional Oven Use						
More Than Once a Day	8.3	6.0	0.5	1.2	0.5	10.7
Once a Day	20.5	15.7	1.0	2.6	1.2	7.9
Between Once a Day						
and Once a Week	34.9	26.8	1.6	4.7	1.8	5.8
Once a Week	15.1	10.9	0.8	2.5	1.0	7.9
Less Than Once a Week	21.5	13.4	1.7	4.6	1.8	6.5
Amount of Food Cooked						
in Microwave Oven						
Use a Microwave Oven	84.2	63.9	3.8	11.3	5.1	4.4
Most or All	7.3	5.0	0.3	1.6	0.4	13.2
About Half	18.4	14.0	0.6	2.7	1.1	8.2
Some or Very Little	22.3	17.1	0.8	3.1	1.3	8.7
Only for Defrosting,						
Reheating, or Snacks	36.2	27.8	2.0	4.0	2.3	6.7
No Microwave Oven	17.3	9.8	1.8	4.5	1.2	8.2

See footnotes at end of table.

**Table HC6-4a. Usage Indicators by Type of Housing Unit,
Million U.S. Households, 1997 (Continued)**

Usage Indicators	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.4	0.5	1.9	1.4	1.9	
Lights						
Outdoor Lights on All Night						
Used	26.3	21.3	0.9	2.4	1.7	8.0
Not Used	75.2	52.4	4.7	13.4	4.6	4.1
Gas Fireplace Usage During Winter Months						
Use a Gas Fireplace	2.7	2.7	Q	Q	Q	28.7
Most Days	1.1	1.1	Q	Q	Q	33.8
Almost Once a Week	0.7	0.7	Q	Q	Q	43.1
Less Than 4 Times a Month	0.8	0.8	Q	Q	Q	65.6
Personal Computer Usage	35.6	29.2	1.2	4.2	1.0	6.2
Hours PC Turned On Each Week						
Less Than 2 Hours	8.2	7.0	0.2	0.8	0.2	13.7
2 to 15 Hours	17.4	14.4	0.6	1.9	0.5	9.0
16 to 40 Hours	6.7	5.3	0.3	0.9	0.2	13.9
On All The Time	3.3	2.6	Q	0.6	Q	17.9
Use of PCs Turned on 16 Hours a Week or More						
Personal Use Only	4.8	3.7	0.3	0.6	0.2	15.3
Business Use Only	2.1	1.7	Q	0.3	Q	23.7
Both Personal and Business	3.1	2.4	Q	0.6	Q	20.5
Business Use of PCs Turned on 16 Hours a Week or More						
Use to Telecommute	2.1	1.6	Q	0.5	Q	21.1
Other Business Use	3.1	2.6	Q	0.4	Q	22.6
Battery Operated Appliances/Tools						
Use Battery Operated						
Appliances/Tools	44.4	37.6	1.1	3.5	2.1	5.3
How Maintained When						
Not in Use						
Plugged in All The Time	12.5	10.4	0.3	1.1	0.7	10.5
Recharged As Needed	27.0	22.7	0.8	2.1	1.4	6.6
Both Ways are Used	4.9	4.5	Q	0.3	Q	18.6
Don't Use Any	57.1	36.1	4.5	12.3	4.2	4.5

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding column and row factors. • Because of rounding, data may not sum to totals. • See "Glossary" for definition of terms used in this report. • All temperatures listed are in degrees Fahrenheit.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC6-13a. Usage Indicators by Census Region,
Million U.S. Households, 1997**

Usage Indicators	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.3	1.1	1.0	1.2	
Total	101.5	19.7	24.1	35.9	21.8	NF
Weekday Home Activities						
Home Used for Business						
Yes	7.4	1.4	1.7	2.2	2.0	11.4
No	94.1	18.3	22.3	33.7	19.8	1.1
Energy-Intensive Activity						
Yes	2.4	0.4	0.6	0.7	0.7	16.9
No	99.1	19.4	23.4	35.1	21.2	NF
Someone Home All Day						
Yes	51.3	10.4	11.6	18.2	11.1	2.6
No	50.1	9.3	12.5	17.7	10.7	2.7
Heating						
Thermostat Available During Heating Season						
Yes	86.0	16.1	21.9	30.3	17.7	1.4
No	14.7	3.6	2.1	5.3	3.7	8.6
Do Not Heat Home	0.8	Q	Q	0.3	0.5	25.4
Set-Back or Clock Thermostat in Home						
Yes	44.9	7.4	10.3	15.8	11.4	6.4
No	56.6	12.4	13.7	20.1	10.4	5.0
Use of Set-Back/Clock Thermostat for Heating						
Programming Features Used	11.7	2.2	3.2	3.1	3.2	9.8
Only Manual Controls Used	33.2	5.2	7.2	12.6	8.2	8.8
Winter Temperature Settings						
Lower When No One Home						
Yes	45.5	8.0	10.0	15.3	12.3	3.2
No	56.0	11.8	14.1	20.6	9.6	2.6
Lower During Sleeping Hours						
Yes	47.4	8.2	9.7	16.3	13.2	3.2
No	54.0	11.5	14.4	19.6	8.6	2.9
Daytime Winter Temperature When Someone is at Home						
Heat is Turned On	93.9	18.2	23.2	33.0	19.4	1.1
63 Degrees or Less	3.8	1.1	0.7	0.8	1.2	15.2
64 to 66 Degrees	8.3	2.2	1.5	2.0	2.6	8.3
67 to 69 Degrees	23.4	6.0	6.3	6.5	4.6	4.5
70 Degrees	25.6	4.9	6.2	8.8	5.7	4.7
71 to 73 Degrees	14.7	2.1	5.0	5.4	2.3	6.1
74 Degrees or More	18.1	2.0	3.5	9.6	3.0	7.0
Heat Turned Off	2.1	Q	Q	0.8	1.3	19.0
Unknown/No Answer	5.5	1.4	0.9	2.0	1.2	15.3

See footnotes at end of table.

**Table HC6-13a. Usage Indicators by Census Region,
Million U.S. Households, 1997 (Continued)**

Usage Indicators	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.3	1.1	1.0	1.2	
Daytime Winter Temperature When No One is at Home						
Heat is Turned On	84.9	18.0	22.9	28.7	15.4	1.5
63 Degrees or Less	19.7	4.6	4.3	5.9	4.9	6.5
64 to 66 Degrees	16.6	3.9	4.3	4.6	3.7	4.9
67 to 69 Degrees	18.0	4.2	5.2	5.9	2.7	6.3
70 Degrees	14.8	3.0	4.0	5.6	2.3	5.9
71 to 73 Degrees	7.6	1.2	3.1	2.5	0.8	10.0
74 Degrees or More	8.2	1.0	2.0	4.3	1.0	10.3
Heat Turned Off	10.4	0.2	0.2	4.9	5.1	11.6
Unknown/No Answer	6.2	1.5	1.0	2.3	1.3	13.6
Winter Temperature During Sleeping Hours						
Heat is Turned On	89.1	18.1	23.2	31.4	16.4	1.3
63 Degrees or Less	16.4	4.1	3.0	4.5	4.8	7.1
64 to 66 Degrees	16.9	3.9	4.2	5.0	3.8	4.6
67 to 69 Degrees	19.6	4.5	5.7	6.4	2.9	6.0
70 Degrees	17.6	3.3	4.7	6.8	2.8	5.7
71 to 73 Degrees	8.4	1.1	3.2	3.2	0.9	9.9
74 Degrees or More	10.2	1.2	2.4	5.4	1.2	10.5
Heat Turned Off	7.3	0.1	Q	2.7	4.4	11.8
Unknown/No Answer	5.1	1.4	0.8	1.8	1.0	15.9
Air-Conditioning						
Central Air-Conditioning Use						
Use a Central System	47.8	4.4	12.4	25.0	6.0	5.0
All Summer	24.6	1.4	4.1	17.2	2.0	7.2
Quite a Bit	10.4	1.1	3.6	4.3	1.5	10.0
Only a Few Times	12.4	1.9	4.6	3.4	2.4	10.2
Not at All	0.3	Q	Q	Q	0.2	30.0
No Central System	53.7	15.3	11.7	10.9	15.8	3.8
Use of Set-Back/Clock Thermostat for Cooling						
Programming Features Used	5.0	0.6	1.4	2.2	0.7	14.4
Only Manual Controls Used	13.5	0.9	2.5	8.8	1.3	13.2
Used Only for Heating	0.4	Q	Q	Q	Q	38.0
Window Air-Conditioning Use						
Use Window Units	26.5	8.2	6.6	8.7	3.0	6.4
All Summer	5.7	0.8	0.9	3.4	0.5	12.4
Quite a Bit	6.6	1.8	1.9	2.3	0.7	10.1
Only a Few Times	13.5	5.3	3.5	3.0	1.8	7.8
Not at All	0.7	0.3	0.2	Q	Q	23.6
No Window Units	75.0	11.6	17.5	27.2	18.8	2.2
Hot Water						
Number of Showers/Baths Taken Each Week						
Fewer than 10	28.3	5.8	7.4	9.1	6.1	3.8
10 to 20	46.7	9.2	10.9	16.2	10.5	2.5
More than 20	26.4	4.7	5.8	10.6	5.2	4.4
Not Applicable	0.2	Q	Q	Q	Q	59.1

See footnotes at end of table.

**Table HC6-13a. Usage Indicators by Census Region,
Million U.S. Households, 1997 (Continued)**

Usage Indicators	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.3	1.1	1.0	1.2	
Hot Water (continued)						
Dishwasher Use						
Each Week						
Use a Dishwasher	50.9	9.6	11.3	18.5	11.6	3.5
Less Than 4 Times	28.7	5.5	6.0	10.8	6.4	5.0
4 to 6 Times	12.9	2.4	3.2	4.2	3.1	6.8
At Least Once Each Day	9.3	1.7	2.1	3.5	2.0	9.4
No Dishwasher	50.6	10.2	12.8	17.4	10.2	3.5
Loads of Laundry						
Washed Each Week						
Use a Clothes Washer	78.5	15.0	19.0	29.4	15.2	2.0
1 Load or Less	5.3	1.3	1.0	1.8	1.1	12.3
2 to 9 Loads	29.8	6.2	6.1	11.8	5.7	3.6
10 to 15 Loads	10.2	1.9	3.1	3.6	1.7	7.9
More than 15 Loads	3.3	0.7	1.0	1.2	0.5	12.9
No Washing Machine	22.9	4.7	5.1	6.5	6.6	6.8
Clothes Dryer Usage						
Use a Clothes Dryer	72.2	13.2	18.2	26.6	14.2	2.2
Every Time Clothes are Washed	57.1	9.3	14.0	22.4	11.3	3.2
Some, but not All, Loads	13.0	3.2	3.8	3.6	2.4	7.6
Used Infrequently	2.2	0.7	0.4	0.6	0.5	16.0
No Dryer	29.3	6.6	5.8	9.3	7.6	5.4
Cooking						
Number of Hot Meals						
Cooked in the Home						
3 or More Times a Day	7.0	1.3	1.3	2.6	1.9	8.9
2 Times a Day	25.7	4.1	6.2	9.3	6.1	5.0
Once a Day	42.2	9.0	10.8	13.3	9.1	3.4
A Few Times Each Week	20.4	3.7	4.6	8.3	3.8	5.9
About Once a Week	3.1	0.8	0.7	1.2	0.4	12.8
Less Than Once a Week	3.0	0.7	0.5	1.2	0.6	17.2
Conventional Oven Use						
More Than Once a Day	8.3	1.3	1.7	3.7	1.5	9.7
Once a Day	20.5	3.9	4.8	8.4	3.5	5.6
Between Once a Day and Once a Week	34.9	6.4	9.1	11.8	7.5	3.5
Once a Week	15.1	3.3	3.2	5.6	3.0	5.1
Less Than Once a Week	21.5	4.8	4.9	5.9	5.9	4.8
Amount of Food Cooked in Microwave Oven						
Use a Microwave Oven	84.2	15.5	20.9	29.6	18.2	1.5
Most or All	7.3	1.3	1.7	2.6	1.7	10.9
About Half	18.4	2.8	4.6	6.4	4.6	5.9
Some or Very Little	22.3	4.0	6.0	7.2	5.1	5.9
Only for Defrosting, Reheating, or Snacks	36.2	7.4	8.6	13.5	6.7	4.7
No Microwave Oven	17.3	4.2	3.1	6.3	3.6	7.6

See footnotes at end of table.

**Table HC6-13a. Usage Indicators by Census Region,
Million U.S. Households, 1997 (Continued)**

Usage Indicators	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.3	1.1	1.0	1.2	
Lights						
Outdoor Lights on All Night						
Used	26.3	3.5	6.3	11.0	5.5	5.8
Not Used	75.2	16.2	17.8	24.8	16.4	1.9
Gas Fireplace Usage During Winter Months						
Use a Gas Fireplace	2.7	Q	0.9	1.2	0.4	21.8
Most Days	1.1	Q	0.4	0.5	0.2	24.8
Almost Once a Week	0.7	Q	Q	0.4	Q	33.0
Less Than 4 Times a Month	0.8	Q	Q	0.4	Q	40.2
Personal Computer Usage	35.6	6.3	9.1	11.1	9.0	4.1
Hours PC Turned On Each Week						
Less Than 2 Hours	8.2	1.5	2.3	2.6	1.8	8.0
2 to 15 Hours	17.4	2.8	4.3	5.7	4.6	5.9
16 to 40 Hours	6.7	1.6	1.8	1.6	1.7	9.2
On All The Time	3.3	0.5	0.7	1.3	0.9	14.3
Use of PCs Turned on 16 Hours a Week or More						
Personal Use Only	4.8	0.9	1.2	1.5	1.2	12.2
Business Use Only	2.1	0.5	0.6	0.4	0.7	19.1
Both Personal and Business	3.1	0.7	0.6	1.0	0.8	15.7
Business Use of PCs Turned on 16 Hours a Week or More						
Use to Telecommute	2.1	0.5	0.4	0.4	0.8	17.4
Other Business Use	3.1	0.7	0.8	0.9	0.7	16.8
Battery Operated Appliances/Tools						
Use Battery Operated Appliances/Tools	44.4	8.5	11.2	15.0	9.7	3.1
How Maintained When Not in Use						
Plugged in All The Time	12.5	2.4	3.3	4.5	2.3	7.1
Recharged As Needed	27.0	5.3	6.9	9.0	5.8	4.2
Both Ways are Used	4.9	0.8	1.0	1.5	1.6	10.2
Don't Use Any	57.1	11.2	12.9	20.9	12.1	2.5

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding column and row factors. • Because of rounding, data may not sum to totals. • See "Glossary" for definition of terms used in this report. • All temperatures listed are in degrees Fahrenheit.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

Home Office Equipment Tables

Table HC7-2a. Home Office Equipment by Year of Construction, Million U.S. Households, 1997

Home Office Equipment	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.6	1.1	1.0	1.1	1.3	0.9	
Total	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.1
Households Using Office Equipment	80.5	8.5	14.8	15.7	11.6	9.5	20.4	4.5
Personal Computers	35.6	4.9	7.3	7.2	4.8	3.5	7.9	6.3
Number of PCs								
1	29.6	4.0	5.9	6.0	4.1	2.9	6.6	6.9
2 or more	5.9	0.9	1.4	1.2	0.6	0.5	1.3	14.4
Modem Connecting PC to Telephone Line	20.7	3.0	4.8	4.1	2.9	1.9	4.0	8.0
PC Uses a Laser Printer	12.6	2.3	3.2	2.2	1.4	1.0	2.5	9.7
Hours PCs Turned On Each Week								
Less than 2 hours	8.2	0.9	1.2	1.8	1.3	0.8	2.3	11.6
2 to 15 hours	17.4	2.6	3.9	3.6	2.1	1.8	3.3	8.4
16 to 40 hours	6.7	0.9	1.4	1.2	0.9	0.6	1.7	13.0
On All the time	3.3	0.5	0.8	0.7	0.5	0.3	0.5	18.3
How PC is Used								
15 hours a Week or Less	25.6	3.5	5.1	5.3	3.4	2.6	5.7	7.2
16 hours a Week or More	10.0	1.4	2.2	1.9	1.4	0.9	2.2	11.1
Personal Use Only	4.8	0.6	0.9	1.0	0.7	0.4	1.1	14.9
Business Use Only	2.1	0.5	0.4	0.3	0.3	0.2	0.4	24.0
Both Personal and Business	3.1	0.3	0.9	0.7	0.4	0.2	0.7	19.9
Business Use of PC								
Other Business Use	3.1	0.5	0.7	0.5	0.4	0.3	0.7	20.6
Used for Telecommuting	2.1	0.3	0.5	0.4	0.3	Q	0.4	21.9
1 to 4 Days per Week	1.1	Q	0.2	0.2	Q	Q	0.2	29.0
5 to 7 Days per Week	1.0	Q	0.3	Q	Q	Q	0.2	31.1
Other Office Equipment								
Cordless Telephone	62.3	6.9	11.9	11.9	8.6	7.4	15.7	4.5
Facsimile Machine	6.3	1.4	1.5	1.2	0.7	0.5	1.1	15.6
Photocopier	3.8	0.7	0.8	0.6	0.5	0.3	0.8	16.5
Telephone Answering Machine	59.3	6.5	11.3	12.1	8.6	6.6	14.2	4.9

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

Table HC7-3a. Home Office Equipment by Household Income, Million U.S. Households, 1997

Home Office Equipment	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.4	2.0	1.2	0.7	0.6	1.7	1.2	
Total	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.6
Households Using Office Equipment	80.5	6.5	20.8	26.7	26.6	7.8	21.0	3.1
Personal Computers	35.6	1.3	4.8	11.5	18.0	1.9	5.4	5.6
Number of PCs								
1	29.6	1.1	4.2	10.2	14.1	1.5	4.7	6.1
2 or more	5.9	Q	0.6	1.3	3.9	0.4	0.7	16.5
Modem Connecting PC to Telephone Line	20.7	0.7	2.5	6.1	11.4	0.9	2.6	8.6
PC Uses a Laser Printer	12.6	0.3	1.3	4.0	7.0	0.5	1.5	10.2
Hours PCs Turned On Each Week								
Less than 2 hours	8.2	0.4	1.2	3.1	3.5	0.5	1.4	10.8
2 to 15 hours	17.4	0.5	2.3	5.7	8.9	0.8	2.3	8.4
16 to 40 hours	6.7	0.4	0.9	1.8	3.5	0.5	1.4	12.9
On All the time	3.3	Q	0.3	0.9	2.1	0.1	0.3	19.5
How PC is Used								
15 hours a Week or Less	25.6	0.8	3.6	8.8	12.4	1.3	3.7	6.7
16 hours a Week or More	10.0	0.5	1.2	2.7	5.6	0.6	1.7	11.5
Personal Use Only	4.8	0.3	0.7	1.3	2.5	0.4	1.0	15.0
Business Use Only	2.1	Q	Q	0.4	1.4	Q	0.3	25.2
Both Personal and Business	3.1	Q	0.4	1.0	1.7	Q	0.5	20.7
Business Use of PC								
Other Business Use	3.1	Q	0.3	0.8	1.8	Q	0.5	22.5
Used for Telecommuting	2.1	Q	0.2	0.6	1.2	Q	0.2	23.5
1 to 4 Days per Week	1.1	Q	Q	0.2	0.8	Q	Q	28.9
5 to 7 Days per Week	1.0	Q	Q	0.4	0.5	Q	Q	34.7
Other Office Equipment								
Cordless Telephone	62.3	4.7	15.0	20.8	21.7	5.8	15.5	3.3
Facsimile Machine	6.3	Q	0.7	1.7	3.7	Q	0.7	16.1
Photocopier	3.8	Q	0.4	1.2	2.0	Q	0.5	18.0
Telephone Answering Machine	59.3	4.0	14.3	19.4	21.6	4.7	13.3	3.8

¹ Below 150 percent of poverty line or 60 percent of median State income.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC7-4a. Home Office Equipment by Type of Housing Unit,
Million U.S. Households, 1997**

Home Office Equipment	Total	Type of Housing Unit				RSE Row Factors
		Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.4	0.5	2.0	1.3	2.2	
Total	101.5	73.7	5.6	15.8	6.3	3.8
Households Using Office Equipment	80.5	61.3	3.8	11.0	4.5	4.2
Personal Computers	35.6	29.2	1.2	4.2	1.0	6.2
Number of PCs						
1	29.6	24.1	1.0	3.7	0.9	6.9
2 or more	5.9	5.2	0.2	0.5	Q	16.2
Modem Connecting PC to Telephone Line	20.7	16.6	0.7	2.9	0.5	8.2
PC Uses a Laser Printer	12.6	10.7	0.5	1.2	0.3	11.6
Hours PCs Turned On Each Week						
Less than 2 hours	8.2	7.0	0.2	0.8	0.2	13.7
2 to 15 hours	17.4	14.4	0.6	1.9	0.5	9.0
16 to 40 hours	6.7	5.3	0.3	0.9	0.2	13.9
On All the time	3.3	2.6	Q	0.6	Q	19.3
How PC is Used						
15 hours a Week or Less	25.6	21.4	0.8	2.7	0.7	7.4
16 hours a Week or More	10.0	7.9	0.4	1.5	0.3	12.1
Personal Use Only	4.8	3.7	0.3	0.6	0.2	15.3
Business Use Only	2.1	1.7	Q	0.3	Q	25.6
Both Personal and Business	3.1	2.4	Q	0.6	Q	22.1
Business Use of PC						
Other Business Use	3.1	2.6	Q	0.4	Q	24.4
Used for Telecommuting	2.1	1.6	Q	0.5	Q	22.8
1 to 4 Days per Week	1.1	0.8	Q	0.2	Q	31.6
5 to 7 Days per Week	1.0	0.7	Q	0.3	Q	34.9
Other Office Equipment						
Cordless Telephone	62.3	48.6	2.9	7.5	3.3	4.2
Facsimile Machine	6.3	5.3	Q	0.8	0.2	17.6
Photocopier	3.8	3.4	Q	0.2	0.1	19.9
Telephone Answering Machine	59.3	45.8	2.8	7.9	2.8	4.6

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

**Table HC7-13a. Home Office Equipment by Census Region,
Million U.S. Households, 1997**

Home Office Equipment	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.3	1.1	1.1	1.1	
Total	101.5	19.7	24.1	35.9	21.8	NF
Households Using Office Equipment	80.5	15.6	19.8	27.5	17.5	1.3
Personal Computers	35.6	6.3	9.1	11.1	9.0	4.1
Number of PCs						
1	29.6	5.4	7.8	9.3	7.2	4.9
2 or more	5.9	0.9	1.3	1.8	1.8	10.7
Modem Connecting PC to Telephone Line	20.7	3.5	5.2	6.5	5.4	6.3
PC Uses a Laser Printer	12.6	2.2	3.1	4.2	3.1	7.9
Hours PCs Turned On Each Week						
Less than 2 hours	8.2	1.5	2.3	2.6	1.8	8.0
2 to 15 hours	17.4	2.8	4.3	5.7	4.6	5.9
16 to 40 hours	6.7	1.6	1.8	1.6	1.7	9.2
On All the time	3.3	0.5	0.7	1.3	0.9	14.3
How PC is Used						
15 hours a Week or Less	25.6	4.2	6.7	8.3	6.4	4.8
16 hours a Week or More	10.0	2.1	2.5	2.9	2.6	8.7
Personal Use Only	4.8	0.9	1.2	1.5	1.2	12.2
Business Use Only	2.1	0.5	0.6	0.4	0.7	19.1
Both Personal and Business	3.1	0.7	0.6	1.0	0.8	15.7
Business Use of PC						
Other Business Use	3.1	0.7	0.8	0.9	0.7	16.8
Used for Telecommuting	2.1	0.5	0.4	0.4	0.8	17.4
1 to 4 Days per Week	1.1	0.2	Q	0.2	0.4	21.1
5 to 7 Days per Week	1.0	0.2	0.2	0.2	0.3	27.7
Other Office Equipment						
Cordless Telephone	62.3	11.8	15.3	22.0	13.1	2.0
Facsimile Machine	6.3	1.3	1.3	2.0	1.8	13.4
Photocopier	3.8	0.8	0.9	1.3	0.9	13.6
Telephone Answering Machine	59.3	12.3	14.7	19.4	12.9	2.5

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

Consumption and Expenditures Tables

Total Consumption Tables

**Table CE1-2c. Total Energy Consumption in U.S. Households
by Year of Construction, 1997**

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.8	1.3	1.0	1.1	1.1	0.8	
Million Households								
Total U.S. Households	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.2
Number of Households, Fuels Used (more than one may apply):								
Electricity ²	101.4	9.7	17.3	19.6	14.4	12.5	27.9	4.2
Natural Gas	61.9	5.2	7.5	9.5	9.6	9.2	20.9	6.1
Fuel Oil	10.0	0.3	0.6	1.0	1.5	1.5	5.0	14.6
Kerosene	3.5	0.2	0.5	0.8	0.4	0.3	1.4	18.4
LPG	8.1	0.9	1.2	1.7	1.1	0.7	2.5	14.0
Wood	15.0	1.6	3.7	3.4	2.2	1.4	2.8	9.8
Quadrillion Btu								
Total Btu Consumption, Fuels Used:								
Electricity								
Primary	10.72	1.25	2.23	2.42	1.41	1.17	2.23	4.5
Site	3.54	0.41	0.74	0.80	0.47	0.39	0.74	4.5
Natural Gas	5.28	0.43	0.56	0.74	0.73	0.77	2.05	7.3
Fuel Oil	1.01	0.03	0.06	0.09	0.14	0.15	0.54	16.8
Kerosene	0.06	(*)	0.01	0.01	0.01	(*)	0.03	30.5
LPG	0.36	0.04	0.05	0.07	0.04	0.02	0.13	16.9
Wood	0.43	0.03	0.08	0.08	0.06	0.03	0.15	15.0
Total (excludes primary electricity and wood)	10.25	0.92	1.41	1.71	1.39	1.33	3.48	4.5
Physical Units								
Physical Units of Total Consumption, Fuels Used:								
Electricity (billion kWh)	1,037	121	215	234	137	113	216	4.5
Natural Gas (billion cf)	5,143	418	545	724	712	747	1,998	7.3
Fuel Oil (million gallons)	7,273	214	439	657	1,001	1,093	3,869	16.7
Kerosene (million gallons)	437	26	53	83	45	30	200	30.5
LPG (million gallons)	3,937	465	556	716	492	249	1,460	16.9
Wood (million cords)	21.4	1.5	3.8	4.1	2.9	1.5	7.5	15.0
Million Btu per Household³								
Total Btu Consumption per Household, Fuels Used:								
Electricity								
Primary	105.6	129.3	128.7	123.8	97.8	93.4	80.0	2.7
Site	34.9	42.7	42.5	40.9	32.3	30.8	26.4	2.7
Natural Gas	85.3	82.1	74.2	78.5	76.1	83.6	98.2	3.6
Fuel Oil	101.2	98.1	103.2	88.4	89.6	99.7	107.9	7.1
Kerosene	17.0	19.7	14.2	14.9	15.5	14.3	19.7	26.5
LPG	44.6	48.3	43.6	38.6	40.9	31.0	53.3	10.2
Wood	28.5	18.9	21.0	23.9	26.8	23.1	53.2	12.4
Total (excludes primary electricity and wood)	101.0	94.6	81.7	87.4	96.0	106.1	124.8	2.4

See footnotes at end of table.

Table CE1-2c. Total Energy Consumption in U.S. Households by Year of Construction, 1997 (Continued)

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.8	1.3	1.0	1.1	1.1	0.8	
Physical Units per Household³								
Physical Units of Total Consumption per Household, Fuels Used:								
Electricity (kWh)	10,219	12,512	12,449	11,976	9,459	9,033	7,735	2.7
Natural Gas (thousand cf)	83	80	72	76	74	81	96	3.6
Fuel Oil (gallons)	730	707	744	637	647	720	779	7.1
Kerosene (gallons)	126	146	105	110	115	106	146	26.5
LPG (gallons)	488	529	478	422	447	339	584	10.2
Wood (cords)	1.4	0.9	1.1	1.2	1.3	1.2	2.7	12.4
Million Households								
Number of Households, Where the End Use Is:								
Space Heating ⁴	99.7	9.6	17.1	19.2	14.1	12.4	27.3	4.2
Electric Air-Conditioning ⁵	72.6	8.3	14.6	14.7	10.0	8.9	16.1	4.7
Water Heating ⁶	100.8	9.7	17.2	19.4	14.3	12.5	27.7	4.2
Refrigerators	101.3	9.7	17.3	19.5	14.4	12.5	27.8	4.2
Appliances	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.2
Quadrillion Btu								
Total Btu Consumption, Where the End Use Is:								
Space Heating	5.18	0.38	0.53	0.75	0.69	0.70	2.14	5.6
Electric Air-Conditioning	0.42	0.06	0.11	0.10	0.05	0.04	0.05	7.1
Water Heating	1.92	0.18	0.29	0.33	0.28	0.25	0.58	4.7
Refrigerators	0.46	0.04	0.08	0.09	0.07	0.06	0.11	4.4
Other Appliances and Lighting	2.27	0.25	0.40	0.44	0.30	0.28	0.59	4.4
Million Btu per Household³								
Total Btu Consumption per Household, Where the End Use Is:								
Space Heating	52.0	39.3	30.8	39.1	48.7	56.2	78.4	3.9
Electric Air-Conditioning	5.7	7.4	7.4	6.5	5.4	4.8	3.3	5.3
Water Heating	19.0	19.0	17.1	17.2	19.2	20.2	21.0	2.7
Refrigerators	4.5	4.5	4.9	4.7	4.6	4.7	4.0	2.4
Other Appliances and Lighting	22.4	26.1	23.1	22.5	21.0	22.4	21.3	2.4

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

² The RECS cannot be used to accurately estimate the number of households that do not use electricity.

³ The averages for total and for appliances are over the set of all households; otherwise the averages are over the set of households using a given fuel or over the set using a given end use.

⁴ Households where the main or secondary space-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.

⁵ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

⁶ Households where the main or secondary water-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.

(*) = Value rounds to zero in the units displayed.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE1-3c. Total Energy Consumption in U.S. Households by Household Income, 1997

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.6	1.0	0.8	1.0	1.4	1.0	
Million Households								
Total U.S. Households	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
Number of Households, Fuels Used (more than one may apply):								
Electricity ²	101.4	13.3	29.1	31.1	27.9	14.6	34.0	2.7
Natural Gas	61.9	8.0	17.0	19.0	17.9	9.1	20.4	4.3
Fuel Oil	10.0	1.3	2.5	3.2	3.0	1.4	3.4	10.4
Kerosene	3.5	0.4	1.2	1.2	0.6	0.6	1.4	14.5
LPG	8.1	1.0	2.4	2.7	1.9	1.2	2.8	12.7
Wood	15.0	0.7	3.0	4.7	6.7	1.1	3.0	9.4
Quadrillion Btu								
Total Btu Consumption, Fuels Used:								
Electricity								
Primary	10.72	1.01	2.69	3.27	3.74	1.24	2.98	3.6
Site	3.54	0.33	0.89	1.08	1.24	0.41	0.99	3.6
Natural Gas	5.28	0.53	1.30	1.65	1.80	0.63	1.53	5.5
Fuel Oil	1.01	0.11	0.22	0.31	0.37	0.11	0.30	11.5
Kerosene	0.06	0.01	0.02	0.02	0.01	0.01	0.03	23.5
LPG	0.36	0.04	0.11	0.13	0.08	0.04	0.12	15.3
Wood	0.43	0.03	0.10	0.14	0.15	0.04	0.12	14.3
Total (excludes primary electricity and wood)	10.25	1.02	2.54	3.19	3.49	1.22	2.96	3.2
Physical Units								
Physical Units of Total Consumption, Fuels Used:								
Electricity (billion kWh)	1,037	98	260	317	362	120	289	3.6
Natural Gas (billion cf)	5,143	516	1,270	1,604	1,752	618	1,490	5.5
Fuel Oil (million gallons)	7,273	761	1,598	2,262	2,653	811	2,138	11.5
Kerosene (million gallons)	437	67	161	154	54	98	193	23.5
LPG (million gallons)	3,937	412	1,177	1,428	920	484	1,286	15.3
Wood (million cords)	21.4	1.7	4.9	7.1	7.6	2.1	6.1	14.3
Million Btu per Household³								
Total Btu Consumption per Household, Fuels Used:								
Electricity								
Primary	105.6	76.2	92.3	105.2	134.1	85.1	87.7	2.5
Site	34.9	25.2	30.5	34.7	44.3	28.1	28.9	2.5
Natural Gas	85.3	66.4	76.7	86.9	100.3	69.4	75.0	3.1
Fuel Oil	101.2	81.3	87.9	99.4	123.1	80.8	86.5	4.9
Kerosene	17.0	22.3	17.5	17.5	11.5	21.2	18.8	19.7
LPG	44.6	36.3	44.1	48.6	43.9	38.2	42.2	9.9
Wood	28.5	49.9	33.4	30.7	22.7	38.9	40.4	12.4
Total (excludes primary electricity and wood)	101.0	76.4	87.3	102.6	125.2	83.0	86.7	2.1

See footnotes at end of table.

Table CE1-3c. Total Energy Consumption in U.S. Households by Household Income, 1997 (Continued)

	1997 Household Income					Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
	Total	Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.6	1.0	0.8	1.0	1.4	1.0	
Physical Units per Household³								
Physical Units of Total Consumption per Household, Fuels Used:								
Electricity (kWh)	10,219	7,372	8,926	10,173	12,974	8,229	8,482	2.5
Natural Gas (thousand cf)	83	65	75	85	98	68	73	3.1
Fuel Oil (gallons)	730	587	634	717	888	583	624	4.9
Kerosene (gallons)	126	166	130	130	85	157	140	19.7
LPG (gallons)	488	398	483	533	480	418	462	9.9
Wood (cords)	1.4	2.5	1.7	1.5	1.1	1.9	2.0	12.4
Million Households								
Number of Households, Where the End Use Is:								
Space Heating ⁴	99.7	12.8	28.5	30.7	27.6	14.0	33.0	2.8
Electric Air-Conditioning ⁵	72.6	8.1	19.3	23.1	22.2	8.3	20.9	3.6
Water Heating ⁶	100.8	13.0	29.0	31.0	27.7	14.4	33.7	2.8
Refrigerators	101.3	13.2	29.1	31.1	27.9	14.6	34.0	2.7
Appliances	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
Quadrillion Btu								
Total Btu Consumption, Where the End Use Is:								
Space Heating	5.18	0.52	1.31	1.64	1.71	0.58	1.48	4.1
Electric Air-Conditioning	0.42	0.04	0.10	0.12	0.16	0.04	0.10	6.0
Water Heating	1.92	0.21	0.48	0.59	0.64	0.27	0.61	3.3
Refrigerators	0.46	0.05	0.12	0.14	0.15	0.06	0.13	3.2
Other Appliances and Lighting	2.27	0.21	0.53	0.71	0.83	0.27	0.63	3.2
Million Btu per Household³								
Total Btu Consumption per Household, Where the End Use Is:								
Space Heating	52.0	40.4	45.9	53.4	62.0	41.3	44.9	3.5
Electric Air-Conditioning	5.7	4.6	5.0	5.1	7.3	4.9	4.8	4.8
Water Heating	19.0	15.8	16.6	19.1	23.1	18.8	18.1	2.3
Refrigerators	4.5	3.8	4.1	4.4	5.5	3.8	3.9	1.9
Other Appliances and Lighting	22.4	15.4	18.4	22.7	29.6	18.5	18.6	2.0

¹ Below 150 percent of poverty line or 60 percent of median State income.

² The RECS cannot be used to accurately estimate the number of households that do not use electricity.

³ The averages for total and for appliances are over the set of all households; otherwise the averages are over the set of households using a given fuel or over the set using a given end use.

⁴ Households where the main or secondary space-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.

⁵ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

⁶ Households where the main or secondary water-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE1-4c. Total Energy Consumption in U.S. Households by Type of Housing Unit, 1997

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.5	2.0	1.3	1.6	
Million Households						
Total U.S. Households	101.5	73.7	5.6	15.8	6.3	4.0
Number of Households, Fuels Used (more than one may apply):						
Electricity ¹	101.4	73.7	5.6	15.8	6.3	4.0
Natural Gas	61.9	47.0	3.8	8.8	2.3	6.1
Fuel Oil	10.0	7.5	0.5	1.8	Q	13.6
Kerosene	3.5	2.7	Q	Q	0.6	16.1
LPG	8.1	6.2	Q	Q	1.7	15.4
Wood	15.0	14.0	Q	0.2	0.7	13.4
Quadrillion Btu						
Total Btu Consumption, Fuels Used:						
Electricity						
Primary	10.72	8.59	0.38	0.98	0.77	4.5
Site	3.54	2.84	0.12	0.32	0.25	4.5
Natural Gas	5.28	4.46	0.34	0.32	0.16	7.9
Fuel Oil	1.01	0.83	0.05	0.12	Q	16.0
Kerosene	0.06	0.04	Q	Q	0.02	28.0
LPG	0.36	0.29	Q	Q	0.06	17.6
Wood	0.43	0.39	Q	(*)	0.03	20.6
Total (excludes primary electricity and wood)	10.25	8.46	0.51	0.77	0.50	4.2
Physical Units						
Physical Units of Total Consumption, Fuels Used:						
Electricity (billion kWh)	1,037	831	37	95	74	4.5
Natural Gas (billion cf)	5,143	4,342	328	315	158	7.9
Fuel Oil (million gallons)	7,273	6,024	348	857	Q	16.0
Kerosene (million gallons)	437	273	Q	Q	139	28.0
LPG (million gallons)	3,937	3,196	Q	Q	683	17.6
Wood (million cords)	21.4	19.3	Q	0.1	1.5	20.6
Million Btu per Household²						
Total Btu Consumption per Household, Fuels Used:						
Electricity						
Primary	105.6	116.6	67.2	61.9	121.4	2.9
Site	34.9	38.5	22.2	20.4	40.1	2.9
Natural Gas	85.3	94.9	87.8	36.8	69.8	3.8
Fuel Oil	101.2	111.0	101.0	64.6	Q	5.8
Kerosene	17.0	13.5	Q	Q	32.3	22.0
LPG	44.6	47.0	Q	Q	36.6	9.5
Wood	28.5	27.7	Q	5.8	45.0	14.9
Total (excludes primary electricity and wood)	101.0	114.7	91.5	48.6	79.5	2.6

See footnotes at end of table.

Table CE1-4c. Total Energy Consumption in U.S. Households by Type of Housing Unit, 1997 (Continued)

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.5	2.0	1.3	1.6	
Physical Units per Household²						
Physical Units of Total Consumption per Household, Fuels Used:						
Electricity (kWh)	10,219	11,278	6,505	5,990	11,739	2.9
Natural Gas (thousand cf)	83	92	85	36	68	3.8
Fuel Oil (gallons)	730	801	728	466	Q	5.8
Kerosene (gallons)	126	100	Q	Q	239	22.0
LPG (gallons)	488	515	Q	Q	401	9.5
Wood (cords)	1.4	1.4	Q	0.3	2.3	14.9
Million Households						
Number of Households, Where the End Use Is:						
Space Heating ³	99.7	72.7	5.6	15.3	6.1	4.0
Electric Air-Conditioning ⁴	72.6	53.8	3.4	10.9	4.5	4.8
Water Heating ⁵	100.8	73.4	5.6	15.5	6.3	4.0
Refrigerators	101.3	73.7	5.6	15.7	6.3	4.0
Appliances	101.5	73.7	5.6	15.8	6.3	4.0
Quadrillion Btu						
Total Btu Consumption, Where the End Use Is:						
Space Heating	5.18	4.39	0.30	0.26	0.23	5.7
Electric Air-Conditioning	0.42	0.33	0.01	0.04	0.03	7.5
Water Heating	1.92	1.48	0.10	0.24	0.09	4.4
Refrigerators	0.46	0.37	0.02	0.05	0.02	3.9
Other Appliances and Lighting	2.27	1.89	0.08	0.18	0.13	3.8
Million Btu per Household²						
Total Btu Consumption per Household, Where the End Use Is:						
Space Heating	52.0	60.4	54.2	16.9	37.0	4.6
Electric Air-Conditioning	5.7	6.1	3.3	3.7	7.5	5.7
Water Heating	19.0	20.2	18.0	15.8	14.2	3.0
Refrigerators	4.5	5.0	3.4	3.1	3.9	2.0
Other Appliances and Lighting	22.4	25.6	14.2	11.2	20.5	2.0

¹ The RECS cannot be used to accurately estimate the number of households that do not use electricity.

² The averages for total and for appliances are over the set of all households; otherwise the averages are over the set of households using a given fuel or over the set using a given end use.

³ Households where the main or secondary space-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.

⁴ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

⁵ Households where the main or secondary water-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.

(*) = Value rounds to zero in the units displayed.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE1-5u. Total Energy Consumption and Expenditures in U.S. Households by Household Demographics, 1997

Household Demographics	Total End-Use Energy				RSE Row Factors	
	Households (millions)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)		Expenditures (dollars)
RSE Column Factor:	1.1	1.4	1.3	0.8	0.6	
Total	101.5	10.25	135.79	101.0	1,338	1.2
Household Size						
1 Person	25.6	1.91	24.59	74.7	962	2.3
2 Persons	33.0	3.34	44.42	101.2	1,347	2.0
3 Persons	17.4	1.91	25.61	109.5	1,471	2.5
4 Persons	15.2	1.79	23.94	117.7	1,571	2.8
5 Persons	6.4	0.80	10.53	123.9	1,640	4.8
6 or More Persons	3.9	0.50	6.71	129.6	1,734	6.5
1997 Household Income Category						
Less than \$5,000	3.8	0.30	3.85	81.3	1,028	6.5
\$5,000 to \$9,999	9.6	0.71	9.41	74.4	985	5.1
\$10,000 to \$14,999	10.3	0.86	10.97	83.2	1,063	4.4
\$15,000 to \$19,999	10.4	0.91	12.29	87.6	1,182	3.9
\$20,000 to \$24,999	8.4	0.77	10.39	91.7	1,233	3.7
\$25,000 to \$34,999	15.6	1.53	19.94	98.0	1,276	3.0
\$35,000 to \$49,999	15.5	1.66	21.61	107.1	1,394	2.5
\$50,000 to \$74,999	16.4	1.96	26.25	119.1	1,599	3.2
\$75,000 or More	11.5	1.54	21.08	133.9	1,835	4.1
Below Poverty Line						
100 Percent	14.6	1.22	15.95	83.0	1,088	3.5
125 Percent	19.7	1.63	21.56	82.9	1,096	3.4
150 Percent	26.7	2.25	29.85	84.2	1,117	2.8
Eligible for Federal Assistance¹						
	34.1	2.96	38.86	86.7	1,140	2.5
Age of Householder						
Under 25 Years	5.7	0.39	5.52	69.7	974	5.3
25 to 34 Years	18.5	1.63	21.93	87.7	1,184	2.9
35 to 44 Years	23.2	2.49	33.40	107.4	1,441	2.3
45 to 59 Years	25.6	2.90	38.89	113.4	1,519	2.1
60 Years and Over	28.5	2.83	36.05	99.4	1,265	2.6
Race of Householder						
White	78.5	8.16	108.12	103.9	1,378	1.4
Black	12.7	1.34	17.16	105.3	1,351	4.6
Other ²	10.3	0.75	10.51	72.8	1,020	4.9
Householder of Hispanic Descent						
Yes	9.4	0.72	10.27	75.9	1,089	4.7
No	92.1	9.53	125.52	103.5	1,364	1.3

¹ Below 150 percent of poverty line or 60 percent of median State income.

² Includes 5.5 million householders who described themselves as Hispanic rather than White, Black, or other.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE1-6u. Total Energy Consumption and Expenditures in U.S. Households by Usage Indicators, 1997

Usage Indicators	Total End-Use Energy					RSE Row Factors
	Households (million)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
	RSE Column Factor:	1.2	1.4	1.3	0.8	
Total	101.5	10.25	135.79	101.0	1,338	1.2
Household Size						
1 Person	25.6	1.91	24.59	74.7	962	2.3
2 Persons	33.0	3.34	44.42	101.2	1,347	2.0
3 Persons	17.4	1.91	25.61	109.5	1,471	2.5
4 Persons	15.2	1.79	23.94	117.7	1,571	2.8
5 Persons	6.4	0.80	10.53	123.9	1,640	4.8
6 or More Persons	3.9	0.50	6.71	129.6	1,734	6.5
Weekday Home Activities						
Home Used for Business						
Yes	7.4	0.84	11.24	114.4	1,528	5.2
No	94.1	9.40	124.55	99.9	1,323	1.2
Energy-Intensive Activity						
Yes	2.4	0.29	4.00	121.4	1,664	7.6
No	99.1	9.95	131.80	100.5	1,330	1.2
Someone Home All Day						
Yes	51.3	5.48	72.18	106.7	1,406	1.8
No	50.1	4.77	63.61	95.1	1,268	1.8
Estimated Heated Floorspace Category (square feet)¹						
Fewer than 600	7.9	0.48	6.45	61.1	818	4.9
600 to 999	21.5	1.66	22.15	77.4	1,031	3.2
1,000 to 1,599	30.4	2.96	39.36	97.4	1,297	2.5
1,600 to 1,999	15.3	1.78	23.59	116.6	1,543	2.8
2,000 to 2,399	7.9	0.98	13.16	124.3	1,669	3.8
2,400 to 2,999	5.3	0.73	9.80	137.7	1,836	4.9
3,000 or More	4.1	0.72	9.44	175.2	2,288	6.7
No Estimate Provided	9.1	0.93	11.85	101.5	1,299	4.9
Winter Temperature Settings						
Lower When No One Home						
Yes	45.5	4.54	60.17	99.9	1,323	1.9
No	56.0	5.70	75.62	101.8	1,350	1.6
Lower During Sleeping Hours						
Yes	47.4	4.82	63.73	101.6	1,343	1.9
No	54.0	5.43	72.06	100.4	1,334	1.6
Use a Secondary Heating Fuel						
Yes	34.3	3.97	52.68	116.0	1,538	2.5
No	66.5	6.24	82.40	94.0	1,240	1.7
Adequacy of Insulation						
Well Insulated	38.0	3.75	51.60	98.6	1,357	2.2
Adequately Insulated	44.4	4.56	59.87	102.5	1,347	1.9
Poorly Insulated	18.5	1.90	23.78	103.0	1,287	3.1
Central Air-Conditioning Use						
All Summer	24.6	2.41	36.59	97.9	1,485	3.0
Quite a Bit	10.4	1.07	14.69	103.1	1,410	4.1
Only a Few Times	12.4	1.28	16.77	103.5	1,355	4.4
No Central System	53.7	5.46	67.41	101.6	1,255	2.0

See footnotes at end of table.

Table CE1-6u. Total Energy Consumption and Expenditures in U.S. Households by Usage Indicators, 1997 (Continued)

Usage Indicators	Total End-Use Energy					RSE Row Factors
	Households (million)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
	RSE Column Factor:	1.2	1.4	1.3	0.8	
Room Air-Conditioning Use						
All Summer	5.7	0.54	7.58	96.3	1,341	6.2
Quite a Bit	6.6	0.75	9.33	113.3	1,412	4.6
Only a Few Times	13.5	1.45	18.22	107.5	1,348	3.8
No Room Units	75.0	7.42	99.73	99.0	1,330	1.5
Use a Dishwasher						
Yes	50.9	5.58	76.73	109.6	1,507	1.8
No	50.6	4.66	59.07	92.2	1,168	2.0
Use a Clothes Washer						
Yes	78.5	8.82	116.43	112.3	1,482	1.2
No	22.9	1.43	19.36	62.2	844	3.4
Use a Clothes Dryer						
Yes	72.2	8.21	108.54	113.7	1,503	1.4
No	29.3	2.03	27.25	69.5	931	2.9
Use Two or More Refrigerators						
Yes	15.4	2.08	27.32	135.0	1,776	2.8
No	86.1	8.17	108.47	94.9	1,260	1.3
Outdoor Lights on all Night						
Yes	26.3	2.85	38.33	108.2	1,457	2.5
No	75.2	7.40	97.46	98.4	1,297	1.5
Utilities Paid by Household						
All Major Fuels²						
Yes	89.7	9.36	125.30	104.3	1,397	1.3
No	11.8	0.89	10.49	75.3	892	4.4
Electricity						
Yes	96.2	9.90	131.54	103.0	1,368	1.1
No	5.3	0.34	4.25	65.0	806	7.4
Natural Gas						
Yes	53.3	6.59	75.93	123.5	1,424	2.1
No	8.6	0.68	7.63	78.8	888	5.0
Fuel Oil						
Yes	7.6	1.11	14.18	145.8	1,859	5.9
No	2.3	0.21	2.43	91.9	1,041	8.0
LPG						
Yes	7.9	0.82	12.57	103.8	1,592	5.9
No	0.2	0.02	0.20	88.5	1,146	20.7
Kerosene						
Yes	3.5	0.35	5.02	100.5	1,443	6.7
No	Q	Q	Q	Q	Q	NF

¹ Estimates provided by the household interview respondents, who were asked which category best described the total heated floorspace in the home.

² The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE1-13c. Total Energy Consumption in U.S. Households by Census Region, 1997

	Census Region					RSE Row Factors
	Total	Northeast	Midwest	South	West	
	0.6	1.1	1.1	1.0	1.3	
RSE Column Factor:						
Million Households						
Total U.S. Households	101.5	19.7	24.1	35.9	21.8	NF
Number of Households, Fuels Used (more than one may apply):						
Electricity ¹	101.4	19.7	24.1	35.9	21.8	NF
Natural Gas	61.9	11.8	18.5	16.4	15.1	3.9
Fuel Oil	10.0	7.5	1.1	1.2	0.3	18.2
Kerosene	3.5	1.0	0.4	1.9	0.2	16.1
LPG	8.1	1.6	2.3	3.2	1.0	16.1
Wood	15.0	2.5	2.6	5.7	4.2	8.7
Quadrillion Btu						
Total Btu Consumption, Fuels Used:						
Electricity						
Primary	10.72	1.48	2.26	5.05	1.92	2.6
Site	3.54	0.49	0.75	1.67	0.64	2.6
Natural Gas	5.28	1.03	2.20	1.13	0.93	5.8
Fuel Oil	1.01	0.81	0.10	0.08	0.02	19.8
Kerosene	0.06	0.03	Q	0.02	(*)	23.2
LPG	0.36	0.03	0.17	0.12	0.04	18.5
Wood	0.43	0.14	0.08	0.11	0.10	14.2
Total (excludes primary electricity and wood)	10.25	2.38	3.22	3.01	1.63	2.2
Physical Units						
Physical Units of Total Consumption, Fuels Used:						
Electricity (billion kWh)	1,037	143	219	489	186	2.6
Natural Gas (billion cf)	5,143	1,000	2,141	1,097	904	5.8
Fuel Oil (million gallons)	7,273	5,816	752	555	151	19.8
Kerosene (million gallons)	437	214	Q	161	33	23.1
LPG (million gallons)	3,937	317	1,869	1,276	475	18.5
Wood (million cords)	21.4	7.0	3.8	5.7	4.9	14.2
Million Btu per Household²						
Total Btu Consumption per Household, Fuels Used:						
Electricity						
Primary	105.6	74.9	94.0	140.8	88.4	2.6
Site	34.9	24.7	31.0	46.5	29.2	2.6
Natural Gas	85.3	86.9	118.6	68.5	61.5	3.0
Fuel Oil	101.2	108.0	98.8	66.2	75.0	6.1
Kerosene	17.0	30.2	Q	11.6	20.4	18.0
LPG	44.6	18.7	73.7	36.0	44.8	10.0
Wood	28.5	56.0	29.3	20.1	23.2	11.2
Total (excludes primary electricity and wood)	101.0	120.6	134.0	83.9	74.9	2.2

See footnotes at end of table.

Table CE1-13c. Total Energy Consumption in U.S. Households by Census Region, 1997 (Continued)

	Census Region					RSE Row Factors
	Total	Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.1	1.1	1.0	1.3	
Physical Units per Household²						
Physical Units of Total Consumption per Household, Fuels Used:						
Electricity (kWh)	10,219	7,246	9,091	13,624	8,549	2.6
Natural Gas (thousand cf)	83	85	115	67	60	3.0
Fuel Oil (gallons)	730	779	715	478	540	6.1
Kerosene (gallons)	126	224	Q	86	151	18.0
LPG (gallons)	488	204	807	395	491	10.0
Wood (cords)	1.4	2.8	1.5	1.0	1.2	11.2
Million Households						
Number of Households, Where the End Use Is:						
Space Heating ³	99.7	19.5	23.8	35.4	21.0	NF
Electric Air-Conditioning ⁴	72.6	12.2	18.6	33.2	8.7	3.4
Water Heating ⁵	100.8	19.6	23.9	35.7	21.6	NF
Refrigerators	101.3	19.7	24.0	35.8	21.7	NF
Appliances	101.5	19.7	24.1	35.9	21.8	NF
Quadrillion Btu						
Total Btu Consumption, Where the End Use Is:						
Space Heating	5.18	1.48	1.96	1.09	0.65	3.8
Electric Air-Conditioning	0.42	0.02	0.06	0.29	0.04	5.9
Water Heating	1.92	0.42	0.53	0.56	0.41	2.4
Refrigerators	0.46	0.07	0.10	0.19	0.09	1.9
Other Appliances and Lighting	2.27	0.38	0.58	0.87	0.44	2.0
Million Btu per Household²						
Total Btu Consumption per Household, Where the End Use Is:						
Space Heating	52.0	76.0	82.3	30.8	30.9	3.8
Electric Air-Conditioning	5.7	2.0	3.3	8.8	4.4	4.7
Water Heating	19.0	21.4	22.0	15.7	19.1	2.4
Refrigerators	4.5	3.6	4.3	5.4	4.1	1.9
Other Appliances and Lighting	22.4	19.2	24.0	24.4	20.2	2.0

1 The RECS cannot be used to accurately estimate the number of households that do not use electricity.
2 The averages for total and for appliances are over the set of all households; otherwise the averages are over the set of households using a given fuel or over the set using a given end use.
3 Households where the main or secondary space-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.
4 The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.
5 Households where the main or secondary water-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.
(*) = Value rounds to zero in the units displayed.
NF = No applicable RSE row factor.
Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.
Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Total Expenditures Tables

**Table CE1-2e. Total Energy Expenditures in U.S. Households
by Year of Construction, 1997**

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.7	1.3	1.0	1.1	1.1	0.8	
Million Households								
Total U.S. Households	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.2
Number of Households, Fuels Used (more than one may apply):								
Electricity ²	101.4	9.7	17.3	19.6	14.4	12.5	27.9	4.2
Natural Gas	61.9	5.2	7.5	9.5	9.6	9.2	20.9	6.1
Fuel Oil	10.0	0.3	0.6	1.0	1.5	1.5	5.0	14.6
Kerosene	3.5	0.2	0.5	0.8	0.4	0.3	1.4	18.4
LPG	8.1	0.9	1.2	1.7	1.1	0.7	2.5	14.0
Wood	15.0	1.6	3.7	3.4	2.2	1.4	2.8	9.8
Billion Dollars								
Total Expenditures, Fuels Used:								
Electricity	88.33	9.66	17.62	19.03	11.85	10.14	20.03	4.5
Natural Gas	35.81	2.91	3.83	4.75	4.88	5.30	14.15	7.3
Fuel Oil	7.11	0.22	0.44	0.63	0.97	1.08	3.77	16.8
Kerosene	0.50	0.03	0.06	0.09	0.05	0.03	0.23	29.9
LPG	4.04	0.48	0.59	0.75	0.50	0.28	1.44	16.7
Total	135.79	13.29	22.54	25.25	18.26	16.82	39.63	4.2
Dollars per Household³								
Total Expenditures per Household, Fuels Used:								
Electricity	871	997	1,018	973	821	808	718	2.6
Natural Gas	579	557	508	501	508	577	677	3.5
Fuel Oil	714	713	753	612	630	710	758	7.7
Kerosene	144	164	120	125	132	119	170	26.0
LPG	500	546	506	443	457	377	576	9.0
Total	1,338	1,369	1,302	1,291	1,264	1,340	1,420	2.0
Dollars per Million Btu³								
Average Price of Btu Consumption, Fuels Used:								
Electricity	24.97	23.35	23.97	23.81	25.42	26.21	27.21	1.5
Natural Gas	6.78	6.78	6.85	6.39	6.67	6.91	6.90	2.0
Fuel Oil	7.05	7.27	7.30	6.92	7.03	7.12	7.02	2.1
Kerosene	8.51	8.32	8.46	8.39	8.52	8.33	8.62	2.6
LPG	11.23	11.30	11.59	11.48	11.19	12.17	10.80	3.3
Total	13.25	14.48	15.95	14.77	13.17	12.63	11.37	1.9

See footnotes at end of table.

Table CE1-2e. Total Energy Expenditures in U.S. Households by Year of Construction, 1997 (Continued)

	Year of Construction							RSE Row Factors
	Total	1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.7	1.3	1.0	1.1	1.1	0.8	
Price per Physical Unit³								
Average Price of Physical Units of Consumption, Fuels Used:								
Electricity (cents per kWh)	8.5	8.0	8.2	8.1	8.7	8.9	9.3	1.5
Natural Gas (dollars per thousand cf)	6.96	6.97	7.03	6.56	6.85	7.09	7.08	2.0
Fuel Oil (dollars per gallon)	0.98	1.01	1.01	0.96	0.97	0.99	0.97	2.1
Kerosene (dollars per gallon)	1.15	1.12	1.14	1.13	1.15	1.12	1.16	2.6
LPG (dollars per gallon)	1.03	1.03	1.06	1.05	1.02	1.11	0.99	3.3
Million Households								
Number of Households, Where the End Use Is:								
Space Heating ⁴	99.7	9.6	17.1	19.2	14.1	12.4	27.3	4.2
Electric Air-Conditioning ⁵	72.6	8.3	14.6	14.7	10.0	8.9	16.1	4.7
Water Heating ⁶	100.8	9.7	17.2	19.4	14.3	12.5	27.7	4.2
Refrigerators	101.3	9.7	17.3	19.5	14.4	12.5	27.8	4.2
Appliances	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.2
Billion Dollars								
Total Expenditures, Where the End Use Is:								
Space Heating	42.03	3.32	5.23	6.85	5.44	5.38	15.80	4.7
Electric Air-Conditioning	10.20	1.49	2.60	2.30	1.34	1.08	1.40	7.3
Water Heating	19.76	2.04	3.62	3.90	2.63	2.32	5.25	4.2
Refrigerators	12.14	1.07	2.08	2.31	1.79	1.62	3.27	4.6
Other Appliances and Lighting	51.66	5.37	9.01	9.88	7.06	6.44	13.90	4.4
Dollars per Household³								
Total Expenditures per Household, Where the End Use Is:								
Space Heating	421	347	306	357	385	433	578	3.0
Electric Air-Conditioning	140	179	177	157	134	121	87	5.5
Water Heating	196	211	210	202	184	185	190	2.2
Refrigerators	120	111	121	118	124	129	117	2.6
Other Appliances and Lighting	509	553	521	505	489	513	498	2.5

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

² The RECS cannot be used to accurately estimate the number of households that do not use electricity.

³ The averages for total and for appliances are over the set of all households; otherwise the averages are over the set of households using a given fuel or over the set using a given end use.

⁴ Households where the main or secondary space-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.

⁵ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

⁶ Households where the main or secondary water-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE1-3e. Total Energy Expenditures in U.S. Households by Household Income, 1997

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.5	1.0	0.9	1.0	1.3	1.0	
Million Households								
Total U.S. Households	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
Number of Households, Fuels Used (more than one may apply):								
Electricity ²	101.4	13.3	29.1	31.1	27.9	14.6	34.0	2.7
Natural Gas	61.9	8.0	17.0	19.0	17.9	9.1	20.4	4.3
Fuel Oil	10.0	1.3	2.5	3.2	3.0	1.4	3.4	10.4
Kerosene	3.5	0.4	1.2	1.2	0.6	0.6	1.4	14.5
LPG	8.1	1.0	2.4	2.7	1.9	1.2	2.8	12.7
Wood	15.0	0.7	3.0	4.7	6.7	1.1	3.0	9.4
Billion Dollars								
Total Expenditures, Fuels Used:								
Electricity	88.33	8.36	21.92	26.61	31.43	10.29	24.79	3.4
Natural Gas	35.81	3.74	8.82	11.17	12.08	4.35	10.54	5.4
Fuel Oil	7.11	0.66	1.52	2.21	2.73	0.69	1.97	12.1
Kerosene	0.50	0.08	0.19	0.18	0.06	0.12	0.22	23.4
LPG	4.04	0.43	1.20	1.39	1.02	0.50	1.34	14.8
Total	135.79	13.26	33.65	41.56	47.33	15.95	38.86	2.9
Dollars per Household³								
Total Expenditures per Household, Fuels Used:								
Electricity	871	630	752	855	1,126	703	728	2.3
Natural Gas	579	469	518	589	673	476	516	3.0
Fuel Oil	714	505	603	699	914	498	576	5.3
Kerosene	144	192	149	147	99	185	163	19.6
LPG	500	412	493	518	531	433	482	8.6
Total	1,338	997	1,155	1,335	1,696	1,088	1,140	1.6
Dollars per Million Btu³								
Average Price of Btu Consumption, Fuels Used:								
Electricity	24.97	25.05	24.70	24.63	25.44	25.04	25.16	1.3
Natural Gas	6.78	7.06	6.76	6.78	6.72	6.86	6.88	1.6
Fuel Oil	7.05	6.22	6.87	7.03	7.42	6.16	6.66	1.5
Kerosene	8.51	8.58	8.54	8.41	8.61	8.68	8.64	1.7
LPG	11.23	11.36	11.18	10.66	12.12	11.33	11.42	2.8
Total	13.25	13.05	13.23	13.01	13.55	13.12	13.15	1.8

See footnotes at end of table.

Table CE1-3e. Total Energy Expenditures in U.S. Households by Household Income, 1997 (Continued)

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.5	1.0	0.9	1.0	1.3	1.0	
Price per Physical Unit³								
Average Price of Physical Units of Consumption, Fuels Used:								
Electricity (cents per kWh)	8.5	8.5	8.4	8.4	8.7	8.5	8.6	1.3
Natural Gas (dollars per thousand cf)	6.96	7.25	6.94	6.96	6.90	7.04	7.07	1.6
Fuel Oil (dollars per gallon)	0.98	0.86	0.95	0.98	1.03	0.85	0.92	1.5
Kerosene (dollars per gallon)	1.15	1.16	1.15	1.14	1.16	1.17	1.17	1.7
LPG (dollars per gallon)	1.03	1.04	1.02	0.97	1.11	1.03	1.04	2.8
Million Households								
Number of Households, Where the End Use Is:								
Space Heating ⁴	99.7	12.8	28.5	30.7	27.6	14.0	33.0	2.8
Electric Air-Conditioning ⁵	72.6	8.1	19.3	23.1	22.2	8.3	20.9	3.6
Water Heating ⁶	100.8	13.0	29.0	31.0	27.7	14.4	33.7	2.8
Refrigerators	101.3	13.2	29.1	31.1	27.9	14.6	34.0	2.8
Appliances	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
Billion Dollars								
Total Expenditures, Where the End Use Is:								
Space Heating	42.03	4.33	10.78	13.12	13.79	4.73	12.20	3.3
Electric Air-Conditioning	10.20	0.91	2.39	2.86	4.04	1.00	2.48	6.1
Water Heating	19.76	2.08	5.22	6.14	6.33	2.71	6.40	3.0
Refrigerators	12.14	1.36	3.15	3.55	4.07	1.52	3.61	3.2
Other Appliances and Lighting	51.66	4.58	12.10	15.89	19.10	5.99	14.18	3.2
Dollars per Household³								
Total Expenditures per Household, Where the End Use Is:								
Space Heating	421	338	378	427	499	338	370	2.6
Electric Air-Conditioning	140	113	124	124	182	120	119	4.8
Water Heating	196	160	180	198	228	189	190	1.8
Refrigerators	120	103	108	114	146	104	106	2.0
Other Appliances and Lighting	509	344	415	510	684	409	416	2.0

¹ Below 150 percent of poverty line or 60 percent of median State income.
² The RECS cannot be used to accurately estimate the number of households that do not use electricity.
³ The averages for total and for appliances are over the set of all households; otherwise the averages are over the set of households using a given fuel or over the set using a given end use.
⁴ Households where the main or secondary space-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.
⁵ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.
⁶ Households where the main or secondary water-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.
Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

**Table CE1-4e. Total Energy Expenditures in U.S. Households
by Type of Housing Unit, 1997**

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.5	1.9	1.4	1.5	
Million Households						
Total U.S. Households	101.5	73.7	5.6	15.8	6.3	4.0
Number of Households, Fuels Used (more than one may apply):						
Electricity ¹	101.4	73.7	5.6	15.8	6.3	4.0
Natural Gas	61.9	47.0	3.8	8.8	2.3	6.1
Fuel Oil	10.0	7.5	0.5	1.8	Q	13.5
Kerosene	3.5	2.7	Q	Q	0.6	15.8
LPG	8.1	6.2	Q	Q	1.7	15.2
Wood	15.0	14.0	Q	0.2	0.7	13.1
Billion Dollars						
Total Expenditures, Fuels Used:						
Electricity	88.33	70.33	3.47	8.84	5.68	4.3
Natural Gas	35.81	29.97	2.36	2.46	1.02	7.9
Fuel Oil	7.11	6.13	0.35	0.59	Q	16.8
Kerosene	0.50	0.32	Q	Q	0.16	27.2
LPG	4.04	3.25	Q	Q	0.72	17.0
Total	135.79	110.00	6.23	11.94	7.62	3.7
Dollars per Household²						
Total Expenditures per Household, Fuels Used:						
Electricity	871	954	617	560	899	2.6
Natural Gas	579	638	616	281	438	3.6
Fuel Oil	714	814	728	323	Q	6.7
Kerosene	144	116	Q	Q	270	21.3
LPG	500	524	Q	Q	423	8.0
Total	1,338	1,492	1,108	755	1,206	1.8
Dollars per Million Btu²						
Average Price of Btu Consumption, Fuels Used:						
Electricity	24.97	24.79	27.79	27.41	22.45	1.6
Natural Gas	6.78	6.72	7.01	7.62	6.27	2.1
Fuel Oil	7.05	7.34	7.21	4.99	Q	1.7
Kerosene	8.51	8.60	Q	Q	8.35	2.0
LPG	11.23	11.15	Q	Q	11.57	2.9
Total	13.25	13.00	12.10	15.53	15.17	2.2

See footnotes at end of table.

Table CE1-4e. Total Energy Expenditures in U.S. Households by Type of Housing Unit, 1997 (Continued)

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.5	1.9	1.4	1.5	
Price per Physical Unit²						
Average Price of Physical Units of Consumption, Fuels Used:						
Electricity (cents per kWh)	8.5	8.5	9.5	9.4	7.7	1.6
Natural Gas (dollars per thousand cf)	6.96	6.90	7.20	7.83	6.44	2.1
Fuel Oil (dollars per gallon)	0.98	1.02	1.00	0.69	Q	1.7
Kerosene (dollars per gallon)	1.15	1.16	Q	Q	1.13	2.0
LPG (dollars per gallon)	1.03	1.02	Q	Q	1.06	2.9
Million Households						
Number of Households, Where the End Use Is:						
Space Heating ³	99.7	72.7	5.6	15.3	6.1	4.1
Electric Air-Conditioning ⁴	72.6	53.8	3.4	10.9	4.5	4.8
Water Heating ⁵	100.8	73.4	5.6	15.5	6.3	4.0
Refrigerators	101.3	73.7	5.6	15.7	6.3	4.0
Appliances	101.5	73.7	5.6	15.8	6.3	4.0
Billion Dollars						
Total Expenditures, Where the End Use Is:						
Space Heating	42.03	35.07	2.45	2.34	2.18	4.5
Electric Air-Conditioning	10.20	8.06	0.29	1.06	0.79	7.6
Water Heating	19.76	14.89	0.97	2.57	1.34	4.0
Refrigerators	12.14	9.55	0.57	1.43	0.59	4.2
Other Appliances and Lighting	51.66	42.44	1.95	4.54	2.73	4.0
Dollars per Household²						
Total Expenditures per Household, Where the End Use Is:						
Space Heating	421	482	436	153	357	3.2
Electric Air-Conditioning	140	150	85	98	175	5.6
Water Heating	196	203	173	165	213	2.3
Refrigerators	120	130	102	91	93	2.5
Other Appliances and Lighting	509	576	347	288	432	2.2

¹ The RECS cannot be used to accurately estimate the number of households that do not use electricity.

² The averages for total and for appliances are over the set of all households; otherwise the averages are over the set of households using a given fuel or over the set using a given end use.

³ Households where the main or secondary space-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.

⁴ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

⁵ Households where the main or secondary water-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE1-13e. Total Energy Expenditures in U.S. Households by Census Region, 1997

	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.0	1.1	1.0	1.4	
Million Households						
Total U.S. Households	101.5	19.7	24.1	35.9	21.8	NF
Number of Households, Fuels Used (more than one may apply):						
Electricity ¹	101.4	19.7	24.1	35.9	21.8	NF
Natural Gas	61.9	11.8	18.5	16.4	15.1	3.9
Fuel Oil	10.0	7.5	1.1	1.2	0.3	18.2
Kerosene	3.5	1.0	0.4	1.9	0.2	16.1
LPG	8.1	1.6	2.3	3.2	1.0	16.1
Wood	15.0	2.5	2.6	5.7	4.2	8.7
Billion Dollars						
Total Expenditures, Fuels Used:						
Electricity	88.33	17.04	18.21	37.24	15.84	2.7
Natural Gas	35.81	9.13	12.96	8.16	5.57	5.8
Fuel Oil	7.11	5.61	0.71	0.62	0.17	20.5
Kerosene	0.50	0.24	Q	0.19	0.04	23.0
LPG	4.04	0.44	1.68	1.44	0.48	18.1
Total	135.79	32.45	33.60	47.65	22.10	1.7
Dollars per Household²						
Total Expenditures per Household, Fuels Used:						
Electricity	871	863	757	1,038	727	2.7
Natural Gas	579	772	699	496	369	3.0
Fuel Oil	714	752	678	530	608	6.6
Kerosene	144	251	Q	102	170	17.8
LPG	500	281	726	445	497	8.4
Total	1,338	1,644	1,396	1,328	1,013	1.7
Dollars per Million Btu²						
Average Price of Btu Consumption, Fuels Used:						
Electricity	24.97	34.92	24.39	22.33	24.94	1.7
Natural Gas	6.78	8.89	5.89	7.24	6.00	1.6
Fuel Oil	7.05	6.96	6.86	8.01	8.11	2.6
Kerosene	8.51	8.29	9.01	8.75	8.33	2.4
LPG	11.23	15.06	9.85	12.34	11.09	3.4
Total	13.25	13.64	10.42	15.83	13.54	2.0

See footnotes at end of table.

Table CE1-13e. Total Energy Expenditures in U.S. Households by Census Region, 1997 (Continued)

	Census Region					RSE Row Factors
	Total	Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.0	1.1	1.0	1.4	
Price per Physical Unit²						
Average Price of Physical Units of Consumption, Fuels Used:						
Electricity (cents per kWh)	8.5	11.9	8.3	7.6	8.5	1.7
Natural Gas (dollars per thousand cf)	6.96	9.13	6.05	7.44	6.16	1.6
Fuel Oil (dollars per gallon)	0.98	0.96	0.95	1.11	1.12	2.6
Kerosene (dollars per gallon)	1.15	1.12	1.22	1.18	1.12	2.4
LPG (dollars per gallon)	1.03	1.38	0.90	1.13	1.01	3.4
Million Households						
Number of Households, Where the End Use Is:						
Space Heating ³	99.7	19.5	23.8	35.4	21.0	NF
Electric Air-Conditioning ⁴	72.6	12.2	18.6	33.2	8.7	3.4
Water Heating ⁵	100.8	19.6	23.9	35.7	21.6	NF
Refrigerators	101.3	19.7	24.0	35.8	21.7	NF
Appliances	101.5	19.7	24.1	35.9	21.8	NF
Billion Dollars						
Total Expenditures, Where the End Use Is:						
Space Heating	42.03	12.83	13.03	11.10	5.07	2.4
Electric Air-Conditioning	10.20	0.90	1.52	6.67	1.11	6.0
Water Heating	19.76	4.56	4.28	7.25	3.67	2.0
Refrigerators	12.14	2.62	2.61	4.41	2.50	2.3
Other Appliances and Lighting	51.66	11.53	12.16	18.21	9.76	2.3
Dollars per Household²						
Total Expenditures per Household, Where the End Use Is:						
Space Heating	421	657	548	314	241	2.4
Electric Air-Conditioning	140	74	81	201	128	4.8
Water Heating	196	233	179	203	169	2.1
Refrigerators	120	133	109	123	115	2.3
Other Appliances and Lighting	509	584	506	508	448	2.3

¹ The RECS cannot be used to accurately estimate the number of households that do not use electricity.
² The averages for total and for appliances are over the set of all households; otherwise the averages are over the set of households using a given fuel or over the set using a given end use.
³ Households where the main or secondary space-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.
⁴ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.
⁵ Households where the main or secondary water-heating fuel is electricity, natural gas, fuel oil, kerosene, or LPG.
 NF = No applicable RSE row factor.
 Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.
 Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Space-Heating Consumption Tables

Table CE2-2c. Space-Heating Energy Consumption in U.S. Households by Year of Construction, 1997

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.5	1.2	1.0	1.1	1.1	0.9	
Million Households								
Total U.S. Households	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.3
No Space Heating	0.8	Q	Q	0.2	Q	Q	0.2	35.8
Space Heating	100.7	9.6	17.3	19.4	14.3	12.4	27.7	4.3
Not Using a Major Fuel ²	1.0	Q	0.2	0.2	0.2	Q	0.3	34.1
Using a Major Fuel ²	99.7	9.6	17.1	19.2	14.1	12.4	27.3	4.3
For Main Space Heating	98.1	9.5	16.8	18.8	13.9	12.3	26.8	4.3
For Secondary Space Heating Only	1.6	Q	0.3	0.4	0.2	0.1	0.5	23.4
Number of Households with Space Heating, Major Fuels Used (more than one may apply):								
Electricity	42.0	4.5	10.9	10.1	5.6	3.9	7.1	6.2
Natural Gas	54.5	4.7	6.5	8.3	8.5	8.3	18.3	6.4
Fuel Oil	9.8	0.3	0.6	1.0	1.5	1.5	4.9	14.8
Kerosene	3.5	0.2	0.5	0.8	0.4	0.3	1.4	18.4
LPG	5.6	0.7	0.9	1.2	0.7	0.6	1.6	15.5
Quadrillion Btu								
Space-Heating Btu Consumption, Major Fuels Used:								
Electricity	0.40	0.05	0.10	0.12	0.05	0.03	0.05	10.0
Natural Gas	3.61	0.27	0.34	0.49	0.49	0.52	1.50	7.9
Fuel Oil	0.85	0.03	0.05	0.08	0.11	0.12	0.46	17.2
Kerosene	0.06	(*)	0.01	0.01	0.01	(*)	0.03	30.4
LPG	0.26	0.03	0.03	0.05	0.03	0.02	0.10	18.0
Total	5.18	0.38	0.53	0.75	0.69	0.70	2.14	5.6
Physical Units								
Physical Units of Space-Heating Consumption, Major Fuels Used:								
Electricity (billion kWh)	118	14	29	36	14	9	16	10.0
Natural Gas (billion cf)	3,517	259	332	477	478	506	1,465	7.9
Fuel Oil (million gallons)	6,133	193	348	566	819	887	3,320	17.2
Kerosene (million gallons)	436	26	53	83	45	30	199	30.4
LPG (million gallons)	2,823	345	348	521	330	198	1,081	18.0
Million Btu per Household								
Average Space-Heating Btu Consumption per Household								
Using a Major Fuel ²	52.0	39.3	30.8	39.1	48.7	56.2	78.4	3.9
For Main Space Heating	52.5	39.7	31.2	39.6	49.1	56.5	79.4	3.9
For Secondary Space Heating Only	17.6	Q	5.9	15.8	18.5	23.7	25.2	29.3

See footnotes at end of table.

Table CE2-2c. Space-Heating Energy Consumption in U.S. Households by Year of Construction, 1997 (Continued)

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.5	1.2	1.0	1.1	1.1	0.9	
Million Households								
Number of Households, Where the Main Space-Heating Fuel Is:								
Electricity	29.6	3.9	9.3	8.5	3.4	2.2	2.3	8.4
Natural Gas	53.5	4.7	6.2	8.1	8.3	8.1	18.1	6.5
Fuel Oil	9.5	0.3	0.5	1.0	1.5	1.4	4.7	14.6
Kerosene	1.0	Q	0.1	0.3	Q	Q	0.3	29.8
LPG	4.6	0.6	0.7	1.0	0.6	0.5	1.4	17.1
Other	2.6	Q	0.4	0.6	0.4	0.2	0.8	21.3
No Space Heating	0.8	Q	Q	0.2	Q	Q	0.2	35.8
Million Btu per Household⁴								
Space-Heating Btu Consumption per Household,³ Where the Main Space-Heating Fuel Is:								
Electricity	12.8	12.0	10.3	14.0	13.0	12.9	19.7	6.6
Natural Gas	66.9	56.1	53.3	60.0	58.0	63.7	83.1	4.1
Fuel Oil	88.1	95.5	87.0	77.5	75.2	84.7	95.1	6.9
Kerosene	41.5	Q	42.1	31.8	Q	Q	47.2	18.2
LPG	53.4	52.7	45.1	47.2	51.0	35.5	69.3	8.3
Physical Units (PU) per Household⁴								
Physical Units of Space-Heating Consumption per Household,³ Where the Main Space-Heating Fuel Is:								
Electricity (kWh)	3,760	3,529	3,028	4,091	3,812	3,786	5,771	6.6
Natural Gas (thousand cf)	65	55	52	58	57	62	81	4.1
Fuel Oil (gallons)	636	689	627	559	543	611	686	6.9
Kerosene (gallons)	307	Q	312	236	Q	Q	349	18.2
LPG (gallons)	585	577	494	517	558	389	759	8.3
1997 Heating Degree-Days (HDD) per Household⁴								
1997 Heating Degree-Days per Household, Where the Main Space-Heating Fuel Is:								
Electricity	3,225	3,362	3,038	3,293	3,182	3,048	3,742	5.9
Natural Gas	4,710	4,507	4,536	4,652	4,304	4,481	5,137	3.4
Fuel Oil	5,707	6,313	5,915	5,521	5,518	5,657	5,762	3.9
Kerosene	4,959	Q	6,111	4,141	Q	Q	4,820	12.5
LPG	4,863	4,973	4,771	4,248	4,525	4,145	5,680	7.3
Average for All Households	4,368	4,129	3,780	4,057	4,171	4,344	5,152	2.5

See footnotes at end of table.

Table CE2-2c. Space-Heating Energy Consumption in U.S. Households by Year of Construction, 1997 (Continued)

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.5	1.2	1.0	1.1	1.1	0.9	
Heated Square Footage (HSF) per Household⁴								
Heated Square Footage per Household,⁵ Where the Main Space-Heating Fuel Is:								
Electricity	1,462	1,599	1,494	1,468	1,349	1,347	1,360	3.6
Natural Gas	1,747	2,465	2,030	1,675	1,645	1,558	1,627	3.0
Fuel Oil	1,836	3,043	2,204	1,880	1,683	1,720	1,800	5.8
Kerosene	1,023	Q	1,011	859	Q	Q	1,122	7.5
LPG	1,663	2,125	1,847	1,360	1,522	1,382	1,754	7.5
Average for All Households	1,659	2,098	1,725	1,565	1,565	1,530	1,635	2.2
Space-Heating Intensity [PU÷(HDD×(HSF÷1000))]⁴								
Space-Heating Intensity, Where the Main Space-Heating Fuel Is:								
Electricity	0.797	0.657	0.667	0.846	0.888	0.922	1.134	4.8
Natural Gas	7.919	4.914	5.636	7.499	7.978	8.884	9.676	3.1
Fuel Oil	0.061	0.036	0.048	0.054	0.058	0.063	0.066	7.2
Kerosene	0.061	Q	0.050	0.066	Q	Q	0.065	16.3
LPG	0.072	0.055	0.056	0.089	0.081	0.068	0.076	10.1

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

² The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

³ Includes only the space-heating consumption of the space-heating fuel. Not included are: 1) the consumption of the main space-heating fuel for uses other than space heating; 2) the consumption of the main space-heating fuel where it is the secondary, and not the main, space-heating fuel, and; 3) the consumption of other fuels that are used as secondary space-heating fuels.

⁴ Averages are for those households using each of the main space-heating fuels.

⁵ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage.

(*) = Value rounds to zero in the units displayed.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE2-3c. Space-Heating Energy Consumption in U.S. Households by Household Income, 1997

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.7	1.4	1.0	0.9	1.0	1.3	1.0	
Million Households								
Total U.S. Households	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.8
No Space Heating	0.8	0.2	0.4	0.1	Q	0.3	0.5	26.0
Space Heating	100.7	13.1	28.8	31.0	27.8	14.3	33.5	2.8
Not Using a Major Fuel ²	1.0	0.3	0.2	0.3	Q	0.3	0.6	26.1
Using a Major Fuel ²	99.7	12.8	28.5	30.7	27.6	14.0	33.0	2.8
For Main Space Heating	98.1	12.7	28.0	30.3	27.1	13.9	32.5	2.9
For Secondary Space Heating Only	1.6	Q	0.6	0.5	0.5	Q	0.4	18.7
Number of Households with Space Heating, Major Fuels Used (more than one may apply):								
Electricity	42.0	5.6	12.1	12.3	11.9	5.8	13.7	5.0
Natural Gas	54.5	6.4	14.9	17.1	16.1	7.3	17.0	4.7
Fuel Oil	9.8	1.3	2.5	3.1	2.9	1.4	3.4	10.4
Kerosene	3.5	0.4	1.2	1.2	0.6	0.6	1.4	14.4
LPG	5.6	0.7	1.7	2.1	1.2	0.8	1.9	14.2
Quadrillion Btu								
Space-Heating Btu Consumption, Major Fuels Used:								
Electricity	0.40	0.05	0.11	0.12	0.12	0.05	0.12	8.3
Natural Gas	3.61	0.36	0.91	1.14	1.21	0.40	1.01	6.1
Fuel Oil	0.85	0.08	0.19	0.27	0.32	0.08	0.24	12.5
Kerosene	0.06	0.01	0.02	0.02	0.01	0.01	0.03	23.5
LPG	0.26	0.03	0.08	0.10	0.05	0.03	0.08	16.8
Total	5.18	0.52	1.31	1.64	1.71	0.58	1.48	4.1
Physical Units								
Physical Units of Space-Heating Consumption, Major Fuels Used:								
Electricity (billion kWh)	118	14	33	34	37	16	36	8.3
Natural Gas (billion cf)	3,517	347	885	1,108	1,177	387	985	6.1
Fuel Oil (million gallons)	6,133	553	1,361	1,920	2,299	589	1,703	12.5
Kerosene (million gallons)	436	67	161	153	54	98	193	23.5
LPG (million gallons)	2,823	300	850	1,089	583	352	906	16.8
Million Btu per Household								
Average Space-Heating Btu Consumption per Household								
Using a Major Fuel ²	52.0	40.4	45.9	53.4	62.0	41.3	44.9	3.5
For Main Space Heating	52.5	40.6	46.5	54.0	62.7	41.5	45.2	3.6
For Secondary Space Heating Only	3195.0	Q	2371.7	3323.6	3600.3	Q	3525.4	23.2

See footnotes at end of table.

Table CE2-3c. Space-Heating Energy Consumption in U.S. Households by Household Income, 1997 (Continued)

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.7	1.4	1.0	0.9	1.0	1.3	1.0	
Million Households								
Number of Households, Where the Main Space-Heating Fuel Is:								
Electricity	29.6	4.4	9.1	8.5	7.6	4.4	10.4	6.6
Natural Gas	53.5	6.2	14.7	16.6	15.9	7.2	16.8	4.8
Fuel Oil	9.5	1.3	2.4	3.0	2.8	1.3	3.3	10.4
Kerosene	1.0	0.2	0.3	0.4	Q	0.3	0.5	23.8
LPG	4.6	0.6	1.5	1.8	0.8	0.7	1.6	14.9
Other	2.6	0.4	0.8	0.7	0.6	0.4	1.0	18.0
No Space Heating	0.8	0.2	0.4	0.1	Q	0.3	0.5	26.0
Million Btu per Household⁴								
Space-Heating Btu Consumption per Household,³ Where the Main Space-Heating Fuel Is:								
Electricity	12.8	10.4	11.9	13.0	15.2	11.4	11.1	5.3
Natural Gas	66.9	56.6	61.5	67.4	75.5	55.3	59.9	3.6
Fuel Oil	88.1	60.1	77.0	86.9	111.8	60.3	71.3	5.6
Kerosene	41.5	33.3	38.0	45.9	Q	38.1	35.7	16.7
LPG	53.4	43.4	51.7	54.6	61.7	44.1	49.2	7.0
Physical Units (PU) per Household⁴								
Physical Units of Space-Heating Consumption per Household,³ Where the Main Space-Heating Fuel Is:								
Electricity (kWh)	3,760	3,059	3,474	3,798	4,462	3,347	3,265	5.3
Natural Gas (thousand cf)	65	55	60	66	74	54	58	3.6
Fuel Oil (gallons)	636	434	556	627	806	435	515	5.5
Kerosene (gallons)	307	247	282	340	Q	282	264	16.7
LPG (gallons)	585	475	566	598	676	483	538	7.0
1997 Heating Degree-Days (HDD) per Household⁴								
1997 Heating Degree-Days per Household, Where the Main Space-Heating Fuel Is:								
Electricity	3,225	3,429	3,122	3,227	3,228	3,356	3,317	4.3
Natural Gas	4,710	4,252	4,503	4,927	4,853	4,223	4,415	2.8
Fuel Oil	5,707	5,186	6,001	5,686	5,715	5,264	5,648	2.9
Kerosene	4,959	3,593	4,758	5,801	Q	3,722	4,123	12.1
LPG	4,863	4,326	4,725	5,185	4,806	4,440	4,598	6.6
Average for All Households	4,368	4,051	4,198	4,552	4,486	4,048	4,192	2.0

See footnotes at end of table.

Table CE2-3c. Space-Heating Energy Consumption in U.S. Households by Household Income, 1997 (Continued)

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.7	1.4	1.0	0.9	1.0	1.3	1.0	
Heated Square Footage (HSF) per Household⁴								
Heated Square Footage per Household,⁵ Where the Main Space-Heating Fuel Is:								
Electricity	1,462	978	1,213	1,467	2,031	1,074	1,136	2.6
Natural Gas	1,747	1,143	1,343	1,746	2,360	1,192	1,295	2.8
Fuel Oil	1,836	1,023	1,510	1,818	2,509	1,088	1,325	4.0
Kerosene	1,023	975	910	1,087	Q	1,001	963	7.0
LPG	1,663	1,044	1,448	1,833	2,161	1,076	1,394	5.6
Average for All Households	1,659	1,066	1,315	1,672	2,275	1,135	1,247	1.8
Space-Heating Intensity [PU÷{HDD×(HSF÷1000)}]⁴								
Space-Heating Intensity, Where the Main Space-Heating Fuel Is:								
Electricity	0.797	0.912	0.917	0.802	0.681	0.928	0.867	3.8
Natural Gas	7.919	11.327	9.903	7.627	6.422	10.704	10.203	3.1
Fuel Oil	0.061	0.082	0.061	0.061	0.056	0.076	0.069	6.7
Kerosene	0.061	0.070	0.065	0.054	Q	0.076	0.067	11.9
LPG	0.072	0.105	0.083	0.063	0.065	0.101	0.084	8.8

¹ Below 150 percent of poverty line or 60 percent of median State income.
² The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).
³ Includes only the space-heating consumption of the space-heating fuel. Not included are: 1) the consumption of the main space-heating fuel for uses other than space heating; 2) the consumption of the main space-heating fuel where it is the secondary, and not the main, space-heating fuel, and; 3) the consumption of other fuels that are used as secondary space-heating fuels.
⁴ Averages are for those households using each of the main space-heating fuels.
⁵ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage.
 Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.
 Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

**Table CE2-4c. Space-Heating Energy Consumption in U.S. Households
by Type of Housing Unit, 1997**

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.6	0.6	1.8	1.2	1.4	
Million Households						
Total U.S. Households	101.5	73.7	5.6	15.8	6.3	4.2
No Space Heating	0.8	0.4	Q	0.3	Q	37.5
Space Heating	100.7	73.4	5.6	15.5	6.2	4.2
Not Using a Major Fuel ¹	1.0	0.6	Q	0.2	Q	34.5
Using a Major Fuel ¹	99.7	72.7	5.6	15.3	6.1	4.2
For Main Space Heating	98.1	71.3	5.6	15.3	5.9	4.3
For Secondary Space Heating Only	1.6	1.4	Q	Q	0.2	21.7
Number of Households with Space Heating, Major Fuels Used (more than one may apply):						
Electricity	42.0	28.0	2.1	8.7	3.2	6.6
Natural Gas	54.5	43.4	3.5	5.5	2.1	7.0
Fuel Oil	9.8	7.4	0.5	1.8	Q	13.1
Kerosene	3.5	2.7	Q	Q	0.6	14.8
LPG	5.6	4.4	Q	Q	1.1	15.4
Quadrillion Btu						
Space-Heating Btu Consumption, Major Fuels Used:						
Electricity	0.40	0.31	0.02	0.04	0.04	9.7
Natural Gas	3.61	3.11	0.24	0.15	0.12	8.9
Fuel Oil	0.85	0.74	0.04	0.07	Q	16.2
Kerosene	0.06	0.04	Q	Q	0.02	25.9
LPG	0.26	0.21	Q	Q	0.04	17.9
Total	5.18	4.39	0.30	0.26	0.23	5.7
Physical Units						
Physical Units of Space-Heating Consumption, Major Fuels Used:						
Electricity (billion kWh)	118	89	6	11	12	9.7
Natural Gas (billion cf)	3,517	3,024	234	144	115	8.9
Fuel Oil (million gallons)	6,133	5,307	282	501	Q	16.2
Kerosene (million gallons)	436	271	Q	Q	139	25.9
LPG (million gallons)	2,823	2,312	Q	Q	465	17.9
Million Btu per Household						
Average Space-Heating Btu Consumption per Household						
Using a Major Fuel ¹	52.0	60.4	54.2	16.9	37.0	4.6
For Main Space Heating	52.5	61.3	54.2	16.9	37.7	4.6
For Secondary Space Heating Only	17.6	18.3	Q	Q	12.3	29.5

See footnotes at end of table.

Table CE2-4c. Space-Heating Energy Consumption in U.S. Households by Type of Housing Unit, 1997 (Continued)

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.6	0.6	1.8	1.2	1.4	
Million Households						
Number of Households, Where the Main Space-Heating Fuel Is:						
Electricity	29.6	17.7	1.6	7.9	2.4	8.6
Natural Gas	53.5	42.5	3.4	5.5	2.1	7.2
Fuel Oil	9.5	7.1	0.5	1.8	Q	13.2
Kerosene	1.0	0.5	Q	Q	0.4	26.1
LPG	4.6	3.5	Q	Q	1.0	16.7
Other	2.6	2.1	Q	0.2	0.3	23.7
No Space Heating	0.8	0.4	Q	0.3	Q	37.5
Million Btu per Household³						
Space-Heating Btu Consumption per Household,² Where the Main Space-Heating Fuel Is:						
Electricity	12.8	16.1	11.9	4.6	16.1	5.8
Natural Gas	66.9	72.4	69.7	26.8	56.3	4.7
Fuel Oil	88.1	101.5	83.5	38.4	Q	6.7
Kerosene	41.5	40.2	Q	Q	45.3	18.6
LPG	53.4	57.3	Q	Q	40.8	6.8
Physical Units (PU) per Household³						
Physical Units of Space-Heating Consumption per Household,² Where the Main Space-Heating Fuel Is:						
Electricity (kWh)	3,760	4,730	3,494	1,347	4,714	5.8
Natural Gas (thousand cf)	65	70	68	26	55	4.7
Fuel Oil (gallons)	636	733	602	277	Q	6.7
Kerosene (gallons)	307	298	Q	Q	336	18.6
LPG (gallons)	585	627	Q	Q	447	6.8
1997 Heating Degree-Days (HDD) per Household³						
1997 Heating Degree-Days per Household, Where the Main Space-Heating Fuel Is:						
Electricity	3,225	3,165	3,728	3,132	3,644	5.4
Natural Gas	4,710	4,679	5,111	4,713	4,665	3.6
Fuel Oil	5,707	5,878	6,139	4,960	Q	3.7
Kerosene	4,959	4,503	Q	Q	5,288	13.4
LPG	4,863	5,050	Q	Q	4,116	7.4
Average for All Households	4,368	4,439	4,816	3,930	4,215	2.7

See footnotes at end of table.

Table CE2-4c. Space-Heating Energy Consumption in U.S. Households by Type of Housing Unit, 1997 (Continued)

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.6	0.6	1.8	1.2	1.4	

Heated Square Footage (HSF) per Household³

Heated Square Footage per Household,⁴ Where the Main Space-Heating Fuel Is:

	Total	Single-Family	Two to Four Units	Five or More Units	Mobile Home	RSE Row Factors
Electricity	1,462	1,814	904	890	1,110	2.8
Natural Gas	1,747	1,969	1,009	819	893	2.5
Fuel Oil	1,836	2,165	976	812	Q	2.6
Kerosene	1,023	1,182	Q	Q	881	6.4
LPG	1,663	1,874	Q	Q	995	4.6
Average for All Households	1,659	1,940	971	855	996	1.8

Space-Heating Intensity [PU÷(HDD×(HSF÷1000))]³

Space-Heating Intensity, Where the Main Space-Heating Fuel Is:

	Total	Single-Family	Two to Four Units	Five or More Units	Mobile Home	RSE Row Factors
Electricity	0.797	0.824	1.036	0.483	1.165	4.2
Natural Gas	7.919	7.651	13.166	6.762	13.161	3.8
Fuel Oil	0.061	0.058	0.100	0.069	Q	7.4
Kerosene	0.061	0.056	Q	Q	0.072	13.9
LPG	0.072	0.066	Q	Q	0.109	8.8

¹ The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

² Includes only the space-heating consumption of the space-heating fuel. Not included are: 1) the consumption of the main space-heating fuel for uses other than space heating; 2) the consumption of the main space-heating fuel where it is the secondary, and not the main, space-heating fuel, and; 3) the consumption of other fuels that are used as secondary space-heating fuels.

³ Averages are for those households using each of the main space-heating fuels.

⁴ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE2-5u. Space-Heating Energy Consumption and Expenditures in U.S. Households by Household Demographics, 1997

Household Demographics	Space-Heating Energy					RSE Row Factors
	Households (millions)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
RSE Column Factor:	0.9	1.3	1.1	1.0	0.8	
Total Households Using a Major Space-Heating Fuel¹	99.7	5.18	42.03	52.0	421	1.7
Household Size						
1 Person	25.1	1.13	9.44	45.2	376	3.2
2 Persons	32.6	1.77	14.42	54.4	442	2.6
3 Persons	17.0	0.91	7.38	53.5	434	3.4
4 Persons	15.0	0.81	6.51	54.0	433	3.8
5 Persons	6.2	0.34	2.67	55.2	429	6.1
6 or More Persons	3.7	0.21	1.60	55.0	429	9.2
1997 Household Income Category						
Less than \$5,000	3.5	0.16	1.26	44.6	356	8.7
\$5,000 to \$9,999	9.3	0.36	3.07	38.7	331	5.9
\$10,000 to \$14,999	10.0	0.44	3.56	44.5	356	6.1
\$15,000 to \$19,999	10.2	0.47	3.87	46.1	379	4.9
\$20,000 to \$24,999	8.3	0.39	3.35	47.4	403	4.8
\$25,000 to \$34,999	15.4	0.79	6.41	51.6	417	3.9
\$35,000 to \$49,999	15.4	0.85	6.72	55.1	437	3.2
\$50,000 to \$74,999	16.3	0.99	7.87	60.7	484	4.2
\$75,000 or More	11.3	0.73	5.91	64.0	521	5.0
Below Poverty Line						
100 Percent	14.0	0.58	4.73	41.3	338	4.7
125 Percent	18.8	0.78	6.47	41.4	344	4.5
150 Percent	25.7	1.08	8.93	42.0	347	3.8
Eligible for Federal Assistance²	33.0	1.48	12.20	44.9	370	3.4
Age of Householder						
Under 25 Years	5.6	0.17	1.43	29.7	256	7.2
25 to 34 Years	18.1	0.74	6.16	41.0	340	4.0
35 to 44 Years	22.6	1.16	9.37	51.2	414	2.8
45 to 59 Years	25.3	1.46	11.84	57.6	468	2.8
60 Years and Over	28.1	1.66	13.23	59.0	471	3.2
Race of Householder						
White	77.6	4.21	34.22	54.3	441	1.8
Black	12.5	0.68	5.45	54.1	435	6.6
Other ³	9.6	0.29	2.35	30.3	245	6.6
Householder of Hispanic Descent						
Yes	9.0	0.27	2.21	29.8	246	7.0
No	90.7	4.91	39.81	54.1	439	1.8

¹ The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

² Below 150 percent of poverty line or 60 percent of median State income.

³ Includes 5.1 million householders who described themselves as Hispanic rather than White, Black, or other.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE2-6u. Space-Heating Energy Consumption and Expenditures in U.S. Households by Usage Indicators, 1997

Usage Indicators	Space-Heating Energy					RSE Row Factors
	Households (million)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
	RSE Column Factor:	1.0	1.3	1.2	0.9	
Total Households Using a Major Space-Heating Fuel¹	99.7	5.18	42.03	52.0	421	1.8
1997 Heating Degree-Days (HDD)						
Less than 4,000	42.0	1.00	10.29	23.9	245	5.8
4,000 to 5,499	21.2	1.24	10.79	58.6	509	7.1
5,500 to 6,999	25.9	2.06	15.26	79.6	588	4.8
7,000 or More	10.5	0.87	5.68	82.4	539	10.0
Estimated Heated Floorspace Category (square feet)²						
Fewer than 600	7.6	0.23	2.02	30.8	268	6.6
600 to 999	21.0	0.84	6.97	39.7	332	4.1
1,000 to 1,599	29.8	1.49	12.12	49.9	406	3.5
1,600 to 1,999	15.1	0.91	7.36	59.9	487	3.8
2,000 to 2,399	7.8	0.49	3.92	63.3	502	5.2
2,400 to 2,999	5.3	0.36	2.88	67.8	546	6.5
3,000 or More	4.1	0.35	2.64	85.3	645	9.1
No Estimate Provided	9.0	0.52	4.11	57.4	456	6.3
Household Size						
1 Person	25.1	1.13	9.44	45.2	376	3.3
2 Persons	32.6	1.77	14.42	54.4	442	2.6
3 Persons	17.0	0.91	7.38	53.5	434	3.4
4 Persons	15.0	0.81	6.51	54.0	433	3.8
5 Persons	6.2	0.34	2.67	55.2	429	6.1
6 or More Persons	3.7	0.21	1.60	55.0	429	9.2
Weekday Home Activities						
Home Used for Business						
Yes	7.2	0.42	3.31	58.0	462	7.0
No	92.6	4.76	38.71	51.5	418	1.7
Energy-Intensive Activity						
Yes	2.4	0.14	1.07	57.8	455	10.7
No	97.4	5.04	40.95	51.8	421	1.7
Someone Home All Day						
Yes	50.3	2.80	22.44	55.7	446	2.3
No	49.5	2.38	19.59	48.2	396	2.5
Winter Temperature Settings						
Lower When No One Home						
Yes	45.0	2.27	18.48	50.5	410	2.5
No	54.7	2.91	23.54	53.1	430	2.1
Lower During Sleeping Hours						
Yes	47.0	2.43	19.53	51.6	415	2.5
No	52.7	2.76	22.50	52.3	427	2.0
Adequacy of Insulation						
Well Insulated	37.5	1.83	15.29	48.8	408	2.7
Adequately Insulated	43.8	2.29	18.45	52.3	421	2.4
Poorly Insulated	18.0	1.04	8.15	57.5	452	4.1

See footnotes at end of table.

Table CE2-6u. Space-Heating Energy Consumption and Expenditures in U.S. Households by Usage Indicators, 1997 (Continued)

Usage Indicators	Space-Heating Energy					RSE Row Factors
	Households (million)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
	RSE Column Factor:	1.0	1.3	1.2	0.9	
Secondary Heating Fuel (more than one may apply)						
No	65.6	3.17	25.35	48.4	387	2.2
Yes	34.2	2.01	16.68	58.8	488	3.3
Electricity	15.7	0.93	7.68	58.9	489	5.3
Natural Gas	4.9	0.36	2.56	73.5	520	8.0
Kerosene	2.6	0.15	1.41	59.9	552	8.9
Wood	12.9	0.69	5.94	53.6	462	4.9
Other	2.1	0.12	1.16	55.5	562	9.4
Main Heating Equipment						
Central Warm-Air Furnace	56.6	3.31	24.53	58.5	433	2.5
Steam or Hot-Water System	13.4	1.21	9.00	90.1	670	4.8
Heat Pump	9.7	0.13	2.64	13.5	273	7.5
Built-In Electric Units	7.5	0.12	2.43	16.4	327	8.1
Floor, Wall, or Pipeless Furnace	4.8	0.15	1.07	30.9	225	10.0
Room Heater	4.3	0.17	1.38	38.5	317	7.3
Other	4.4	0.09	0.97	20.9	220	7.7
No Main Equipment	0.8	Q	Q	Q	Q	18.4
Age of Main Heating Equipment						
Less than 2 Years	8.7	0.43	3.62	49.7	417	5.2
2 to 4 Years	12.1	0.64	5.21	52.4	429	4.6
5 to 9 Years	19.9	0.93	7.87	46.8	396	3.9
10 to 19 Years	25.0	1.17	9.89	46.9	395	3.3
20 Years or More	26.0	1.63	12.48	62.8	480	3.3
Don't Know	9.0	0.38	2.96	42.0	330	7.7
No Main Equipment	0.8	Q	Q	Q	Q	18.4
Amount of Heat Provided by Main Heating Equipment						
All or Almost All	93.3	4.84	38.91	51.9	417	1.8
About Three-Fourths	4.2	0.22	2.01	52.2	476	7.2
Closer to One-Half	3.2	0.12	1.11	36.1	344	9.2
No Main Equipment	0.8	Q	Q	Q	Q	18.4
Average Electricity Cost for Main Space-Heating (cents per kWh)						
Less than 6	5.1	0.12	1.80	24.2	354	7.3
6 to Less than 9	18.0	0.24	4.86	13.1	270	6.3
9 or More	6.5	0.06	1.66	8.9	256	12.3
Average Natural Gas Cost for Main Space-Heating (dollars per 1000 cf)						
Less than 4.50	1.2	0.13	0.51	107.5	414	15.2
4.50 to Less than 6	13.2	1.06	5.63	80.3	428	6.5
6 or More	39.1	2.41	18.15	61.8	465	4.2

See footnotes at end of table.

Table CE2-6u. Space-Heating Energy Consumption and Expenditures in U.S. Households by Usage Indicators, 1997 (Continued)

Usage Indicators	Space-Heating Energy					RSE Row Factors
	Households (million)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
	RSE Column Factor:	1.0	1.3	1.2	0.9	
Average Fuel Oil Cost for Main Space-Heating (dollars per gallon)						
Less than .95	3.3	0.24	1.45	73.1	442	8.8
.95 to Less than 1.10	4.7	0.47	3.49	100.1	740	7.5
1.10 or More	1.3	0.13	1.14	102.1	898	17.9
Average LPG Cost for Main Space-Heating (dollars per gallon)						
Less than .75	0.4	0.03	0.22	75.0	540	12.6
.75 to Less than 1.00	1.8	0.12	1.20	64.9	653	10.7
1.00 or More	2.3	0.10	1.26	44.1	553	12.2
Main Space-Heating Fuel Paid by Household						
All Major Fuels¹						
Yes	86.8	4.71	38.51	54.3	444	1.9
No	11.3	0.44	3.24	39.0	286	5.7
Electricity						
Yes	27.4	0.40	7.99	14.7	292	4.5
No	2.2	0.01	0.33	6.5	151	16.0
Natural Gas						
Yes	46.9	3.30	22.19	70.3	473	3.0
No	6.5	0.30	2.10	46.1	321	7.1
Fuel Oil						
Yes	7.2	0.73	5.41	101.3	752	7.0
No	2.3	0.11	0.68	49.8	299	11.5
LPG						
Yes	4.5	0.24	2.62	54.9	587	7.5
No	0.1	0.01	0.07	44.1	506	21.8
Kerosene						
Yes	0.9	0.04	0.34	42.6	366	15.6
No	Q	Q	Q	Q	Q	NF

¹ The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

² Estimates provided by the household interview respondents, who were asked which category best described the total heated floorspace in the home.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE2-13c. Space-Heating Energy Consumption in U.S. Households by Census Region, 1997

	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.1	1.0	1.1	1.2	
Million Households						
Total U.S. Households	101.5	19.7	24.1	35.9	21.8	NF
No Space Heating	0.8	Q	Q	0.3	0.5	23.8
Space Heating	100.7	19.7	24.1	35.6	21.3	NF
Not Using a Major Fuel ¹	1.0	0.2	0.3	0.2	0.3	29.4
Using a Major Fuel ¹	99.7	19.5	23.8	35.4	21.0	NF
For Main Space Heating	98.1	19.2	23.5	34.8	20.6	NF
For Secondary Space Heating Only	1.6	0.3	0.3	0.6	0.4	21.1
Number of Households with Space Heating, Major Fuels Used (more than one may apply):						
Electricity	42.0	5.0	6.2	21.3	9.4	4.9
Natural Gas	54.5	9.2	18.1	14.4	12.8	4.8
Fuel Oil	9.8	7.3	1.1	1.1	0.3	18.2
Kerosene	3.5	0.9	0.4	1.9	0.2	15.9
LPG	5.6	0.4	2.0	2.6	0.6	18.6
Quadrillion Btu						
Space-Heating Btu Consumption, Major Fuels Used:						
Electricity	0.40	0.05	0.06	0.21	0.09	8.2
Natural Gas	3.61	0.74	1.66	0.71	0.51	6.7
Fuel Oil	0.85	0.65	0.10	0.07	0.02	20.4
Kerosene	0.06	0.03	Q	0.02	(*)	22.8
LPG	0.26	0.01	0.13	0.08	0.03	21.4
Total	5.18	1.48	1.96	1.09	0.65	3.8
Physical Units						
Physical Units of Space-Heating Consumption, Major Fuels Used:						
Electricity (billion kWh)	118	14	18	60	26	8.2
Natural Gas (billion cf)	3,517	720	1,615	687	495	6.7
Fuel Oil (million gallons)	6,133	4,722	734	526	151	20.4
Kerosene (million gallons)	436	213	Q	161	33	22.8
LPG (million gallons)	2,823	159	1,458	921	285	21.4
Million Btu per Household						
Average Space-Heating Btu Consumption per Household						
Using a Major Fuel ¹	52.0	76.0	82.3	30.8	30.9	3.8
For Main Space Heating	52.5	76.7	83.1	31.2	31.3	3.8
For Secondary Space Heating Only	17.6	35.6	20.7	9.6	12.1	25.2

See footnotes at end of table.

Table CE2-13c. Space-Heating Energy Consumption in U.S. Households by Census Region, 1997 (Continued)

	Census Region					RSE Row Factors
	Total	Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.1	1.0	1.1	1.2	
Million Households						
Number of Households, Where the Main Space-Heating Fuel Is:						
Electricity	29.6	2.3	2.7	17.5	7.1	8.0
Natural Gas	53.5	9.2	17.9	13.7	12.7	4.8
Fuel Oil	9.5	7.1	1.0	1.1	0.2	17.8
Kerosene	1.0	0.4	Q	0.4	Q	22.6
LPG	4.6	0.2	1.8	2.1	0.5	20.7
Other	2.6	0.5	0.6	0.8	0.7	19.5
No Space Heating	0.8	Q	Q	0.3	0.5	23.8
Million Btu per Household³						
Space-Heating Btu Consumption per Household,² Where the Main Space-Heating Fuel Is:						
Electricity	12.8	18.0	20.3	11.3	12.0	5.5
Natural Gas	66.9	80.7	92.0	50.1	39.7	3.4
Fuel Oil	88.1	90.7	96.5	64.9	82.5	6.4
Kerosene	41.5	56.0	Q	25.7	Q	14.5
LPG	53.4	58.1	72.7	38.2	46.3	7.8
Physical Units (PU) per Household³						
Physical Units of Space-Heating Consumption per Household,² Where the Main Space-Heating Fuel Is:						
Electricity (kWh)	3,760	5,284	5,941	3,319	3,518	5.5
Natural Gas (thousand cf)	65	79	90	49	39	3.4
Fuel Oil (gallons)	636	654	698	469	595	6.4
Kerosene (gallons)	307	415	Q	190	Q	14.5
LPG (gallons)	585	636	796	418	507	7.8
1997 Heating Degree-Days (HDD) per Household³						
1997 Heating Degree-Days per Household, Where the Main Space-Heating Fuel Is:						
Electricity	3,225	5,812	6,120	2,382	3,354	3.5
Natural Gas	4,710	5,801	6,596	2,970	3,136	2.8
Fuel Oil	5,707	5,753	7,484	3,857	5,258	4.4
Kerosene	4,959	6,647	Q	3,010	Q	8.7
LPG	4,863	6,457	6,747	2,991	5,150	5.8
Average for All Households	4,368	5,811	6,592	2,705	3,300	2.1

See footnotes at end of table.

Table CE2-7c. Space-Heating Energy Consumption in U.S. Households by Four Most Populated States, 1997 (Continued)

	Total U.S.	Four Most Populated States				RSE Row Factors
		New York	California	Texas	Florida	
RSE Column Factor:	0.3	1.2	0.8	1.4	2.2	
Heated Square Footage (HSF) per Household³						
Heated Square Footage per Household,⁴ Where the Main Space-Heating Fuel Is:						
Electricity	1,462	1,199	1,232	1,355	1,556	5.6
Natural Gas	1,747	1,797	1,415	1,599	1,906	5.5
Fuel Oil	1,836	1,488	Q	Q	Q	6.8
Kerosene	1,023	Q	Q	Q	Q	12.1
LPG	1,663	Q	1,223	1,344	Q	7.1
Average for All Households	1,659	1,623	1,363	1,488	1,586	3.4
Space-Heating Intensity [PU÷(HDD×(HSF÷1000))]³						
Space-Heating Intensity, Where the Main Space-Heating Fuel Is:						
Electricity	0.797	0.565	0.619	1.009	1.122	7.0
Natural Gas	7.919	7.322	9.244	10.510	7.587	4.7
Fuel Oil	0.061	0.079	Q	Q	Q	11.2
Kerosene	0.061	Q	Q	Q	Q	25.5
LPG	0.072	Q	0.086	0.093	Q	15.1

¹ The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

² Includes only the space-heating consumption of the space-heating fuel. Not included are: 1) the consumption of the main space-heating fuel for uses other than space heating; 2) the consumption of the main space-heating fuel where it is the secondary, and not the main, space-heating fuel, and; 3) the consumption of other fuels that are used as secondary space-heating fuels.

³ Averages are for those households using each of the main space-heating fuels.

⁴ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage. NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Space-Heating Expenditures Tables

Table CE2-2e. Space-Heating Energy Expenditures in U.S. Households by Year of Construction, 1997

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.5	1.2	1.0	1.1	1.1	0.9	
Million Households								
Total U.S. Households	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.3
No Space Heating	0.8	Q	Q	0.2	Q	Q	0.2	35.6
Space Heating	100.7	9.6	17.3	19.4	14.3	12.4	27.7	4.3
Not Using a Major Fuel ²	1.0	Q	0.2	0.2	0.2	Q	0.3	34.1
Using a Major Fuel ²	99.7	9.6	17.1	19.2	14.1	12.4	27.3	4.3
For Main Space Heating	98.1	9.5	16.8	18.8	13.9	12.3	26.8	4.3
For Secondary Space Heating Only	1.6	Q	0.3	0.4	0.2	0.1	0.5	23.4
Number of Households with Space Heating, Major Fuels Used (more than one may apply):								
Electricity	42.0	4.5	10.9	10.1	5.6	3.9	7.1	6.2
Natural Gas	54.5	4.7	6.5	8.3	8.5	8.3	18.3	6.4
Fuel Oil	9.8	0.3	0.6	1.0	1.5	1.5	4.9	14.8
Kerosene	3.5	0.2	0.5	0.8	0.4	0.3	1.4	18.4
LPG	5.6	0.7	0.9	1.2	0.7	0.6	1.6	15.5
Billion Dollars								
Space-Heating Expenditures, Major Fuels Used:								
Electricity	8.56	0.98	2.16	2.58	1.04	0.69	1.11	9.3
Natural Gas	24.11	1.76	2.30	3.09	3.22	3.56	10.17	7.8
Fuel Oil	6.07	0.19	0.36	0.55	0.81	0.88	3.28	17.3
Kerosene	0.50	0.03	0.06	0.09	0.05	0.03	0.23	29.8
LPG	2.79	0.35	0.36	0.53	0.33	0.22	1.00	18.2
Total	42.03	3.32	5.23	6.85	5.44	5.38	15.80	4.7
Dollars per Household								
Average Space-Heating Expenditures per Household								
Using a Major Fuel ²	421	347	306	357	385	433	578	3.0
For Main Space Heating	425	350	309	362	388	435	585	3.0
For Secondary Space Heating Only	175	Q	102	170	186	211	220	22.4
Million Households								
Number of Households, Where the Main Space-Heating Fuel Is:								
Electricity	29.6	3.9	9.3	8.5	3.4	2.2	2.3	8.4
Natural Gas	53.5	4.7	6.2	8.1	8.3	8.1	18.1	6.5
Fuel Oil	9.5	0.3	0.5	1.0	1.5	1.4	4.7	14.6
Kerosene	1.0	Q	0.1	0.3	Q	Q	0.3	29.8
LPG	4.6	0.6	0.7	1.0	0.6	0.5	1.4	17.1
Other	2.6	Q	0.4	0.6	0.4	0.2	0.8	21.3
No Space Heating	0.8	Q	Q	0.2	Q	Q	0.2	35.6

See footnotes at end of table.

Table CE2-2e. Space-Heating Energy Expenditures in U.S. Households by Year of Construction, 1997 (Continued)

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.5	1.2	1.0	1.1	1.1	0.9	
Dollars per Household⁴								
Space-Heating Expenditures per Household,³ Where the Main Space-Heating Fuel Is:								
Electricity	270	246	225	295	275	271	389	6.3
Natural Gas	446	371	357	378	380	436	562	4.0
Fuel Oil	629	695	638	544	536	605	679	7.6
Kerosene	350	Q	350	267	Q	Q	400	17.9
LPG	567	579	501	511	540	415	698	8.0
1997 Heating Degree-Days (HDD) per Household⁴								
1997 Heating Degree-Days per Household, Where the Main Space-Heating Fuel Is:								
Electricity	3,225	3,362	3,038	3,293	3,182	3,048	3,742	5.9
Natural Gas	4,710	4,507	4,536	4,652	4,304	4,481	5,137	3.4
Fuel Oil	5,707	6,313	5,915	5,521	5,518	5,657	5,762	3.9
Kerosene	4,959	Q	6,111	4,141	Q	Q	4,820	12.5
LPG	4,863	4,973	4,771	4,248	4,525	4,145	5,680	7.3
Average for All Households	4,368	4,129	3,780	4,057	4,171	4,344	5,152	2.5
Heated Square Footage (HSF) per Household⁴								
Heated Square Footage per Household,⁵ Where the Main Space-Heating Fuel Is:								
Electricity	1,462	1,599	1,494	1,468	1,349	1,347	1,360	3.6
Natural Gas	1,747	2,465	2,030	1,675	1,645	1,558	1,627	3.0
Fuel Oil	1,836	3,043	2,204	1,880	1,683	1,720	1,800	5.8
Kerosene	1,023	Q	1,011	859	Q	Q	1,122	7.5
LPG	1,663	2,125	1,847	1,360	1,522	1,382	1,754	7.5
Average for All Households	1,659	2,098	1,725	1,565	1,565	1,530	1,635	2.2
Space-Heating Intensity [Cents÷(HDD×(HSF÷1000))]⁴								
Space-Heating Intensity, Where the Main Space-Heating Fuel Is:								
Electricity	5.72	4.58	4.96	6.10	6.41	6.60	7.64	5.4
Natural Gas	5.42	3.34	3.88	4.86	5.37	6.24	6.72	3.7
Fuel Oil	6.01	3.62	4.89	5.24	5.77	6.22	6.55	7.7
Kerosene	6.89	Q	5.66	7.49	Q	Q	7.40	16.9
LPG	7.01	5.48	5.68	8.85	7.84	7.25	7.01	10.7

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

² The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

³ Includes only the space-heating expenditures of the space-heating fuel. Not included are: 1) the expenditures of the main space-heating fuel for uses other than space heating; 2) the expenditures of the main space-heating fuel where it is the secondary, and not the main, space-heating fuel, and; 3) the expenditures of other fuels that are used as secondary space-heating fuels.

⁴ Averages are for those households using each of the main space-heating fuels.

⁵ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage. Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE2-3e. Space-Heating Energy Expenditures in U.S. Households by Household Income, 1997

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.7	1.4	1.0	0.9	1.0	1.3	1.0	
Million Households								
Total U.S. Households	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.8
No Space Heating	0.8	0.2	0.4	0.1	Q	0.3	0.5	25.9
Space Heating	100.7	13.1	28.8	31.0	27.8	14.3	33.5	2.8
Not Using a Major Fuel ²	1.0	0.3	0.2	0.3	Q	0.3	0.6	26.1
Using a Major Fuel ²	99.7	12.8	28.5	30.7	27.6	14.0	33.0	2.8
For Main Space Heating	98.1	12.7	28.0	30.3	27.1	13.9	32.5	2.9
For Secondary Space Heating Only	1.6	Q	0.6	0.5	0.5	Q	0.4	18.7
Number of Households with Space Heating, Major Fuels Used (more than one may apply):								
Electricity	42.0	5.6	12.1	12.3	11.9	5.8	13.7	5.0
Natural Gas	54.5	6.4	14.9	17.1	16.1	7.3	17.0	4.7
Fuel Oil	9.8	1.3	2.5	3.1	2.9	1.4	3.4	10.4
Kerosene	3.5	0.4	1.2	1.2	0.6	0.6	1.4	14.4
LPG	5.6	0.7	1.7	2.1	1.2	0.8	1.9	14.2
Billion Dollars								
Space-Heating Expenditures, Major Fuels Used:								
Electricity	8.56	1.03	2.35	2.44	2.75	1.10	2.62	8.0
Natural Gas	24.11	2.43	6.09	7.59	8.00	2.64	6.82	6.1
Fuel Oil	6.07	0.49	1.32	1.89	2.37	0.52	1.61	13.0
Kerosene	0.50	0.08	0.19	0.17	0.06	0.12	0.22	23.4
LPG	2.79	0.30	0.84	1.03	0.61	0.35	0.92	16.7
Total	42.03	4.33	10.78	13.12	13.79	4.73	12.20	3.3
Dollars per Household								
Average Space-Heating Expenditures per Household								
Using a Major Fuel ²	421	338	378	427	499	338	370	2.6
For Main Space Heating	425	339	382	431	504	340	373	2.6
For Secondary Space Heating Only	175	Q	154	155	231	Q	144	20.0
Million Households								
Number of Households, Where the Main Space-Heating Fuel Is:								
Electricity	29.6	4.4	9.1	8.5	7.6	4.4	10.4	6.6
Natural Gas	53.5	6.2	14.7	16.6	15.9	7.2	16.8	4.8
Fuel Oil	9.5	1.3	2.4	3.0	2.8	1.3	3.3	10.4
Kerosene	1.0	0.2	0.3	0.4	Q	0.3	0.5	23.7
LPG	4.6	0.6	1.5	1.8	0.8	0.7	1.6	14.9
Other	2.6	0.4	0.8	0.7	0.6	0.4	1.0	18.0
No Space Heating	0.8	0.2	0.4	0.1	Q	0.3	0.5	25.9

See footnotes at end of table.

Table CE2-3e. Space-Heating Energy Expenditures in U.S. Households by Household Income, 1997 (Continued)

	1997 Household Income					Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
	Total	Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.7	1.4	1.0	0.9	1.0	1.3	1.0	
Dollars per Household⁴								
Space-Heating Expenditures per Household,³ Where the Main Space-Heating Fuel Is:								
Electricity	270	219	244	269	331	234	236	5.2
Natural Gas	446	386	411	448	500	367	404	3.6
Fuel Oil	629	388	538	617	832	387	488	6.0
Kerosene	350	286	320	386	Q	328	306	16.7
LPG	567	472	553	560	685	479	540	6.6
1997 Heating Degree-Days (HDD) per Household⁴								
1997 Heating Degree-Days per Household, Where the Main Space-Heating Fuel Is:								
Electricity	3,225	3,429	3,122	3,227	3,228	3,356	3,317	4.3
Natural Gas	4,710	4,252	4,503	4,927	4,853	4,223	4,415	2.8
Fuel Oil	5,707	5,186	6,001	5,686	5,715	5,264	5,648	2.9
Kerosene	4,959	3,593	4,758	5,801	Q	3,722	4,123	12.1
LPG	4,863	4,326	4,725	5,185	4,806	4,440	4,598	6.6
Average for All Households	4,368	4,051	4,198	4,552	4,486	4,048	4,192	2.0
Heated Square Footage (HSF) per Household⁴								
Heated Square Footage per Household,⁵ Where the Main Space-Heating Fuel Is:								
Electricity	1,462	978	1,213	1,467	2,031	1,074	1,136	2.6
Natural Gas	1,747	1,143	1,343	1,746	2,360	1,192	1,295	2.8
Fuel Oil	1,836	1,023	1,510	1,818	2,509	1,088	1,325	4.0
Kerosene	1,023	975	910	1,087	Q	1,001	963	7.0
LPG	1,663	1,044	1,448	1,833	2,161	1,076	1,394	5.6
Average for All Households	1,659	1,066	1,315	1,672	2,275	1,135	1,247	1.8
Space-Heating Intensity [Cents÷(HDD×(HSF÷1000))]⁴								
Space-Heating Intensity, Where the Main Space-Heating Fuel Is:								
Electricity	5.72	6.53	6.43	5.68	5.05	6.48	6.27	4.3
Natural Gas	5.42	7.94	6.80	5.21	4.36	7.28	7.07	3.7
Fuel Oil	6.01	7.31	5.94	5.97	5.80	6.75	6.53	7.1
Kerosene	6.89	8.17	7.39	6.12	Q	8.80	7.71	12.9
LPG	7.01	10.44	8.08	5.89	6.59	10.02	8.42	9.2

¹ Below 150 percent of poverty line or 60 percent of median State income.

² The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

³ Includes only the space-heating expenditures of the space-heating fuel. Not included are: 1) the expenditures of the main space-heating fuel for uses other than space heating; 2) the expenditures of the main space-heating fuel where it is the secondary, and not the main, space-heating fuel, and; 3) the expenditures of other fuels that are used as secondary space-heating fuels.

⁴ Averages are for those households using each of the main space-heating fuels.

⁵ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage. Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

**Table CE2-4e. Space-Heating Energy Expenditures in U.S. Households
by Type of Housing Unit, 1997**

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.6	0.6	1.8	1.2	1.4	
Million Households						
Total U.S. Households	101.5	73.7	5.6	15.8	6.3	4.2
No Space Heating	0.8	0.4	Q	0.3	Q	37.0
Space Heating	100.7	73.4	5.6	15.5	6.2	4.2
Not Using a Major Fuel ¹	1.0	0.6	Q	0.2	Q	34.0
Using a Major Fuel ¹	99.7	72.7	5.6	15.3	6.1	4.2
For Main Space Heating	98.1	71.3	5.6	15.3	5.9	4.3
For Secondary Space Heating Only	1.6	1.4	Q	Q	0.2	21.7
Number of Households with Space Heating, Major Fuels Used (more than one may apply):						
Electricity	42.0	28.0	2.1	8.7	3.2	6.6
Natural Gas	54.5	43.4	3.5	5.5	2.1	7.0
Fuel Oil	9.8	7.4	0.5	1.8	Q	13.0
Kerosene	3.5	2.7	Q	Q	0.6	14.8
LPG	5.6	4.4	Q	Q	1.1	15.5
Billion Dollars						
Space-Heating Expenditures, Major Fuels Used:						
Electricity	8.56	6.45	0.46	0.88	0.77	9.2
Natural Gas	24.11	20.64	1.66	1.07	0.74	9.0
Fuel Oil	6.07	5.40	0.28	0.35	Q	16.8
Kerosene	0.50	0.32	Q	Q	0.16	25.6
LPG	2.79	2.26	Q	Q	0.47	18.0
Total	42.03	35.07	2.45	2.34	2.18	4.5
Dollars per Household						
Average Space-Heating Expenditures per Household						
Using a Major Fuel ¹	421	482	436	153	357	3.2
For Main Space Heating	425	488	436	153	362	3.2
For Secondary Space Heating Only	175	177	Q	Q	168	20.1
Million Households						
Number of Households, Where the Main Space-Heating Fuel Is:						
Electricity	29.6	17.7	1.6	7.9	2.4	8.6
Natural Gas	53.5	42.5	3.4	5.5	2.1	7.2
Fuel Oil	9.5	7.1	0.5	1.8	Q	13.1
Kerosene	1.0	0.5	Q	Q	0.4	26.1
LPG	4.6	3.5	Q	Q	1.0	16.8
Other	2.6	2.1	Q	0.2	0.3	23.6
No Space Heating	0.8	0.4	Q	0.3	Q	37.0

See footnotes at end of table.

Table CE2-4e. Space-Heating Energy Expenditures in U.S. Households by Type of Housing Unit, 1997 (Continued)

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.6	0.6	1.8	1.2	1.4	
Dollars per Household³						
Space-Heating Expenditures per Household,² Where the Main Space-Heating Fuel Is:						
Electricity	270	337	269	108	306	5.5
Natural Gas	446	481	481	194	350	4.4
Fuel Oil	629	745	606	193	Q	7.2
Kerosene	350	341	Q	Q	378	18.5
LPG	567	602	Q	Q	451	6.5
1997 Heating Degree-Days (HDD) per Household³						
1997 Heating Degree-Days per Household, Where the Main Space-Heating Fuel Is:						
Electricity	3,225	3,165	3,728	3,132	3,644	5.4
Natural Gas	4,710	4,679	5,111	4,713	4,665	3.6
Fuel Oil	5,707	5,878	6,139	4,960	Q	3.7
Kerosene	4,959	4,503	Q	Q	5,288	13.5
LPG	4,863	5,050	Q	Q	4,116	7.4
Average for All Households	4,368	4,439	4,816	3,930	4,215	2.7
Heated Square Footage (HSF) per Household³						
Heated Square Footage per Household,⁴ Where the Main Space-Heating Fuel Is:						
Electricity	1,462	1,814	904	890	1,110	2.8
Natural Gas	1,747	1,969	1,009	819	893	2.5
Fuel Oil	1,836	2,165	976	812	Q	2.5
Kerosene	1,023	1,182	Q	Q	881	6.4
LPG	1,663	1,874	Q	Q	995	4.6
Average for All Households	1,659	1,940	971	855	996	1.8
Space-Heating Intensity [Cents÷{HDD×(HSF÷1000)}]³						
Space-Heating Intensity, Where the Main Space-Heating Fuel Is:						
Electricity	5.72	5.87	7.97	3.89	7.56	4.6
Natural Gas	5.42	5.22	9.33	5.02	8.40	4.2
Fuel Oil	6.01	5.85	10.11	4.79	Q	8.0
Kerosene	6.89	6.42	Q	Q	8.11	14.9
LPG	7.01	6.37	Q	Q	11.00	9.6

¹ The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

² Includes only the space-heating expenditures of the space-heating fuel. Not included are: 1) the expenditures of the main space-heating fuel for uses other than space heating; 2) the expenditures of the main space-heating fuel where it is the secondary, and not the main, space-heating fuel, and; 3) the expenditures of other fuels that are used as secondary space-heating fuels.

³ Averages are for those households using each of the main space-heating fuels.

⁴ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE2-13e. Space-Heating Energy Expenditures in U.S. Households by Census Region, 1997

	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.1	1.1	1.1	1.2	
Million Households						
Total U.S. Households	101.5	19.7	24.1	35.9	21.8	NF
No Space Heating	0.8	Q	Q	0.3	0.5	23.8
Space Heating	100.7	19.7	24.1	35.6	21.3	NF
Not Using a Major Fuel ¹	1.0	0.2	0.3	0.2	0.3	29.4
Using a Major Fuel ¹	99.7	19.5	23.8	35.4	21.0	NF
For Main Space Heating	98.1	19.2	23.5	34.8	20.6	NF
For Secondary Space Heating Only	1.6	0.3	0.3	0.6	0.4	21.1
Number of Households with Space Heating, Major Fuels Used (more than one may apply):						
Electricity	42.0	5.0	6.2	21.3	9.4	4.9
Natural Gas	54.5	9.2	18.1	14.4	12.8	4.8
Fuel Oil	9.8	7.3	1.1	1.1	0.3	18.2
Kerosene	3.5	0.9	0.4	1.9	0.2	15.9
LPG	5.6	0.4	2.0	2.6	0.6	18.6
Billion Dollars						
Space-Heating Expenditures, Major Fuels Used:						
Electricity	8.56	1.39	1.22	4.26	1.70	8.4
Natural Gas	24.11	6.39	9.78	5.05	2.89	6.5
Fuel Oil	6.07	4.62	0.70	0.58	0.17	21.0
Kerosene	0.50	0.24	Q	0.19	0.04	22.6
LPG	2.79	0.19	1.30	1.01	0.28	21.3
Total	42.03	12.83	13.03	11.10	5.07	2.4
Dollars per Household						
Average Space-Heating Expenditures per Household						
Using a Major Fuel ¹	421	657	548	314	241	2.4
For Main Space Heating	425	663	553	317	243	2.4
For Secondary Space Heating Only	175	294	192	124	141	19.5
Million Households						
Number of Households, Where the Main Space-Heating Fuel Is:						
Electricity	29.6	2.3	2.7	17.5	7.1	8.0
Natural Gas	53.5	9.2	17.9	13.7	12.7	4.8
Fuel Oil	9.5	7.1	1.0	1.1	0.2	17.8
Kerosene	1.0	0.4	Q	0.4	Q	22.6
LPG	4.6	0.2	1.8	2.1	0.5	20.7
Other	2.6	0.5	0.6	0.8	0.7	19.5
No Space Heating	0.8	Q	Q	0.3	0.5	23.8

See footnotes at end of table.

Table CE2-13e. Space-Heating Energy Expenditures in U.S. Households by Census Region, 1997 (Continued)

	Census Region					RSE Row Factors
	Total	Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.1	1.1	1.1	1.2	
Dollars per Household³						
Space-Heating Expenditures per Household,² Where the Main Space-Heating Fuel Is:						
Electricity	270	534	405	233	221	5.2
Natural Gas	446	697	542	358	225	3.4
Fuel Oil	629	641	662	518	676	6.9
Kerosene	350	467	Q	221	Q	15.2
LPG	567	718	705	451	495	6.7
1997 Heating Degree-Days (HDD) per Household³						
1997 Heating Degree-Days per Household, Where the Main Space-Heating Fuel Is:						
Electricity	3,225	5,812	6,120	2,382	3,354	3.5
Natural Gas	4,710	5,801	6,596	2,970	3,136	2.8
Fuel Oil	5,707	5,753	7,484	3,857	5,258	4.4
Kerosene	4,959	6,647	Q	3,010	Q	8.8
LPG	4,863	6,457	6,747	2,991	5,150	5.8
Average for All Households	4,368	5,811	6,592	2,705	3,300	2.1
Heated Square Footage (HSF) per Household³						
Heated Square Footage per Household,⁴ Where the Main Space-Heating Fuel Is:						
Electricity	1,462	1,516	1,519	1,523	1,274	3.8
Natural Gas	1,747	1,799	1,966	1,615	1,545	3.0
Fuel Oil	1,836	1,791	2,057	1,785	2,499	4.6
Kerosene	1,023	1,103	Q	919	Q	5.2
LPG	1,663	1,532	1,926	1,526	1,377	6.6
Average for All Households	1,659	1,743	1,914	1,560	1,457	2.0
Space-Heating Intensity [Cents÷{HDD×(HSF÷1000)}]³						
Space-Heating Intensity, Where the Main Space-Heating Fuel Is:						
Electricity	5.72	6.06	4.36	6.44	5.19	5.2
Natural Gas	5.42	6.68	4.18	7.46	4.64	3.8
Fuel Oil	6.01	6.22	4.30	7.53	5.14	8.3
Kerosene	6.89	6.38	Q	8.01	Q	14.8
LPG	7.01	7.26	5.43	9.89	6.98	9.8

¹ The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).
² Includes only the space-heating expenditures of the space-heating fuel. Not included are: 1) the expenditures of the main space-heating fuel for uses other than space heating; 2) the expenditures of the main space-heating fuel where it is the secondary, and not the main, space-heating fuel, and; 3) the expenditures of other fuels that are used as secondary space-heating fuels.
³ Averages are for those households using each of the main space-heating fuels.
⁴ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage.
 NF = No applicable RSE row factor.
 Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.
 Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Electric Air-Conditioning Consumption Tables

Table CE3-2c. Electric Air-Conditioning Energy Consumption in U.S. Households by Year of Construction, 1997

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.9	1.2	1.0	0.9	1.1	0.9	
Million Households								
Total U.S. Households	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.2
No/Don't Use Air-Conditioning	28.8	1.4	2.7	4.9	4.4	3.6	11.8	7.9
Electric Air-Conditioning ²	72.6	8.3	14.6	14.7	10.0	8.9	16.1	4.7
Central Air-Conditioning ³	47.5	7.5	12.9	10.8	6.5	4.6	5.2	6.2
Room/Wall Air-Conditioning	25.2	0.8	1.8	3.9	3.5	4.3	10.9	8.6
Quadrillion Btu								
Electric Air-Conditioning Btu Consumption								
Total	0.42	0.06	0.11	0.10	0.05	0.04	0.05	7.1
Central Air-Conditioning	0.34	0.06	0.10	0.08	0.04	0.03	0.03	8.3
Room/Wall Air-Conditioning	0.07	(*)	0.01	0.01	0.01	0.01	0.03	11.6
Billion kWh								
Electric Air-Conditioning kWh Consumption								
Total	122	18	32	28	16	12	16	7.1
Central Air-Conditioning	101	18	30	24	13	8	8	8.3
Room/Wall Air-Conditioning	21	1	2	4	3	4	8	11.6
Million Btu per Household⁴								
Electric Air-Conditioning Btu Consumption per Household								
Electric Air-Conditioning	5.7	7.4	7.4	6.5	5.4	4.8	3.3	5.3
Central Air-Conditioning	7.2	8.0	8.0	7.7	6.7	6.1	5.2	5.6
Room/Wall Air-Conditioning	2.9	2.7	3.1	3.3	3.1	3.3	2.4	9.0
kWh per Household⁴								
Electric Air-Conditioning kWh Consumption per Household								
Electric Air-Conditioning	1,677	2,181	2,160	1,911	1,592	1,393	975	5.3
Central Air-Conditioning	2,123	2,330	2,332	2,257	1,953	1,788	1,529	5.6
Room/Wall Air-Conditioning	837	782	901	955	911	970	713	9.0
1997 Cooling Degree-Days (CDD) per Household⁴								
1997 Cooling Degree-Days per Household								
Total U.S. Households	1,274	1,342	1,557	1,411	1,312	1,257	967	3.9
No/Don't Use Air-Conditioning	868	736	746	877	1,017	943	828	7.7
Electric Air-Conditioning	1,435	1,443	1,704	1,589	1,443	1,385	1,068	4.1
Central Air-Conditioning	1,576	1,478	1,788	1,689	1,558	1,399	1,135	4.9
Room/Wall Air-Conditioning	1,169	1,112	1,094	1,312	1,225	1,370	1,037	5.9

See footnotes at end of table.

Table CE3-2c. Electric Air-Conditioning Energy Consumption in U.S. Households by Year of Construction, 1997 (Continued)

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.9	1.2	1.0	0.9	1.1	0.9	
Cooled Square Footage (CSF) per Household⁴								
Cooled Square Footage per Household⁵								
Electric Air-Conditioning	1,464	2,001	1,643	1,436	1,412	1,321	1,158	3.0
Central Air-Conditioning	1,823	2,134	1,770	1,708	1,730	1,786	1,895	2.8
Room/Wall Air-Conditioning	786	760	717	688	811	825	810	5.6
Air-Conditioning Intensity [kWh÷(CDD×(CSF÷1000))]⁴								
Air-Conditioning Intensity								
Electric Air-Conditioning	0.80	0.76	0.77	0.84	0.78	0.76	0.79	3.1
Central Air-Conditioning	0.74	0.74	0.74	0.78	0.72	0.72	0.71	3.3
Room/Wall Air-Conditioning	0.91	0.93	1.15	1.06	0.92	0.86	0.85	6.3

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

² The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

³ Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These room/wall air-conditioners are not included in the count of 25.2 million households using room/wall air-conditioners. Note: This applies to all occurrences of central air-conditioning.

⁴ Averages are for those households using any electric air-conditioning, central air-conditioning, or room/wall air-conditioning, as applicable.

⁵ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage.

(*) = Value rounds to zero in the units displayed.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE3-3c. Electric Air-Conditioning Energy Consumption in U.S. Households by Household Income, 1997

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.7	1.0	0.8	0.9	1.4	1.0	
Million Households								
Total U.S. Households	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
No/Don't Use Air-Conditioning	28.8	5.2	9.9	8.0	5.7	6.4	13.2	5.2
Electric Air-Conditioning ²	72.6	8.1	19.3	23.1	22.2	8.3	20.9	3.6
Central Air-Conditioning ³	47.5	3.6	10.9	15.6	17.3	3.7	10.5	5.4
Room/Wall Air-Conditioning	25.2	4.4	8.4	7.5	4.9	4.6	10.4	5.7
Quadrillion Btu								
Electric Air-Conditioning Btu Consumption								
Total	0.42	0.04	0.10	0.12	0.16	0.04	0.10	6.0
Central Air-Conditioning	0.34	0.02	0.07	0.10	0.15	0.03	0.07	7.6
Room/Wall Air-Conditioning	0.07	0.01	0.02	0.02	0.01	0.02	0.03	8.9
Billion kWh								
Electric Air-Conditioning kWh Consumption								
Total	122	11	28	35	48	12	29	6.0
Central Air-Conditioning	101	7	21	29	44	7	20	7.6
Room/Wall Air-Conditioning	21	4	7	6	4	4	9	8.9
Million Btu per Household⁴								
Electric Air-Conditioning Btu Consumption per Household								
Electric Air-Conditioning	5.7	4.6	5.0	5.1	7.3	4.9	4.8	4.8
Central Air-Conditioning	7.2	6.5	6.7	6.3	8.6	6.9	6.5	5.4
Room/Wall Air-Conditioning	2.9	3.1	3.0	2.6	2.9	3.3	3.1	6.8
kWh per Household⁴								
Electric Air-Conditioning kWh Consumption per Household								
Electric Air-Conditioning	1,677	1,354	1,478	1,497	2,154	1,433	1,404	4.8
Central Air-Conditioning	2,123	1,894	1,950	1,853	2,522	2,035	1,897	5.4
Room/Wall Air-Conditioning	837	910	867	754	848	959	908	6.8
1997 Cooling Degree-Days (CDD) per Household⁴								
1997 Cooling Degree-Days per Household								
Total U.S. Households	1,274	1,392	1,339	1,197	1,235	1,379	1,322	3.1
No/Don't Use Air-Conditioning	868	984	921	808	752	1,003	961	5.5
Electric Air-Conditioning	1,435	1,657	1,553	1,332	1,359	1,666	1,551	3.2
Central Air-Conditioning	1,576	1,829	1,805	1,482	1,464	1,894	1,737	4.2
Room/Wall Air-Conditioning	1,169	1,515	1,227	1,020	983	1,486	1,363	4.0

See footnotes at end of table.

Table CE3-3c. Electric Air-Conditioning Energy Consumption in U.S. Households by Household Income, 1997 (Continued)

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.7	1.0	0.8	0.9	1.4	1.0	
Cooled Square Footage (CSF) per Household⁴								
Cooled Square Footage per Household⁵								
Electric Air-Conditioning	1,464	884	1,117	1,449	1,990	921	1,055	2.9
Central Air-Conditioning	1,823	1,274	1,425	1,717	2,284	1,346	1,417	3.2
Room/Wall Air-Conditioning	786	563	718	889	945	586	691	3.7
Air-Conditioning Intensity [kWh÷(CDD×(CSF÷1000))]⁴								
Air-Conditioning Intensity								
Electric Air-Conditioning	0.80	0.92	0.85	0.78	0.80	0.93	0.86	2.9
Central Air-Conditioning	0.74	0.81	0.76	0.73	0.75	0.80	0.77	3.4
Room/Wall Air-Conditioning	0.91	1.07	0.98	0.83	0.91	1.10	0.96	4.7

¹ Below 150 percent of poverty line or 60 percent of median State income.

² The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

³ Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These room/wall air-conditioners are not included in the count of 25.2 million households using room/wall air-conditioners. Note: This applies to all occurrences of central air-conditioning.

⁴ Averages are for those households using any electric air-conditioning, central air-conditioning, or room/wall air-conditioning, as applicable.

⁵ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE3-4c. Electric Air-Conditioning Energy Consumption in U.S. Households by Type of Housing Unit, 1997

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.5	1.7	1.4	1.5	
Million Households						
Total U.S. Households	101.5	73.7	5.6	15.8	6.3	4.1
No/Don't Use Air-Conditioning	28.8	19.9	2.2	4.9	1.8	7.6
Electric Air-Conditioning ¹	72.6	53.8	3.4	10.9	4.5	4.8
Central Air-Conditioning ²	47.5	36.8	1.6	6.5	2.6	7.0
Room/Wall Air-Conditioning	25.2	17.1	1.8	4.4	1.9	7.8
Quadrillion Btu						
Electric Air-Conditioning Btu Consumption						
Total	0.42	0.33	0.01	0.04	0.03	7.5
Central Air-Conditioning	0.34	0.28	0.01	0.03	0.02	8.6
Room/Wall Air-Conditioning	0.07	0.05	(*)	0.01	0.01	9.8
Billion kWh						
Electric Air-Conditioning kWh Consumption						
Total	122	97	3	12	10	7.5
Central Air-Conditioning	101	82	2	10	7	8.6
Room/Wall Air-Conditioning	21	15	1	2	3	9.8
Million Btu per Household³						
Electric Air-Conditioning Btu Consumption per Household						
Electric Air-Conditioning	5.7	6.1	3.3	3.7	7.5	5.7
Central Air-Conditioning	7.2	7.6	5.1	5.0	9.3	5.9
Room/Wall Air-Conditioning	2.9	3.0	1.7	1.8	5.1	7.1
kWh per Household³						
Electric Air-Conditioning kWh Consumption per Household						
Electric Air-Conditioning	1,677	1,798	957	1,086	2,204	5.7
Central Air-Conditioning	2,123	2,221	1,496	1,474	2,716	5.9
Room/Wall Air-Conditioning	837	886	484	519	1,488	7.1
1997 Cooling Degree-Days (CDD) per Household³						
1997 Cooling Degree-Days per Household						
Total U.S. Households	1,274	1,257	1,084	1,418	1,282	4.6
No/Don't Use Air-Conditioning	868	838	779	1,001	942	7.4
Electric Air-Conditioning	1,435	1,411	1,280	1,607	1,420	4.7
Central Air-Conditioning	1,576	1,520	1,591	1,907	1,545	5.6
Room/Wall Air-Conditioning	1,169	1,178	1,007	1,167	1,245	4.9

See footnotes at end of table.

Table CE3-4c. Electric Air-Conditioning Energy Consumption in U.S. Households by Type of Housing Unit, 1997 (Continued)

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.5	1.7	1.4	1.5	
Cooled Square Footage (CSF) per Household³						
Cooled Square Footage per Household⁴						
Electric Air-Conditioning	1,464	1,699	770	747	904	2.7
Central Air-Conditioning	1,823	2,063	1,035	937	1,125	2.6
Room/Wall Air-Conditioning	786	915	537	470	594	3.6
Air-Conditioning Intensity [kWh÷{CDD×(CSF÷1000)}]³						
Air-Conditioning Intensity						
Electric Air-Conditioning	0.80	0.75	0.97	0.90	1.72	2.6
Central Air-Conditioning	0.74	0.71	0.91	0.82	1.56	2.8
Room/Wall Air-Conditioning	0.91	0.82	0.90	0.95	2.01	4.9

¹ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

² Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These room/wall air-conditioners are not included in the count of 25.2 million households using room/wall air-conditioners. Note: This applies to all occurrences of central air-conditioning.

³ Averages are for those households using any electric air-conditioning, central air-conditioning, or room/wall air-conditioning, as applicable.

⁴ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage. (*) = Value rounds to zero in the units displayed.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE3-5u. Electric Air-Conditioning Energy Consumption and Expenditures in U.S. Households by Household Demographics, 1997

Household Demographics	Electric Air-Conditioning Energy					RSE Row Factors
	Households (millions)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
RSE Column Factor:	0.8	1.2	1.2	0.9	0.9	
Total	72.6	0.42	10.20	5.7	140	2.6
Household Size						
1 Person	17.7	0.07	1.83	4.1	104	3.9
2 Persons	24.6	0.14	3.52	5.8	143	4.1
3 Persons	12.2	0.08	1.89	6.4	155	4.4
4 Persons	11.2	0.07	1.74	6.4	155	5.4
5 Persons	4.4	0.03	0.71	6.6	162	7.3
6 or More Persons	2.5	0.02	0.50	8.2	199	11.2
1997 Household Income Category						
Less than \$5,000	2.0	0.01	0.22	4.4	107	10.4
\$5,000 to \$9,999	6.1	0.03	0.70	4.7	115	12.4
\$10,000 to \$14,999	6.3	0.03	0.74	4.8	118	8.0
\$15,000 to \$19,999	7.1	0.04	0.90	5.1	128	7.6
\$20,000 to \$24,999	5.9	0.03	0.74	5.2	126	6.3
\$25,000 to \$34,999	11.4	0.05	1.33	4.8	116	4.2
\$35,000 to \$49,999	11.7	0.06	1.53	5.4	131	4.5
\$50,000 to \$74,999	13.4	0.09	2.15	6.5	161	5.0
\$75,000 or More	8.8	0.08	1.89	8.6	215	6.3
Below Poverty Line						
100 Percent	8.3	0.04	1.00	4.9	120	7.9
125 Percent	11.6	0.06	1.42	5.0	123	7.7
150 Percent	16.2	0.08	2.03	5.1	125	6.0
Eligible for Federal Assistance¹	20.9	0.10	2.48	4.8	119	5.4
Age of Householder						
Under 25 Years	3.5	0.02	0.41	4.8	119	8.1
25 to 34 Years	12.7	0.07	1.61	5.2	127	4.2
35 to 44 Years	16.4	0.11	2.56	6.4	156	4.4
45 to 59 Years	18.8	0.13	3.08	6.8	164	4.2
60 Years and Over	21.3	0.10	2.53	4.7	119	5.0
Race of Householder						
White	58.2	0.34	8.15	5.8	140	2.9
Black	9.0	0.05	1.27	5.7	141	6.3
Other ²	5.4	0.03	0.78	5.3	145	12.3
Householder of Hispanic Descent						
Yes	5.2	0.04	0.95	7.2	183	8.5
No	67.4	0.38	9.25	5.6	137	2.8

¹ Below 150 percent of poverty line or 60 percent of median State income.

² Includes 2.7 million householders who described themselves as Hispanic rather than White, Black, or other.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE3-6u. Electric Air-Conditioning Energy Consumption and Expenditures in U.S. Households by Usage Indicators, 1997

Usage Indicators	Electric Air-Conditioning Energy					RSE Row Factors
	Households (million)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
	RSE Column Factor:	0.9	1.3	1.2	0.8	
Total	72.6	0.42	10.20	5.7	140	2.6
Type of Air-Conditioning¹						
Electric Air-Conditioning	72.6	0.42	10.20	5.7	140	2.6
Central Air-Conditioning	47.5	0.34	8.29	7.2	175	3.0
Room Air-Conditioning	25.2	0.07	1.91	2.9	76	4.7
Percentage of Rooms Air-Conditioned in Summer 1997						
100%	50.2	0.35	8.51	7.0	169	3.1
50% to 99%	11.4	0.05	1.13	4.0	99	6.0
25% to 49%	7.0	0.01	0.38	2.0	55	6.8
1% to 24%	4.0	0.01	0.17	1.5	43	8.1
Household Size						
1 Person	17.7	0.07	1.83	4.1	104	3.9
2 Persons	24.6	0.14	3.52	5.8	143	4.1
3 Persons	12.2	0.08	1.89	6.4	155	4.4
4 Persons	11.2	0.07	1.74	6.4	155	5.4
5 Persons	4.4	0.03	0.71	6.6	162	7.3
6 or More Persons	2.5	0.02	0.50	8.2	199	11.2
Someone Home All Day						
Yes	36.2	0.22	5.31	6.0	147	3.9
No	36.5	0.20	4.89	5.5	134	3.4
Large Tree(s) that Shades the Home						
Yes	35.5	0.23	5.48	6.4	154	4.2
No	37.2	0.19	4.72	5.1	127	3.9
Adequacy of Insulation						
Well Insulated	29.7	0.18	4.39	6.1	148	4.0
Adequately Insulated	31.5	0.18	4.53	5.9	144	3.4
Poorly Insulated	11.2	0.05	1.25	4.4	112	5.6
Not Insulated	0.2	(*)	0.02	3.9	103	30.2
Cooling Degree-Days (CDD)-1997						
Use Central Air-Conditioning						
2,000 or More	12.2	0.16	3.92	13.4	322	6.8
1,000 to 1,999	18.3	0.12	2.90	6.8	158	5.6
500 to 999	12.7	0.05	1.23	3.7	97	6.9
Fewer than 500	4.2	0.01	0.24	2.2	56	13.1
Use Room Air-Conditioner						
2,000 or More	3.1	0.03	0.63	8.3	202	11.7
1,000 to 1,999	8.7	0.03	0.70	3.1	81	6.5
500 to 999	9.8	0.02	0.48	1.6	49	6.9
Fewer than 500	3.5	(*)	0.09	1.0	25	14.9
Air-Conditioning Use Summer 1997²						
Central Air-Conditioning						
Only a Few Times	12.6	0.04	1.07	3.2	85	5.0
Quite a Bit	10.5	0.07	1.64	6.2	157	4.8
All Summer	24.4	0.24	5.58	9.8	229	3.8

See footnotes at end of table.

Table CE3-6u. Electric Air-Conditioning Energy Consumption and Expenditures in U.S. Households by Usage Indicators, 1997 (Continued)

Usage Indicators	Electric Air-Conditioning Energy					RSE Row Factors
	Households (million)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
	RSE Column Factor:	0.9	1.3	1.2	0.8	
Room Air-Conditioners						
Only a Few Times	13.2	0.02	0.66	1.7	50	4.6
Quite a Bit	6.5	0.02	0.42	2.4	65	6.8
All Summer	5.5	0.03	0.83	6.1	151	7.9
Electric Air-Conditioning Paid by Household						
Central Air-Conditioning						
Yes	46.2	0.34	8.13	7.3	176	3.0
No	1.1	0.01	0.14	5.8	130	18.4
Room Air-Conditioner						
Yes	23.4	0.07	1.80	2.9	77	4.9
No	1.7	(*)	0.10	2.1	58	19.2
Age of Air-Conditioners² (excludes systems for more than one housing unit)						
Central Air-Conditioner						
Less than 5 Years	13.1	0.09	2.12	6.8	162	6.4
5 to 9 Years	14.1	0.11	2.61	7.6	185	5.9
10 to 19 Years	12.8	0.10	2.38	7.9	187	5.3
20 or More Years	3.9	0.02	0.61	6.1	154	8.4
Don't Know	2.7	0.02	0.46	7.1	169	11.0
Room Air-Conditioner						
Less than 5 Years	8.7	0.03	0.71	3.1	81	6.6
5 to 9 Years	6.9	0.02	0.52	2.8	76	7.4
10 or 19 Years	5.7	0.02	0.43	2.9	76	7.5
20 or More Years	2.0	(*)	0.12	2.3	62	10.3
Don't Know	1.9	(*)	0.12	2.2	62	13.6
Average Cost of Electricity (cents per kWh)						
Central Air-Conditioning						
Less than 6	4.1	0.03	0.46	7.1	113	11.5
6 to 8.99	28.4	0.25	5.73	8.8	202	4.3
9 or More	15.0	0.06	2.10	4.3	140	7.2
Room Air-Conditioning						
Less than 6	1.7	(*)	0.08	2.8	44	17.7
6 to 8.99	10.0	0.04	1.01	4.4	101	8.0
9 or More	13.4	0.02	0.82	1.7	61	5.9

¹ Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These room/wall air-conditioners are not included in the count of 25.2 million households using room/wall air-conditioners. Note: This applies to all occurrences of central air-conditioning.

² If a household has both a central and room air-conditioner then the usage and age of the equipment is presented only for the central unit.

(*) = Value rounds to zero in the units displayed.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE3-13c. Electric Air-Conditioning Energy Consumption in U.S. Households by Census Region, 1997

	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.2	1.0	0.8	1.9	
Million Households						
Total U.S. Households	101.5	19.7	24.1	35.9	21.8	NF
No/Don't Use Air-Conditioning	28.8	7.6	5.5	2.7	13.2	6.6
Electric Air-Conditioning ¹	72.6	12.2	18.6	33.2	8.7	3.1
Central Air-Conditioning ²	47.5	4.4	12.3	24.9	5.9	5.1
Room/Wall Air-Conditioning	25.2	7.8	6.3	8.3	2.8	6.7
Quadrillion Btu						
Electric Air-Conditioning Btu Consumption						
Total	0.42	0.02	0.06	0.29	0.04	5.9
Central Air-Conditioning	0.34	0.01	0.05	0.25	0.03	7.0
Room/Wall Air-Conditioning	0.07	0.01	0.01	0.04	0.01	9.1
Billion kWh						
Electric Air-Conditioning kWh Consumption						
Total	122	7	18	85	11	5.9
Central Air-Conditioning	101	4	15	72	9	7.0
Room/Wall Air-Conditioning	21	3	3	13	2	9.1
Million Btu per Household³						
Electric Air-Conditioning Btu Consumption per Household						
Electric Air-Conditioning	5.7	2.0	3.3	8.8	4.4	4.7
Central Air-Conditioning	7.2	3.2	4.2	9.9	5.4	4.8
Room/Wall Air-Conditioning	2.9	1.4	1.7	5.4	2.2	6.0
kWh per Household³						
Electric Air-Conditioning kWh Consumption per Household						
Electric Air-Conditioning	1,677	599	978	2,566	1,287	4.7
Central Air-Conditioning	2,123	938	1,228	2,899	1,594	4.8
Room/Wall Air-Conditioning	837	409	486	1,571	639	6.0
1997 Cooling Degree-Days (CDD) per Household³						
1997 Cooling Degree-Days per Household						
Total U.S. Households	1,274	688	704	2,044	1,166	3.7
No/Don't Use Air-Conditioning	868	627	592	1,840	923	5.3
Electric Air-Conditioning	1,435	725	737	2,060	1,536	3.4
Central Air-Conditioning	1,576	673	754	2,112	1,705	4.4
Room/Wall Air-Conditioning	1,169	755	703	1,905	1,181	3.8

See footnotes at end of table.

Table CE3-13c. Electric Air-Conditioning Energy Consumption in U.S. Households by Census Region, 1997 (Continued)

	Census Region					RSE Row Factors
	Total	Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.2	1.0	0.8	1.9	
Cooled Square Footage (CSF) per Household³						
Cooled Square Footage per Household⁴						
Electric Air-Conditioning	1,464	1,271	1,701	1,443	1,303	3.2
Central Air-Conditioning	1,823	2,158	2,137	1,659	1,609	3.2
Room/Wall Air-Conditioning	786	774	843	796	659	4.5
Air-Conditioning Intensity [kWh÷{CDD×(CSF÷1000)}]³						
Air-Conditioning Intensity						
Electric Air-Conditioning	0.80	0.65	0.78	0.86	0.64	2.2
Central Air-Conditioning	0.74	0.65	0.76	0.83	0.58	2.5
Room/Wall Air-Conditioning	0.91	0.70	0.82	1.04	0.82	3.9

¹ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

² Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These room/wall air-conditioners are not included in the count of 25.2 million households using room/wall air-conditioners. Note: This applies to all occurrences of central air-conditioning.

³ Averages are for those households using any electric air-conditioning, central air-conditioning, or room/wall air-conditioning, as applicable.

⁴ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage.

NF = No applicable RSE row factor.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Electric Air-Conditioning Expenditures Tables

Table CE3-2e. Electric Air-Conditioning Energy Expenditures in U.S. Households by Year of Construction, 1997

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.9	1.2	1.0	1.0	1.1	0.9	
Million Households								
Total U.S. Households	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.2
No/Don't Use Air-Conditioning	28.8	1.4	2.7	4.9	4.4	3.6	11.8	7.9
Electric Air-Conditioning ²	72.6	8.3	14.6	14.7	10.0	8.9	16.1	4.7
Central Air-Conditioning ³	47.5	7.5	12.9	10.8	6.5	4.6	5.2	6.2
Room/Wall Air-Conditioning	25.2	0.8	1.8	3.9	3.5	4.3	10.9	8.6
Billion Dollars								
Electric Air-Conditioning Expenditures								
Total	10.20	1.49	2.60	2.30	1.34	1.08	1.40	7.3
Central Air-Conditioning	8.29	1.44	2.47	1.98	1.06	0.69	0.66	8.7
Room/Wall Air-Conditioning	1.91	0.05	0.13	0.32	0.28	0.39	0.74	11.2
Dollars per Household⁴								
Electric Air-Conditioning Expenditures per Household								
Electric Air-Conditioning	140	179	177	157	134	121	87	5.5
Central Air-Conditioning	175	191	192	184	162	150	128	5.8
Room/Wall Air-Conditioning	76	62	71	83	81	90	68	8.4
1997 Cooling Degree-Days (CDD) per Household⁴								
1997 Cooling Degree-Days per Household								
Total U.S. Households	1,274	1,342	1,557	1,411	1,312	1,257	967	3.9
No/Don't Use Air-Conditioning	868	736	746	877	1,017	943	828	7.7
Electric Air-Conditioning	1,435	1,443	1,704	1,589	1,443	1,385	1,068	4.1
Central Air-Conditioning	1,576	1,478	1,788	1,689	1,558	1,399	1,135	4.9
Room/Wall Air-Conditioning	1,169	1,112	1,094	1,312	1,225	1,370	1,037	5.9
Cooled Square Footage (CSF) per Household⁴								
Cooled Square Footage per Household⁵								
Electric Air-Conditioning	1,464	2,001	1,643	1,436	1,412	1,321	1,158	3.0
Central Air-Conditioning	1,823	2,134	1,770	1,708	1,730	1,786	1,895	2.8
Room/Wall Air-Conditioning	786	760	717	688	811	825	810	5.6

See footnotes at end of table.

Table CE3-2e. Electric Air-Conditioning Energy Expenditures in U.S. Households by Year of Construction, 1997 (Continued)

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.9	1.2	1.0	1.0	1.1	0.9	

Air-Conditioning Intensity [Cents÷{CDD×(CSF÷1000)}]⁴

Air-Conditioning Intensity	Total	1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	RSE Row Factors
Electric Air-Conditioning	6.69	6.19	6.33	6.87	6.57	6.61	7.03	3.1
Central Air-Conditioning	6.08	6.06	6.06	6.37	6.00	5.99	5.95	3.3
Room/Wall Air-Conditioning	8.25	7.38	9.06	9.17	8.15	7.97	8.04	6.1

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

² The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

³ Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These room/wall air-conditioners are not included in the count of 25.2 million households using room/wall air-conditioners. Note: This applies to all occurrences of central air-conditioning.

⁴ Averages are for those households using any electric air-conditioning, central air-conditioning, or room/wall air-conditioning, as applicable.

⁵ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE3-3e. Electric Air-Conditioning Energy Expenditures in U.S. Households by Household Income, 1997

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.6	1.0	0.8	0.9	1.4	1.0	
Million Households								
Total U.S. Households	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
No/Don't Use Air-Conditioning	28.8	5.2	9.9	8.0	5.7	6.4	13.2	5.2
Electric Air-Conditioning ²	72.6	8.1	19.3	23.1	22.2	8.3	20.9	3.6
Central Air-Conditioning ³	47.5	3.6	10.9	15.6	17.3	3.7	10.5	5.4
Room/Wall Air-Conditioning	25.2	4.4	8.4	7.5	4.9	4.6	10.4	5.7
Billion Dollars								
Electric Air-Conditioning Expenditures								
Total	10.20	0.91	2.39	2.86	4.04	1.00	2.48	6.1
Central Air-Conditioning	8.29	0.56	1.75	2.35	3.64	0.61	1.64	7.8
Room/Wall Air-Conditioning	1.91	0.36	0.64	0.51	0.41	0.39	0.84	8.5
Dollars per Household⁴								
Electric Air-Conditioning Expenditures per Household								
Electric Air-Conditioning	140	113	124	124	182	120	119	4.8
Central Air-Conditioning	175	153	161	150	210	165	156	5.5
Room/Wall Air-Conditioning	76	81	76	68	84	84	81	6.2
1997 Cooling Degree-Days (CDD) per Household⁴								
1997 Cooling Degree-Days per Household								
Total U.S. Households	1,274	1,392	1,339	1,197	1,235	1,379	1,322	3.1
No/Don't Use Air-Conditioning	868	984	921	808	752	1,003	961	5.5
Electric Air-Conditioning	1,435	1,657	1,553	1,332	1,359	1,666	1,551	3.2
Central Air-Conditioning	1,576	1,829	1,805	1,482	1,464	1,894	1,737	4.2
Room/Wall Air-Conditioning	1,169	1,515	1,227	1,020	983	1,486	1,363	4.0
Cooled Square Footage (CSF) per Household⁴								
Cooled Square Footage per Household⁵								
Electric Air-Conditioning	1,464	884	1,117	1,449	1,990	921	1,055	2.9
Central Air-Conditioning	1,823	1,274	1,425	1,717	2,284	1,346	1,417	3.2
Room/Wall Air-Conditioning	786	563	718	889	945	586	691	3.7

See footnotes at end of table.

Table CE3-3e. Electric Air-Conditioning Energy Expenditures in U.S. Households by Household Income, 1997 (Continued)

	Total	1997 Household Income				Below Poverty Line	Eli-gible for Fed-eral Assist-ance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.6	1.0	0.8	0.9	1.4	1.0	

Air-Conditioning Intensity [Cents÷{CDD×(CSF÷1000)}]⁴

Air-Conditioning Intensity								
Electric Air-Conditioning	6.69	7.72	7.14	6.40	6.73	7.83	7.25	2.8
Central Air-Conditioning	6.08	6.55	6.27	5.91	6.27	6.49	6.35	3.3
Room/Wall Air-Conditioning	8.25	9.44	8.60	7.47	8.99	9.68	8.59	4.4

¹ Below 150 percent of poverty line or 60 percent of median State income.
² The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.
³ Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These room/wall air-conditioners are not included in the count of 25.2 million households using room/wall air-conditioners. Note: This applies to all occurrences of central air-conditioning.
⁴ Averages are for those households using any electric air-conditioning, central air-conditioning, or room/wall air-conditioning, as applicable.
⁵ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage.
 Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE3-4e. Electric Air-Conditioning Energy Expenditures in U.S. Households by Type of Housing Unit, 1997

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.6	1.7	1.3	1.6	
Million Households						
Total U.S. Households	101.5	73.7	5.6	15.8	6.3	4.1
No/Don't Use Air-Conditioning	28.8	19.9	2.2	4.9	1.8	7.6
Electric Air-Conditioning ¹	72.6	53.8	3.4	10.9	4.5	4.8
Central Air-Conditioning ²	47.5	36.8	1.6	6.5	2.6	7.0
Room/Wall Air-Conditioning	25.2	17.1	1.8	4.4	1.9	7.8
Billion Dollars						
Electric Air-Conditioning Expenditures						
Total	10.20	8.06	0.29	1.06	0.79	7.6
Central Air-Conditioning	8.29	6.71	0.20	0.82	0.57	8.9
Room/Wall Air-Conditioning	1.91	1.35	0.09	0.24	0.22	9.8
Dollars per Household³						
Electric Air-Conditioning Expenditures per Household						
Electric Air-Conditioning	140	150	85	98	175	5.6
Central Air-Conditioning	175	182	125	126	216	6.0
Room/Wall Air-Conditioning	76	79	50	55	118	6.6
1997 Cooling Degree-Days (CDD) per Household³						
1997 Cooling Degree-Days per Household						
Total U.S. Households	1,274	1,257	1,084	1,418	1,282	4.6
No/Don't Use Air-Conditioning	868	838	779	1,001	942	7.4
Electric Air-Conditioning	1,435	1,411	1,280	1,607	1,420	4.7
Central Air-Conditioning	1,576	1,520	1,591	1,907	1,545	5.6
Room/Wall Air-Conditioning	1,169	1,178	1,007	1,167	1,245	4.9
Cooled Square Footage (CSF) per Household³						
Cooled Square Footage per Household⁴						
Electric Air-Conditioning	1,464	1,699	770	747	904	2.7
Central Air-Conditioning	1,823	2,063	1,035	937	1,125	2.6
Room/Wall Air-Conditioning	786	915	537	470	594	3.6

See footnotes at end of table.

Table CE3-4e. Electric Air-Conditioning Energy Expenditures in U.S. Households by Type of Housing Unit, 1997 (Continued)

	Total	Type of Housing Unit			Mobile Home	RSE Row Factors
		Single-Family	Multifamily			
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.6	1.7	1.3	1.6	

Air-Conditioning Intensity [Cents÷(CDD×(CSF÷1000))]³

Air-Conditioning Intensity	Total	Single-Family	Two to Four Units	Five or More Units	Mobile Home	RSE Row Factors
Electric Air-Conditioning	6.69	6.24	8.63	8.12	13.64	2.7
Central Air-Conditioning	6.08	5.82	7.59	7.08	12.41	2.9
Room/Wall Air-Conditioning	8.25	7.34	9.25	10.08	15.98	5.0

¹ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

² Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These room/wall air-conditioners are not included in the count of 25.2 million households using room/wall air-conditioners. Note: This applies to all occurrences of central air-conditioning.

³ Averages are for those households using any electric air-conditioning, central air-conditioning, or room/wall air-conditioning, as applicable.

⁴ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE3-13e. Electric Air-Conditioning Energy Expenditures in U.S. Households by Census Region, 1997

	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.2	1.0	0.8	1.9	
Million Households						
Total U.S. Households	101.5	19.7	24.1	35.9	21.8	NF
No/Don't Use Air-Conditioning	28.8	7.6	5.5	2.7	13.2	6.6
Electric Air-Conditioning ¹	72.6	12.2	18.6	33.2	8.7	3.2
Central Air-Conditioning ²	47.5	4.4	12.3	24.9	5.9	5.1
Room/Wall Air-Conditioning	25.2	7.8	6.3	8.3	2.8	6.7
Billion Dollars						
Electric Air-Conditioning Expenditures						
Total	10.20	0.90	1.52	6.67	1.11	6.0
Central Air-Conditioning	8.29	0.48	1.25	5.63	0.94	7.1
Room/Wall Air-Conditioning	1.91	0.42	0.27	1.04	0.17	9.6
Dollars per Household³						
Electric Air-Conditioning Expenditures per Household						
Electric Air-Conditioning	140	74	81	201	128	4.8
Central Air-Conditioning	175	110	101	226	160	4.8
Room/Wall Air-Conditioning	76	54	43	125	61	6.6
1997 Cooling Degree-Days (CDD) per Household³						
1997 Cooling Degree-Days per Household						
Total U.S. Households	1,274	688	704	2,044	1,166	3.7
No/Don't Use Air-Conditioning	868	627	592	1,840	923	5.3
Electric Air-Conditioning	1,435	725	737	2,060	1,536	3.4
Central Air-Conditioning	1,576	673	754	2,112	1,705	4.4
Room/Wall Air-Conditioning	1,169	755	703	1,905	1,181	3.8
Cooled Square Footage (CSF) per Household³						
Cooled Square Footage per Household⁴						
Electric Air-Conditioning	1,464	1,271	1,701	1,443	1,303	3.2
Central Air-Conditioning	1,823	2,158	2,137	1,659	1,609	3.2
Room/Wall Air-Conditioning	786	774	843	796	659	4.5

See footnotes at end of table.

Table CE3-13e. Electric Air-Conditioning Energy Expenditures in U.S. Households by Census Region, 1997 (Continued)

	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.2	1.0	0.8	1.9	

Air-Conditioning Intensity [Cents÷(CDD×(CSF÷1000))]³						
Air-Conditioning Intensity						
Electric Air-Conditioning	6.69	8.04	6.50	6.76	6.39	2.4
Central Air-Conditioning	6.08	7.54	6.26	6.46	5.82	2.6
Room/Wall Air-Conditioning	8.25	9.29	7.27	8.26	7.89	4.5

¹ The number of households, where the end use is electric air-conditioning, does **not** include households that did not use their equipment (0.9 million). It does include the small number of households where the fuel for central air-conditioning equipment was something other than electricity; those households were treated as if the fuel was electricity.

² Includes 642,000 households using room/wall air-conditioners in addition to central air-conditioning. These room/wall air-conditioners are not included in the count of 25.2 million households using room/wall air-conditioners. Note: This applies to all occurrences of central air-conditioning.

³ Averages are for those households using any electric air-conditioning, central air-conditioning, or room/wall air-conditioning, as applicable.

⁴ In previous RECS, square footage measurements were obtained during the personal interview. In the 1997 RECS, square footage was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Water-Heating Consumption Tables

Table CE4-2c. Water-Heating Energy Consumption in U.S. Households by Year of Construction, 1997

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.6	1.3	1.0	1.0	1.1	0.9	
Million Households								
Total U.S. Households	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.2
No Water Heating	0.2	Q	Q	Q	Q	Q	Q	72.5
Water Heating	101.3	9.7	17.3	19.5	14.4	12.5	27.8	4.2
Not Using a Major Fuel ²	0.5	Q	Q	Q	Q	Q	Q	53.6
Using a Major Fuel ²	100.8	9.7	17.2	19.4	14.3	12.5	27.7	4.2
For Main Water Heating	100.6	9.7	17.2	19.3	14.3	12.5	27.7	4.2
Number of Households with Water Heating, Major Fuels Used: (more than one may apply)								
Electricity	40.2	4.7	10.1	10.2	4.9	3.6	6.7	6.6
Natural Gas	52.8	4.6	6.4	8.3	8.3	7.8	17.5	6.4
Fuel Oil	5.2	Q	0.4	0.5	0.8	1.0	2.4	17.5
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	3.2	0.2	0.5	0.6	0.4	0.3	1.2	18.3
Quadrillion Btu								
Water-Heating Btu Consumption, Major Fuels Used:								
Electricity	0.39	0.05	0.09	0.10	0.04	0.03	0.07	7.4
Natural Gas	1.29	0.12	0.17	0.20	0.20	0.19	0.41	7.1
Fuel Oil	0.16	Q	0.01	0.01	0.03	0.03	0.08	18.7
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	0.08	0.01	0.02	0.01	0.01	(*)	0.03	20.2
Total	1.92	0.18	0.29	0.33	0.28	0.25	0.58	4.7
Physical Units								
Physical Units of Water-Heating Consumption, Major Fuels Used:								
Electricity (billion kWh)	114	14	28	31	13	9	19	7.4
Natural Gas (billion cf)	1,260	122	167	197	190	183	401	7.1
Fuel Oil (million gallons)	1,139	Q	91	91	183	206	548	18.7
Kerosene (million gallons)	Q	Q	Q	Q	Q	Q	Q	NF
LPG (million gallons)	847	74	165	146	123	45	296	20.2
Million Btu per Household								
Average Water-Heating Btu Consumption per Household								
Using a Major Fuel ²	19.0	19.0	17.1	17.2	19.2	20.2	21.0	2.7
For Main Water Heating	19.1	19.0	17.1	17.2	19.2	20.2	21.0	2.7

See footnotes at end of table.

Table CE4-2c. Water-Heating Energy Consumption in U.S. Households by Year of Construction, 1997 (Continued)

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.6	1.3	1.0	1.0	1.1	0.9	
Million Households								
Number of Households, Where the Main Water-Heating Fuel Is:								
Electricity	39.6	4.7	10.0	10.0	4.8	3.5	6.6	6.7
Natural Gas	52.6	4.6	6.3	8.2	8.3	7.7	17.4	6.5
Fuel Oil	5.1	Q	0.4	0.4	0.8	1.0	2.4	17.8
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	3.1	0.2	0.5	0.5	0.4	0.3	1.2	18.6
No Water Heating	0.2	Q	Q	Q	Q	Q	Q	72.5
Million Btu per Household⁴								
Water-Heating Btu Consumption per Household,³ Where the Main Water-Heating Fuel Is:								
Electricity	9.8	10.3	9.5	10.4	9.0	9.2	9.9	2.8
Natural Gas	24.6	27.2	27.1	24.5	23.5	24.2	23.6	2.8
Fuel Oil	30.6	Q	33.7	28.2	30.8	29.5	31.0	6.2
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	24.4	29.1	28.9	23.6	27.1	15.9	22.7	9.5
Physical Units (PU) per Household⁴								
Physical Units of Water-Heating Consumption per Household,³ Where the Main Water-Heating Fuel Is:								
Electricity (kWh)	2,871	3,009	2,787	3,038	2,650	2,700	2,895	2.8
Natural Gas (thousand cf)	24	27	26	24	23	24	23	2.8
Fuel Oil (gallons)	221	Q	243	203	222	213	223	6.2
Kerosene (gallons)	Q	Q	Q	Q	Q	Q	Q	NF
LPG (gallons)	267	319	316	259	297	174	248	9.5
Number of Household Members (NHM) per Household⁴								
Number of Household Members per Household, Where the Main Water-Heating Fuel Is:								
Electricity	2.5	2.6	2.4	2.5	2.3	2.4	2.5	3.0
Natural Gas	2.7	3.0	2.9	2.7	2.6	2.7	2.6	2.9
Fuel Oil	2.4	Q	2.4	2.4	2.4	2.4	2.5	7.6
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	2.6	3.5	3.1	2.7	2.5	2.1	2.3	10.0

See footnotes at end of table.

Table CE4-2c. Water-Heating Energy Consumption in U.S. Households by Year of Construction, 1997 (Continued)

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.6	1.3	1.0	1.0	1.1	0.9	
Water-Heating Intensity (PU÷NHM)⁴								
Water-Heating Intensity, Where the Main Water-Heating Fuel Is:								
Electricity	1,169	1,136	1,169	1,209	1,168	1,126	1,158	2.4
Natural Gas	8.8	8.7	9.1	8.9	8.9	8.6	8.8	2.7
Fuel Oil	90	Q	100	84	92	89	90	9.5
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	103	91	101	97	118	82	108	10.2

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

² The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

³ Includes only the water-heating consumption of the water-heating fuel. Not included are: 1) the consumption of the main water-heating fuel for uses other than water heating; 2) the consumption of the main water-heating fuel where it is the secondary, and not the main, water-heating fuel, and; 3) the consumption of other fuels that are used as secondary water-heating fuels.

⁴ Averages are for those households using each of the main water-heating fuels.

(*) = Value rounds to zero in the units displayed.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE4-3c. Water-Heating Energy Consumption in U.S. Households by Household Income, 1997

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.5	1.0	0.9	1.0	1.4	1.0	
Million Households								
Total U.S. Households	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
No Water Heating	0.2	Q	Q	Q	Q	Q	Q	57.9
Water Heating	101.3	13.2	29.1	31.1	27.9	14.6	33.9	2.8
Not Using a Major Fuel ²	0.5	Q	Q	Q	Q	0.2	0.2	37.4
Using a Major Fuel ²	100.8	13.0	29.0	31.0	27.7	14.4	33.7	2.8
For Main Water Heating	100.6	13.0	29.0	31.0	27.6	14.4	33.7	2.8
Number of Households with Water Heating, Major Fuels Used:								
Electricity	40.2	5.4	12.8	12.5	9.4	5.7	13.9	5.3
Natural Gas	52.8	6.2	14.1	16.1	16.3	7.3	16.8	4.9
Fuel Oil	5.2	1.0	1.3	1.5	1.4	0.9	2.0	11.1
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	3.2	0.4	1.0	1.0	0.8	0.5	1.1	15.9
Quadrillion Btu								
Water-Heating Btu Consumption, Major Fuels Used:								
Electricity	0.39	0.04	0.11	0.13	0.11	0.05	0.13	6.1
Natural Gas	1.29	0.13	0.31	0.40	0.46	0.18	0.39	5.4
Fuel Oil	0.16	0.03	0.03	0.05	0.05	0.03	0.06	11.4
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	0.08	0.01	0.02	0.02	0.02	0.01	0.03	17.4
Total	1.92	0.21	0.48	0.59	0.64	0.27	0.61	3.3
Physical Units								
Physical Units of Water-Heating Consumption, Major Fuels Used:								
Electricity (billion kWh)	114	12	34	37	32	16	39	6.1
Natural Gas (billion cf)	1,260	125	303	385	447	171	384	5.4
Fuel Oil (million gallons)	1,139	208	236	342	353	223	435	11.4
Kerosene (million gallons)	Q	Q	Q	Q	Q	Q	Q	NF
LPG (million gallons)	847	76	246	266	260	98	278	17.4
Million Btu per Household								
Average Water-Heating Btu Consumption per Household								
Using a Major Fuel ²	19.0	15.8	16.6	19.1	23.1	18.8	18.1	2.3
For Main Water Heating	19.1	15.8	16.6	19.1	23.1	18.8	18.2	2.3

See footnotes at end of table.

Table CE4-3c. Water-Heating Energy Consumption in U.S. Households by Household Income, 1997 (Continued)

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.5	1.0	0.9	1.0	1.4	1.0	
Million Households								
Number of Households, Where the Main Water-Heating Fuel Is:								
Electricity	39.6	5.4	12.6	12.4	9.2	5.7	13.8	5.4
Natural Gas	52.6	6.2	14.1	16.0	16.2	7.3	16.8	4.9
Fuel Oil	5.1	0.9	1.3	1.5	1.4	0.9	2.0	11.1
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	3.1	0.4	0.9	1.0	0.8	0.5	1.1	16.1
No Water Heating	0.2	Q	Q	Q	Q	Q	Q	57.9
Million Btu per Household⁴								
Water-Heating Btu Consumption per Household,³ Where the Main Water-Heating Fuel Is:								
Electricity	9.8	7.6	9.1	10.1	11.7	9.6	9.6	2.4
Natural Gas	24.6	20.6	22.0	24.6	28.2	24.2	23.5	2.3
Fuel Oil	30.6	30.2	25.7	31.0	35.1	33.2	30.3	5.4
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	24.4	17.3	23.3	23.6	30.4	18.2	22.8	9.3
Physical Units (PU) per Household⁴								
Physical Units of Water-Heating Consumption per Household,³ Where the Main Water-Heating Fuel Is:								
Electricity (kWh)	2,871	2,233	2,657	2,953	3,430	2,824	2,801	2.4
Natural Gas (thousand cf)	24	20	21	24	27	24	23	2.3
Fuel Oil (gallons)	221	218	186	224	253	239	219	5.3
Kerosene (gallons)	Q	Q	Q	Q	Q	Q	Q	NF
LPG (gallons)	267	189	255	259	333	199	249	9.3
Number of Household Members (NHM) per Household⁴								
Number of Household Members per Household, Where the Main Water-Heating Fuel Is:								
Electricity	2.5	1.8	2.3	2.6	2.9	2.7	2.6	2.4
Natural Gas	2.7	2.2	2.4	2.7	3.1	3.2	2.8	2.4
Fuel Oil	2.4	2.0	2.0	2.5	3.1	2.4	2.3	5.4
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	2.6	1.7	2.7	2.4	3.2	2.7	2.6	8.1

See footnotes at end of table.

Table CE4-3c. Water-Heating Energy Consumption in U.S. Households by Household Income, 1997 (Continued)

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.5	1.0	0.9	1.0	1.4	1.0	
Water-Heating Intensity (PU÷NHM)⁴								
Water-Heating Intensity, Where the Main Water-Heating Fuel Is:								
Electricity	1,169	1,235	1,145	1,149	1,198	1,060	1,094	2.3
Natural Gas	8.8	9.0	8.8	8.7	8.9	7.4	8.1	2.3
Fuel Oil	90	110	93	89	81	100	96	6.7
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	103	114	95	107	103	75	95	9.8

¹ Below 150 percent of poverty line or 60 percent of median State income.
² The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).
³ Includes only the water-heating consumption of the water-heating fuel. Not included are: 1) the consumption of the main water-heating fuel for uses other than water heating; 2) the consumption of the main water-heating fuel where it is the secondary, and not the main, water-heating fuel, and; 3) the consumption of other fuels that are used as secondary water-heating fuels.
⁴ Averages are for those households using each of the main water-heating fuels.
 NF = No applicable RSE row factor.
 Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.
 Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

**Table CE4-4c. Water-Heating Energy Consumption in U.S. Households
by Type of Housing Unit, 1997**

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.6	2.0	1.1	1.7	
Million Households						
Total U.S. Households	101.5	73.7	5.6	15.8	6.3	4.0
No Water Heating	0.2	Q	Q	Q	Q	68.5
Water Heating	101.3	73.7	5.6	15.7	6.3	4.0
Not Using a Major Fuel ¹	0.5	0.3	Q	0.2	Q	46.8
Using a Major Fuel ¹	100.8	73.4	5.6	15.5	6.3	4.1
For Main Water Heating	100.6	73.3	5.6	15.5	6.3	4.1
Number of Households with Water Heating, Major Fuels Used:						
Electricity	40.2	27.1	1.8	7.0	4.3	7.2
Natural Gas	52.8	40.9	3.4	7.0	1.4	6.9
Fuel Oil	5.2	3.3	0.3	1.6	Q	15.8
Kerosene	Q	Q	Q	Q	Q	NF
LPG	3.2	2.6	Q	Q	0.5	17.0
Quadrillion Btu						
Water-Heating Btu Consumption, Major Fuels Used:						
Electricity	0.39	0.28	0.01	0.05	0.05	7.8
Natural Gas	1.29	1.04	0.08	0.14	0.03	7.6
Fuel Oil	0.16	0.10	0.01	0.05	Q	16.9
Kerosene	Q	Q	Q	Q	Q	NF
LPG	0.08	0.06	Q	Q	0.01	17.3
Total	1.92	1.48	0.10	0.24	0.09	4.4
Physical Units						
Physical Units of Water-Heating Consumption, Major Fuels Used:						
Electricity (billion kWh)	114	81	4	15	13	7.8
Natural Gas (billion cf)	1,260	1,016	75	139	30	7.6
Fuel Oil (million gallons)	1,139	717	66	356	Q	16.9
Kerosene (million gallons)	Q	Q	Q	Q	Q	NF
LPG (million gallons)	847	694	Q	Q	142	17.3
Million Btu per Household						
Average Water-Heating Btu Consumption per Household						
Using a Major Fuel ¹	19.0	20.2	18.0	15.8	14.2	3.0
For Main Water Heating	19.1	20.2	18.0	15.8	14.2	3.0

See footnotes at end of table.

Table CE4-4c. Water-Heating Energy Consumption in U.S. Households by Type of Housing Unit, 1997 (Continued)

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.6	2.0	1.1	1.7	
Million Households						
Number of Households, Where the Main Water-Heating Fuel Is:						
Electricity	39.6	26.6	1.8	6.9	4.3	7.3
Natural Gas	52.6	40.9	3.4	6.9	1.4	6.9
Fuel Oil	5.1	3.2	0.3	1.6	Q	15.9
Kerosene	Q	Q	Q	Q	Q	NF
LPG	3.1	2.6	Q	Q	0.5	17.3
No Water Heating	0.2	Q	Q	Q	Q	68.5
Million Btu per Household³						
Water-Heating Btu Consumption per Household,² Where the Main Water-Heating Fuel Is:						
Electricity	9.8	10.4	8.0	7.6	10.5	2.7
Natural Gas	24.6	25.5	22.4	20.5	21.5	3.2
Fuel Oil	30.6	30.6	29.0	31.1	Q	4.7
Kerosene	Q	Q	Q	Q	Q	NF
LPG	24.4	24.4	Q	Q	24.3	8.1
Physical Units (PU) per Household³						
Physical Units of Water-Heating Consumption per Household,² Where the Main Water-Heating Fuel Is:						
Electricity (kWh)	2,871	3,047	2,332	2,215	3,066	2.7
Natural Gas (thousand cf)	24	25	22	20	21	3.2
Fuel Oil (gallons)	221	220	209	224	Q	4.7
Kerosene (gallons)	Q	Q	Q	Q	Q	NF
LPG (gallons)	267	267	Q	Q	266	8.1
Number of Household Members (NHM) per Household³						
Number of Household Members per Household, Where the Main Water-Heating Fuel Is:						
Electricity	2.5	2.6	2.0	1.9	2.6	2.9
Natural Gas	2.7	2.8	2.4	2.1	2.3	3.1
Fuel Oil	2.4	2.6	1.6	2.2	Q	4.6
Kerosene	Q	Q	Q	Q	Q	NF
LPG	2.6	2.6	Q	Q	2.8	7.5

See footnotes at end of table.

Table CE4-4c. Water-Heating Energy Consumption in U.S. Households by Type of Housing Unit, 1997 (Continued)

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.6	2.0	1.1	1.7	
Water-Heating Intensity (PU÷NHM)³						
Water-Heating Intensity, Where the Main Water-Heating Fuel Is:						
Electricity	1,169	1,170	1,166	1,141	1,199	2.4
Natural Gas	8.8	8.8	8.9	9.4	9.0	2.9
Fuel Oil	90	84	128	100	Q	7.0
Kerosene	Q	Q	Q	Q	Q	NF
LPG	103	105	Q	Q	94	9.3

¹ The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).
² Includes only the water-heating consumption of the water-heating fuel. Not included are: 1) the consumption of the main water-heating fuel for uses other than water heating; 2) the consumption of the main water-heating fuel where it is the secondary, and not the main, water-heating fuel, and; 3) the consumption of other fuels that are used as secondary water-heating fuels.
³ Averages are for those households using each of the main water-heating fuels.
 NF = No applicable RSE row factor.
 Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.
 Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE4-5u. Water-Heating Energy Consumption and Expenditures in U.S. Households by Household Demographics, 1997

Household Demographics	Water-Heating Energy					RSE Row Factors
	Households (millions)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
RSE Column Factor:	1.1	1.4	1.2	0.8	0.7	
Total	100.8	1.92	19.76	19.0	196	1.4
Household Size						
1 Person	25.3	0.28	2.93	11.0	116	2.4
2 Persons	32.8	0.55	5.99	16.8	183	2.0
3 Persons	17.3	0.39	3.99	22.6	230	2.6
4 Persons	15.1	0.39	3.96	25.8	261	2.9
5 Persons	6.4	0.19	1.75	29.0	274	4.5
6 or More Persons	3.8	0.12	1.15	31.8	300	6.7
1997 Household Income Category						
Less than \$5,000	3.7	0.06	0.61	16.9	166	6.3
\$5,000 to \$9,999	9.4	0.14	1.47	15.4	157	4.9
\$10,000 to \$14,999	10.3	0.17	1.73	16.5	168	4.6
\$15,000 to \$19,999	10.3	0.17	1.90	16.2	184	4.3
\$20,000 to \$24,999	8.4	0.14	1.59	17.1	189	4.1
\$25,000 to \$34,999	15.6	0.29	3.04	18.3	195	3.3
\$35,000 to \$49,999	15.5	0.31	3.10	19.9	200	2.7
\$50,000 to \$74,999	16.4	0.36	3.67	21.9	224	3.6
\$75,000 or More	11.3	0.28	2.65	24.7	234	4.4
Below Poverty Line						
100 Percent	14.4	0.27	2.71	18.8	189	3.7
125 Percent	19.3	0.36	3.69	18.5	191	3.5
150 Percent	26.4	0.49	5.12	18.4	194	3.0
Eligible for Federal Assistance¹	33.7	0.61	6.40	18.1	190	2.6
Age of Householder						
Under 25 Years	5.7	0.10	1.12	18.4	198	5.7
25 to 34 Years	18.4	0.37	3.86	20.3	210	3.1
35 to 44 Years	23.0	0.52	5.26	22.4	229	2.5
45 to 59 Years	25.4	0.51	5.29	20.2	208	2.3
60 Years and Over	28.4	0.41	4.24	14.5	149	2.7
Race of Householder						
White	78.1	1.43	15.07	18.3	193	1.5
Black	12.6	0.28	2.75	22.0	218	4.4
Other ²	10.1	0.21	1.95	21.1	192	5.1
Householder of Hispanic Descent						
Yes	9.3	0.20	1.82	21.1	197	5.6
No	91.5	1.72	17.94	18.8	196	1.5

¹ Below 150 percent of poverty line or 60 percent of median State income.

² Includes 5.4 million householders who described themselves as Hispanic rather than White, Black, or other.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE4-6u. Water-Heating Energy Consumption and Expenditures in U.S. Households by Usage Indicators, 1997

Usage Indicators	Water-Heating Energy					RSE Row Factors
	Households (millions)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
	RSE Column Factor:	1.2	1.4	1.3	0.7	
Total	100.8	1.92	19.76	19.0	196	1.4
Household Size						
1 Person	25.3	0.28	2.93	11.0	116	2.5
2 Persons	32.8	0.55	5.99	16.8	183	2.0
3 Persons	17.3	0.39	3.99	22.6	230	2.6
4 Persons	15.1	0.39	3.96	25.8	261	2.9
5 Persons	6.4	0.19	1.75	29.0	274	4.5
6 or More Persons	3.8	0.12	1.15	31.8	300	6.7
Someone Home All Day						
Yes	50.9	0.99	10.18	19.5	200	2.0
No	49.9	0.93	9.58	18.6	192	1.8
Number of Showers/Baths Taken Each Week						
Less than 10	28.1	0.35	3.49	12.6	124	2.1
10 to 20	46.5	0.90	9.40	19.3	202	1.8
21 or More	26.2	0.67	6.87	25.6	262	2.1
Dishwasher Use Each Week						
Use a Dishwasher	50.7	1.02	10.58	20.0	209	2.1
Less than 4 Times	28.6	0.47	5.30	16.5	185	2.6
4 to 6 Times	12.8	0.29	2.83	22.7	221	3.5
Once a Week	9.3	0.25	2.45	27.3	264	4.3
Loads of Laundry Washed Each Week						
Use a Clothes Washer	78.2	1.55	16.03	19.8	205	1.5
1 to 4 Loads	35.0	0.56	6.00	16.0	172	2.2
5 to 9 Loads	29.8	0.63	6.40	21.2	215	2.5
10 to 15 Loads	10.1	0.26	2.66	26.0	263	3.7
16 or More Loads	3.3	0.10	0.96	29.6	291	6.7
Age of Water Heater						
One Housing Unit						
Less than 2 Years	11.2	0.21	2.23	19.0	199	4.2
2 to 4 Years	17.0	0.34	3.55	20.2	209	3.3
5 to 9 Years	25.2	0.49	5.15	19.4	204	2.6
10 to 19 Years	20.2	0.36	4.00	17.9	198	3.2
20 Years or More	7.1	0.12	1.29	16.3	182	5.1
Don't Know	7.1	0.13	1.41	17.7	197	5.5
Water Heaters for Two or More Units	10.0	0.20	1.60	20.4	160	4.7
No Separate Water Heater	7.9	0.15	1.24	19.7	159	5.7
Size of Water Heater						
One Housing Unit						
Small	15.5	0.23	2.75	14.9	177	3.5
Medium	47.1	0.90	9.19	19.0	195	1.9
Large	21.5	0.45	4.94	21.2	230	3.3
Don't Know	3.4	0.06	0.64	17.0	192	8.5
Water Heaters for Two or More Units	10.0	0.20	1.60	20.4	160	4.7
No Separate Water Heater	7.9	0.15	1.24	19.7	159	5.7

See footnotes at end of table.

Table CE4-6u. Water-Heating Energy Consumption and Expenditures in U.S. Households by Usage Indicators, 1997 (Continued)

Usage Indicators	Water-Heating Energy					RSE Row Factors
	Households (millions)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
	RSE Column Factor:	1.2	1.4	1.3	0.7	
Average Electricity Cost for Water Heating (cents per kWh)						
Less than 6	6.1	0.08	1.15	12.3	187	6.9
6 to 8.99	23.4	0.24	5.29	10.2	226	3.7
9 or More	10.7	0.09	2.67	8.3	250	5.6
Average Natural Gas Cost for Water Heating (dollars per 1000 cf)						
Less than 4.50	1.4	0.05	0.18	34.1	132	17.2
4.50 to 5.99	13.0	0.35	1.83	26.7	141	5.4
6 or More	38.5	0.90	6.86	23.5	179	3.1
Average Fuel Oil Cost for Water Heating (dollars per gallon)						
Less than .95	2.2	0.07	0.35	30.7	160	5.9
.95 to 1.09	2.5	0.08	0.58	30.7	233	9.3
1.10 or More	0.5	0.02	0.15	33.1	295	14.2
Average LPG Cost for Water Heating (dollars per gallon)						
Less than .75	0.3	0.01	0.06	28.2	203	24.2
.75 to .99	1.3	0.03	0.34	26.5	265	11.5
1.00 or More	1.6	0.04	0.50	22.3	315	9.6
Main Water Heating Fuel Paid by Household						
All Major Fuels¹						
Yes	89.2	1.68	17.98	18.8	202	1.5
No	11.4	0.24	1.77	20.7	155	4.4
Electricity						
Yes	38.2	0.38	8.77	10.0	230	2.5
No	1.4	0.01	0.24	7.2	166	15.8
Natural Gas						
Yes	45.1	1.13	7.72	25.1	171	2.6
No	7.6	0.16	1.11	21.1	147	5.0
Fuel Oil						
Yes	3.2	0.10	0.71	30.5	224	7.5
No	1.9	0.06	0.32	30.6	165	6.9
LPG						
Yes	3.2	0.08	0.87	23.9	274	7.5
No	Q	Q	Q	Q	Q	NF
Kerosene						
Yes	Q	Q	Q	Q	Q	NF
No	Q	Q	Q	Q	Q	NF

¹ The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE4-13c. Water-Heating Energy Consumption in U.S. Households by Census Region, 1997

	Census Region					RSE Row Factors
	Total	Northeast	Midwest	South	West	
	0.6	1.2	1.1	1.0	1.2	
RSE Column Factor:						
Million Households						
Total U.S. Households	101.5	19.7	24.1	35.9	21.8	NF
No Water Heating	0.2	Q	Q	Q	Q	54.3
Water Heating	101.3	19.7	24.1	35.8	21.8	NF
Not Using a Major Fuel ¹	0.5	Q	Q	Q	Q	40.1
Using a Major Fuel ¹	100.8	19.6	23.9	35.7	21.6	NF
For Main Water Heating	100.6	19.6	23.9	35.6	21.6	NF
Number of Households with Water Heating, Major Fuels Used:						
Electricity	40.2	5.2	6.5	21.0	7.5	5.8
Natural Gas	52.8	9.2	16.3	13.4	13.9	4.6
Fuel Oil	5.2	4.9	Q	Q	Q	10.1
Kerosene	Q	Q	Q	Q	Q	NF
LPG	3.2	0.4	1.1	1.1	0.5	17.9
Quadrillion Btu						
Water-Heating Btu Consumption, Major Fuels Used:						
Electricity	0.39	0.05	0.06	0.21	0.07	6.6
Natural Gas	1.29	0.21	0.43	0.32	0.33	5.6
Fuel Oil	0.16	0.15	Q	Q	Q	10.3
Kerosene	Q	Q	Q	Q	Q	NF
LPG	0.08	0.01	0.03	0.02	0.01	17.9
Total	1.92	0.42	0.53	0.56	0.41	2.4
Physical Units						
Physical Units of Water-Heating Consumption, Major Fuels Used:						
Electricity (billion kWh)	114	14	19	61	20	6.6
Natural Gas (billion cf)	1,260	205	417	315	324	5.6
Fuel Oil (million gallons)	1,139	1,093	Q	Q	Q	10.4
Kerosene (million gallons)	Q	Q	Q	Q	Q	NF
LPG (million gallons)	847	105	330	255	157	17.9
Million Btu per Household						
Average Water-Heating Btu Consumption per Household						
Using a Major Fuel ¹	19.0	21.4	22.0	15.7	19.1	2.4
For Main Water Heating	19.1	21.4	22.0	15.7	19.1	2.4

See footnotes at end of table.

Table CE4-13c. Water-Heating Energy Consumption in U.S. Households by Census Region, 1997 (Continued)

	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.2	1.1	1.0	1.2	
Million Households						
Number of Households, Where the Main Water-Heating Fuel Is:						
Electricity	39.6	5.1	6.4	20.9	7.2	5.9
Natural Gas	52.6	9.1	16.3	13.4	13.9	4.6
Fuel Oil	5.1	4.8	Q	Q	Q	10.1
Kerosene	Q	Q	Q	Q	Q	NF
LPG	3.1	0.4	1.1	1.1	0.5	18.3
No Water Heating	0.2	Q	Q	Q	Q	54.3
Million Btu per Household³						
Water-Heating Btu Consumption per Household,² Where the Main Water-Heating Fuel Is:						
Electricity	9.8	9.4	10.1	10.0	9.2	2.5
Natural Gas	24.6	22.9	26.3	24.1	24.0	2.4
Fuel Oil	30.6	30.9	Q	Q	Q	3.4
Kerosene	Q	Q	Q	Q	Q	NF
LPG	24.4	23.9	26.7	20.8	27.1	7.5
Physical Units (PU) per Household³						
Physical Units of Water-Heating Consumption per Household,² Where the Main Water-Heating Fuel Is:						
Electricity (kWh)	2,871	2,746	2,969	2,931	2,699	2.5
Natural Gas (thousand cf)	24	22	26	23	23	2.4
Fuel Oil (gallons)	221	223	Q	Q	Q	3.4
Kerosene (gallons)	Q	Q	Q	Q	Q	NF
LPG (gallons)	267	261	292	227	297	7.5
Number of Household Members (NHM) per Household³						
Number of Household Members per Household, Where the Main Water-Heating Fuel Is:						
Electricity	2.5	2.5	2.4	2.5	2.4	2.7
Natural Gas	2.7	2.5	2.7	2.7	2.8	2.2
Fuel Oil	2.4	2.5	Q	Q	Q	2.6
Kerosene	Q	Q	Q	Q	Q	NF
LPG	2.6	2.5	2.5	2.6	3.0	7.2

See footnotes at end of table.

Table CE4-13c. Water-Heating Energy Consumption in U.S. Households by Census Region, 1997 (Continued)

	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.2	1.1	1.0	1.2	
Water-Heating Intensity (PU÷NHM)³						
Water-Heating Intensity, Where the Main Water-Heating Fuel Is:						
Electricity	1,169	1,101	1,212	1,187	1,130	2.3
Natural Gas	8.8	8.8	9.6	8.7	8.2	2.5
Fuel Oil	90	90	Q	Q	Q	4.7
Kerosene	Q	Q	Q	Q	Q	NF
LPG	103	104	118	88	100	7.5

¹ The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

² Includes only the water-heating consumption of the water-heating fuel. Not included are: 1) the consumption of the main water-heating fuel for uses other than water heating; 2) the consumption of the main water-heating fuel where it is the secondary, and not the main, water-heating fuel, and; 3) the consumption of other fuels that are used as secondary water-heating fuels.

³ Averages are for those households using each of the main water-heating fuels.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Water-Heating Expenditures Tables

Table CE4-2e. Water-Heating Energy Expenditures in U.S. Households by Year of Construction, 1997

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.6	1.3	1.0	1.0	1.1	0.9	
Million Households								
Total U.S. Households	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.2
No Water Heating	0.2	Q	Q	Q	Q	Q	Q	71.9
Water Heating	101.3	9.7	17.3	19.5	14.4	12.5	27.8	4.2
Not Using a Major Fuel ²	0.5	Q	Q	Q	Q	Q	Q	53.1
Using a Major Fuel ²	100.8	9.7	17.2	19.4	14.3	12.5	27.7	4.2
For Main Water Heating	100.6	9.7	17.2	19.3	14.3	12.5	27.7	4.2
Number of Households with Water Heating, Major Fuels Used:								
Electricity	40.2	4.7	10.1	10.2	4.9	3.6	6.7	6.6
Natural Gas	52.8	4.6	6.4	8.3	8.3	7.8	17.5	6.4
Fuel Oil	5.2	Q	0.4	0.5	0.8	1.0	2.4	17.6
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	3.2	0.2	0.5	0.6	0.4	0.3	1.2	18.3
Billion Dollars								
Water-Heating Expenditures, Major Fuels Used:								
Electricity	8.99	1.07	2.19	2.35	1.03	0.77	1.58	7.3
Natural Gas	8.84	0.88	1.17	1.32	1.31	1.30	2.87	7.1
Fuel Oil	1.04	Q	0.09	0.08	0.17	0.20	0.48	18.0
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	0.89	0.08	0.17	0.15	0.12	0.05	0.32	20.3
Total	19.76	2.04	3.62	3.90	2.63	2.32	5.25	4.2
Dollars per Household								
Average Water-Heating Expenditures per Household								
Using a Major Fuel ²	196	211	210	202	184	185	190	2.2
For Main Water Heating	196	211	210	202	184	185	190	2.2
Million Households								
Number of Households, Where the Main Water-Heating Fuel Is:								
Electricity	39.6	4.7	10.0	10.0	4.8	3.5	6.6	6.7
Natural Gas	52.6	4.6	6.3	8.2	8.3	7.7	17.4	6.5
Fuel Oil	5.1	Q	0.4	0.4	0.8	1.0	2.4	17.9
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	3.1	0.2	0.5	0.5	0.4	0.3	1.2	18.6
Does Not Heat Water	0.2	Q	Q	Q	Q	Q	Q	71.9

See footnotes at end of table.

Table CE4-2e. Water-Heating Energy Expenditures in U.S. Households by Year of Construction, 1997 (Continued)

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ¹	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.5	1.6	1.3	1.0	1.0	1.1	0.9	
Dollars per Household								
Water-Heating Expenditures per Household,³ Where the Main Water-Heating Fuel Is:								
Electricity	227	226	219	234	214	219	239	3.0
Natural Gas	168	191	184	159	158	167	164	3.0
Fuel Oil	201	Q	239	175	202	207	197	7.7
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	279	337	328	270	289	187	266	8.8
Number of Household Members (NHM) per Household⁴								
Number of Household Members per Household, Where the Main Water-Heating Fuel Is:								
Electricity	2.5	2.6	2.4	2.5	2.3	2.4	2.5	3.0
Natural Gas	2.7	3.0	2.9	2.7	2.6	2.7	2.6	2.9
Fuel Oil	2.4	Q	2.4	2.4	2.4	2.4	2.5	7.6
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	2.6	3.5	3.1	2.7	2.5	2.1	2.3	10.0
Water-Heating Intensity (Dollars÷NHM)⁴								
Water-Heating Intensity, Where the Main Water-Heating Fuel Is:								
Electricity	92	85	92	93	94	91	96	2.8
Natural Gas	62	63	63	60	62	61	63	3.1
Fuel Oil	82	Q	98	73	84	86	79	9.7
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	107	96	105	101	115	88	116	9.4

¹ New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

² The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

³ Includes only the water-heating expenditures of the water-heating fuel. Not included are: 1) the expenditures of the main water-heating fuel for uses other than water heating; 2) the expenditures of the main water-heating fuel where it is the secondary, and not the main, water-heating fuel, and; 3) the expenditures of other fuels that are used as secondary water-heating fuels.

⁴ Averages are for those households using each of the main water-heating fuels.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE4-3e. Water-Heating Energy Expenditures in U.S. Households by Household Income, 1997

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.5	1.0	0.9	1.0	1.4	1.0	
Million Households								
Total U.S. Households	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
No Water Heating	0.2	Q	Q	Q	Q	Q	Q	57.0
Water Heating	101.3	13.2	29.1	31.1	27.9	14.6	33.9	2.8
Not Using a Major Fuel ²	0.5	Q	Q	Q	Q	0.2	0.2	37.3
Using a Major Fuel ²	100.8	13.0	29.0	31.0	27.7	14.4	33.7	2.8
For Main Water Heating	100.6	13.0	29.0	31.0	27.6	14.4	33.7	2.8
Number of Households with Water Heating, Major Fuels Used:								
Electricity	40.2	5.4	12.8	12.5	9.4	5.7	13.9	5.3
Natural Gas	52.8	6.2	14.1	16.1	16.3	7.3	16.8	4.9
Fuel Oil	5.2	1.0	1.3	1.5	1.4	0.9	2.0	11.1
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	3.2	0.4	1.0	1.0	0.8	0.5	1.1	15.9
Billion Dollars								
Water-Heating Expenditures, Major Fuels Used:								
Electricity	8.99	0.94	2.66	2.85	2.53	1.25	3.06	6.1
Natural Gas	8.84	0.90	2.11	2.70	3.14	1.19	2.70	5.6
Fuel Oil	1.04	0.16	0.20	0.32	0.36	0.17	0.36	12.2
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	0.89	0.08	0.25	0.27	0.30	0.10	0.28	16.9
Total	19.76	2.08	5.22	6.14	6.33	2.71	6.40	3.0
Dollars per Household								
Average Water-Heating Expenditures per Household								
Using a Major Fuel ²	196	160	180	198	228	189	190	1.8
For Main Water Heating	196	160	180	198	229	189	190	1.8
Million Households								
Number of Households, Where the Main Water-Heating Fuel Is:								
Electricity	39.6	5.4	12.6	12.4	9.2	5.7	13.8	5.4
Natural Gas	52.6	6.2	14.1	16.0	16.2	7.3	16.8	4.9
Fuel Oil	5.1	0.9	1.3	1.5	1.4	0.9	2.0	11.1
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	3.1	0.4	0.9	1.0	0.8	0.5	1.1	16.1
Does Not Heat Water	0.2	Q	Q	Q	Q	Q	Q	57.0

See footnotes at end of table.

Table CE4-3e. Water-Heating Energy Expenditures in U.S. Households by Household Income, 1997 (Continued)

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ¹	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.5	1.0	0.9	1.0	1.4	1.0	
Dollars per Household								
Water-Heating Expenditures per Household,³ Where the Main Water-Heating Fuel Is:								
Electricity	227	174	211	230	275	220	222	2.6
Natural Gas	168	144	149	168	193	164	161	2.4
Fuel Oil	201	167	161	207	256	183	181	6.3
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	279	195	254	258	382	203	247	7.9
Number of Household Members (NHM) per Household⁴								
Number of Household Members per Household, Where the Main Water-Heating Fuel Is:								
Electricity	2.5	1.8	2.3	2.6	2.9	2.7	2.6	2.4
Natural Gas	2.7	2.2	2.4	2.7	3.1	3.2	2.8	2.4
Fuel Oil	2.4	2.0	2.0	2.5	3.1	2.4	2.3	5.4
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	2.6	1.7	2.7	2.4	3.2	2.7	2.6	8.1
Water-Heating Intensity (Dollars÷NHM)⁴								
Water-Heating Intensity, Where the Main Water-Heating Fuel Is:								
Electricity	92	96	91	89	96	83	87	2.5
Natural Gas	62	65	61	61	62	52	57	2.5
Fuel Oil	82	84	81	82	82	76	79	7.3
Kerosene	Q	Q	Q	Q	Q	Q	Q	NF
LPG	107	118	94	107	118	77	94	8.9

¹ Below 150 percent of poverty line or 60 percent of median State income.

² The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

³ Includes only the water-heating expenditures of the water-heating fuel. Not included are: 1) the expenditures of the main water-heating fuel for uses other than water heating; 2) the expenditures of the main water-heating fuel where it is the secondary, and not the main, water-heating fuel, and; 3) the expenditures of other fuels that are used as secondary water-heating fuels.

⁴ Averages are for those households using each of the main water-heating fuels.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

**Table CE4-4e. Water-Heating Energy Expenditures in U.S. Households
by Type of Housing Unit, 1997**

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.5	1.9	1.2	1.6	
Million Households						
Total U.S. Households	101.5	73.7	5.6	15.8	6.3	4.0
No Water Heating	0.2	Q	Q	Q	Q	68.2
Water Heating	101.3	73.7	5.6	15.7	6.3	4.0
Not Using a Major Fuel ¹	0.5	0.3	Q	0.2	Q	45.5
Using a Major Fuel ¹	100.8	73.4	5.6	15.5	6.3	4.1
For Main Water Heating	100.6	73.3	5.6	15.5	6.3	4.1
Number of Households with Water Heating, Major Fuels Used:						
Electricity	40.2	27.1	1.8	7.0	4.3	7.2
Natural Gas	52.8	40.9	3.4	7.0	1.4	6.9
Fuel Oil	5.2	3.3	0.3	1.6	Q	15.7
Kerosene	Q	Q	Q	Q	Q	NF
LPG	3.2	2.6	Q	Q	0.5	17.3
Billion Dollars						
Water-Heating Expenditures, Major Fuels Used:						
Electricity	8.99	6.35	0.35	1.29	1.00	7.7
Natural Gas	8.84	7.08	0.55	1.02	0.19	7.8
Fuel Oil	1.04	0.73	0.06	0.25	Q	17.7
Kerosene	Q	Q	Q	Q	Q	NF
LPG	0.89	0.73	Q	Q	0.15	17.7
Total	19.76	14.89	0.97	2.57	1.34	4.0
Dollars per Household						
Average Water-Heating Expenditures per Household						
Using a Major Fuel ¹	196	203	173	165	213	2.3
For Main Water Heating	196	203	173	166	213	2.3
Million Households						
Number of Households, Where the Main Water-Heating Fuel Is:						
Electricity	39.6	26.6	1.8	6.9	4.3	7.3
Natural Gas	52.6	40.9	3.4	6.9	1.4	6.9
Fuel Oil	5.1	3.2	0.3	1.6	Q	15.8
Kerosene	Q	Q	Q	Q	Q	NF
LPG	3.1	2.6	Q	Q	0.5	17.6
Does Not Heat Water	0.2	Q	Q	Q	Q	68.2

See footnotes at end of table.

Table CE4-4e. Water-Heating Energy Expenditures in U.S. Households by Type of Housing Unit, 1997 (Continued)

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.5	1.9	1.2	1.6	
Dollars per Household						
Water-Heating Expenditures per Household,² Where the Main Water-Heating Fuel Is:						
Electricity	227	238	191	187	232	3.1
Natural Gas	168	173	160	147	133	3.2
Fuel Oil	201	224	204	154	Q	6.2
Kerosene	Q	Q	Q	Q	Q	NF
LPG	279	281	Q	Q	269	6.9
Number of Household Members (NHM) per Household³						
Number of Household Members per Household, Where the Main Water-Heating Fuel Is:						
Electricity	2.5	2.6	2.0	1.9	2.6	2.9
Natural Gas	2.7	2.8	2.4	2.1	2.3	3.1
Fuel Oil	2.4	2.6	1.6	2.2	Q	4.6
Kerosene	Q	Q	Q	Q	Q	NF
LPG	2.6	2.6	Q	Q	2.8	7.6
Water-Heating Intensity (Dollars÷NHM)³						
Water-Heating Intensity, Where the Main Water-Heating Fuel Is:						
Electricity	92	92	95	96	91	2.8
Natural Gas	62	61	65	69	57	3.2
Fuel Oil	82	85	125	69	Q	7.8
Kerosene	Q	Q	Q	Q	Q	NF
LPG	107	110	Q	Q	95	8.1

¹ The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

² Includes only the water-heating expenditures of the water-heating fuel. Not included are: 1) the expenditures of the main water-heating fuel for uses other than water heating; 2) the expenditures of the main water-heating fuel where it is the secondary, and not the main, water-heating fuel, and; 3) the expenditures of other fuels that are used as secondary water-heating fuels.

³ Averages are for those households using each of the main water-heating fuels.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE4-13e. Water-Heating Energy Expenditures in U.S. Households by Census Region, 1997

	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.2	1.2	1.0	1.1	
Million Households						
Total U.S. Households	101.5	19.7	24.1	35.9	21.8	NF
No Water Heating	0.2	Q	Q	Q	Q	53.9
Water Heating	101.3	19.7	24.1	35.8	21.8	NF
Not Using a Major Fuel ¹	0.5	Q	Q	Q	Q	39.8
Using a Major Fuel ¹	100.8	19.6	23.9	35.7	21.6	NF
For Main Water Heating	100.6	19.6	23.9	35.6	21.6	NF
Number of Households with Water Heating, Major Fuels Used:						
Electricity	40.2	5.2	6.5	21.0	7.5	5.8
Natural Gas	52.8	9.2	16.3	13.4	13.9	4.6
Fuel Oil	5.2	4.9	Q	Q	Q	10.0
Kerosene	Q	Q	Q	Q	Q	NF
LPG	3.2	0.4	1.1	1.1	0.5	17.9
Billion Dollars						
Water-Heating Expenditures, Major Fuels Used:						
Electricity	8.99	1.55	1.44	4.59	1.41	7.0
Natural Gas	8.84	1.88	2.53	2.34	2.09	5.7
Fuel Oil	1.04	0.99	Q	Q	Q	10.8
Kerosene	Q	Q	Q	Q	Q	NF
LPG	0.89	0.14	0.30	0.29	0.16	18.3
Total	19.76	4.56	4.28	7.25	3.67	2.0
Dollars per Household						
Average Water-Heating Expenditures per Household						
Using a Major Fuel ¹	196	233	179	203	169	2.1
For Main Water Heating	196	233	179	204	170	2.1
Million Households						
Number of Households, Where the Main Water-Heating Fuel Is:						
Electricity	39.6	5.1	6.4	20.9	7.2	5.9
Natural Gas	52.6	9.1	16.3	13.4	13.9	4.6
Fuel Oil	5.1	4.8	Q	Q	Q	10.0
Kerosene	Q	Q	Q	Q	Q	NF
LPG	3.1	0.4	1.1	1.1	0.5	18.3
Does Not Heat Water	0.2	Q	Q	Q	Q	53.9
Dollars per Household						
Water-Heating Expenditures per Household,² Where the Main Water-Heating Fuel Is:						
Electricity	227	302	225	219	195	3.1
Natural Gas	168	205	155	174	151	2.5
Fuel Oil	201	201	Q	Q	Q	4.0
Kerosene	Q	Q	Q	Q	Q	NF
LPG	279	352	263	257	304	7.0

See footnotes at end of table.

Table CE4-13e. Water-Heating Energy Expenditures in U.S. Households by Census Region, 1997 (Continued)

	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.2	1.2	1.0	1.1	
Number of Household Members (NHM) per Household³						
Number of Household Members per Household, Where the Main Water-Heating Fuel Is:						
Electricity	2.5	2.5	2.4	2.5	2.4	2.7
Natural Gas	2.7	2.5	2.7	2.7	2.8	2.2
Fuel Oil	2.4	2.5	Q	Q	Q	2.6
Kerosene	Q	Q	Q	Q	Q	NF
LPG	2.6	2.5	2.5	2.6	3.0	7.2
Water-Heating Intensity (Dollars÷NHM)³						
Water-Heating Intensity, Where the Main Water-Heating Fuel Is:						
Electricity	92	121	92	89	82	3.1
Natural Gas	62	81	58	64	53	2.6
Fuel Oil	82	82	Q	Q	Q	5.1
Kerosene	Q	Q	Q	Q	Q	NF
LPG	107	140	106	100	103	6.2

¹ The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

² Includes only the water-heating expenditures of the water-heating fuel. Not included are: 1) the expenditures of the main water-heating fuel for uses other than water heating; 2) the expenditures of the main water-heating fuel where it is the secondary, and not the main, water-heating fuel, and; 3) the expenditures of other fuels that are used as secondary water-heating fuels.

³ Averages are for those households using each of the main water-heating fuels.

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Appliances Consumption Tables

**Table CE5-2c. Appliances¹ Energy Consumption in U.S. Households
by Year of Construction, 1997**

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ²	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.9	1.3	1.0	1.0	1.2	0.9	
Million Households								
Total U.S. Households	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.1
Number of Households With Appliances, Fuels Used (more than one may apply):								
Electricity for:								
Refrigerators	101.3	9.7	17.3	19.5	14.4	12.5	27.8	4.1
Other Appliances and Lighting	101.4	9.7	17.3	19.6	14.4	12.5	27.9	4.1
Natural Gas	40.4	2.9	4.4	5.2	5.3	6.5	16.1	7.5
LPG	4.8	0.5	0.8	0.9	0.8	0.2	1.6	17.1
Quadrillion Btu								
Appliances Btu Consumption, Fuels Used:								
Electricity for:								
Refrigerators	0.46	0.04	0.08	0.09	0.07	0.06	0.11	4.4
Other Appliances and Lighting	1.87	0.21	0.35	0.39	0.25	0.22	0.45	4.3
Natural Gas	0.37	0.04	0.05	0.05	0.05	0.06	0.14	9.8
LPG	0.02	(*)	(*)	(*)	(*)	(*)	0.01	22.2
Total	2.73	0.30	0.48	0.53	0.37	0.34	0.71	4.3
Physical Units								
Physical Units of Appliances Consumption, Fuels Used:								
Electricity for:								
Refrigerators (billion kWh)	134	13	25	27	19	17	33	4.4
Other Appliances and Lighting (billion kWh)	549	62	103	113	74	65	132	4.3
Natural Gas (billion cf)	365	36	45	49	44	58	132	9.8
LPG (million gallons)	267	46	43	50	39	6	83	22.2
Million Btu per Household³								
Appliances Btu Consumption per Household, Fuels Used:								
Electricity for:								
Refrigerators	4.5	4.5	4.9	4.7	4.6	4.7	4.0	2.4
Other Appliances and Lighting	18.5	21.8	20.2	19.7	17.6	17.6	16.2	2.3
Natural Gas	9.3	12.8	10.6	9.7	8.5	9.2	8.4	5.7
LPG	5.1	8.1	5.0	4.8	4.4	2.5	4.9	13.6
Total	26.9	30.6	28.0	27.2	25.5	27.1	25.3	2.3

See footnotes at end of table.

Table CE5-2c. Appliances¹ Energy Consumption in U.S. Households by Year of Construction, 1997 (Continued)

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ²	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.9	1.3	1.0	1.0	1.2	0.9	
Physical Units per Household³								
Physical Units of Appliances Consumption per Household, Fuels Used:								
Electricity for:								
Refrigerators (kWh)	1,323	1,327	1,424	1,378	1,348	1,370	1,187	2.4
Other Appliances and Lighting (kWh)	5,412	6,396	5,926	5,777	5,149	5,169	4,740	2.3
Natural Gas (thousand cf)	9	12	10	9	8	9	8	5.7
LPG (gallons)	55	89	55	53	48	27	54	13.6

¹ Includes energy consumption for refrigeration and lighting.

² New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

³ Averages are for those households using each of the fuels for appliances.

(*) = Value rounds to zero in the units displayed.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE5-3c. Appliances¹ Energy Consumption in U.S. Households by Household Income, 1997

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ²	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.5	1.6	1.0	0.9	1.1	1.3	0.9	
Million Households								
Total U.S. Households	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
Number of Households With Appliances, Fuels Used (more than one may apply):								
Electricity for:								
Refrigerators	101.3	13.2	29.1	31.1	27.9	14.6	34.0	2.7
Other Appliances and Lighting	101.4	13.3	29.1	31.1	27.9	14.6	34.0	2.7
Natural Gas	40.4	5.8	11.3	11.7	11.7	6.8	14.7	4.8
LPG	4.8	0.7	1.6	1.4	1.1	0.8	1.9	14.7
Quadrillion Btu								
Appliances Btu Consumption, Fuels Used:								
Electricity for:								
Refrigerators	0.46	0.05	0.12	0.14	0.15	0.06	0.13	3.2
Other Appliances and Lighting	1.87	0.16	0.44	0.59	0.69	0.21	0.50	3.2
Natural Gas	0.37	0.05	0.08	0.11	0.13	0.06	0.12	6.6
LPG	0.02	(*)	0.01	0.01	0.01	(*)	0.01	17.1
Total	2.73	0.26	0.65	0.84	0.98	0.33	0.77	3.2
Physical Units								
Physical Units of Appliances Consumption, Fuels Used:								
Electricity for:								
Refrigerators (billion kWh)	134	15	35	40	45	16	39	3.2
Other Appliances and Lighting (billion kWh)	549	46	130	172	201	61	146	3.2
Natural Gas (billion cf)	365	44	81	111	128	59	121	6.6
LPG (million gallons)	267	35	81	73	77	34	103	17.2
Million Btu per Household³								
Appliances Btu Consumption per Household, Fuels Used:								
Electricity for:								
Refrigerators	4.5	3.8	4.1	4.4	5.5	3.8	3.9	1.9
Other Appliances and Lighting	18.5	11.8	15.2	18.8	24.6	14.1	14.6	2.0
Natural Gas	9.3	7.8	7.4	9.8	11.3	8.9	8.5	3.8
LPG	5.1	4.4	4.6	4.9	6.3	3.9	5.0	11.1
Total	26.9	19.2	22.4	27.0	35.1	22.3	22.5	1.9

See footnotes at end of table.

Table CE5-3c. Appliances¹ Energy Consumption in U.S. Households by Household Income, 1997 (Continued)

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ²	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.5	1.6	1.0	0.9	1.1	1.3	0.9	

Physical Units per Household³

Physical Units of Appliances Consumption per Household, Fuels Used:

	Total	Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More	Below Poverty Line	Eligible for Federal Assistance ²	RSE Row Factors
Electricity for:								
Refrigerators (kWh)	1,323	1,114	1,198	1,279	1,603	1,123	1,147	1.9
Other Appliances and Lighting (kWh)	5,412	3,461	4,462	5,511	7,219	4,139	4,292	2.0
Natural Gas (thousand cf)	9	8	7	10	11	9	8	3.8
LPG (gallons)	55	48	51	54	69	43	55	11.1

¹ Includes energy consumption for refrigeration and lighting.

² Below 150 percent of poverty line or 60 percent of median State income.

³ Averages are for those households using each of the fuels for appliances.

(*) = Value rounds to zero in the units displayed.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE5-4c. Appliances¹ Energy Consumption in U.S. Households by Type of Housing Unit, 1997

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.5	1.8	1.4	1.6	
Million Households						
Total U.S. Households	101.5	73.7	5.6	15.8	6.3	4.0
Number of Households With Appliances, Fuels Used (more than one may apply):						
Electricity for:						
Refrigerators	101.3	73.7	5.6	15.7	6.3	4.0
Other Appliances and Lighting	101.4	73.7	5.6	15.8	6.3	4.0
Natural Gas	40.4	30.4	2.7	5.4	1.8	6.9
LPG	4.8	3.4	Q	Q	1.3	16.7
Quadrillion Btu						
Appliances Btu Consumption, Fuels Used:						
Electricity for:						
Refrigerators	0.46	0.37	0.02	0.05	0.02	3.9
Other Appliances and Lighting	1.87	1.56	0.06	0.14	0.11	3.9
Natural Gas	0.37	0.31	0.02	0.03	0.01	8.5
LPG	0.02	0.02	Q	Q	0.01	19.9
Total	2.73	2.25	0.10	0.23	0.15	3.7
Physical Units						
Physical Units of Appliances Consumption, Fuels Used:						
Electricity for:						
Refrigerators (billion kWh)	134	107	6	14	7	3.9
Other Appliances and Lighting (billion kWh)	549	457	18	42	32	3.9
Natural Gas (billion cf)	365	302	19	32	12	8.5
LPG (million gallons)	267	189	Q	Q	75	19.9
Million Btu per Household²						
Appliances Btu Consumption per Household, Fuels Used:						
Electricity for:						
Refrigerators	4.5	5.0	3.4	3.1	3.9	2.0
Other Appliances and Lighting	18.5	21.1	10.7	9.1	17.4	2.1
Natural Gas	9.3	10.2	7.1	6.0	6.8	4.3
LPG	5.1	5.1	Q	Q	5.2	10.6
Total	26.9	30.5	17.5	14.3	24.3	1.8

See footnotes at end of table.

Table CE5-4c. Appliances¹ Energy Consumption in U.S. Households by Type of Housing Unit, 1997 (Continued)

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.5	1.8	1.4	1.6	
Physical Units per Household²						
Physical Units of Appliances Consumption per Household, Fuels Used:						
Electricity for:						
Refrigerators (kWh)	1,323	1,454	982	906	1,136	2.0
Other Appliances and Lighting (kWh)	5,412	6,198	3,129	2,677	5,102	2.1
Natural Gas (thousand cf)	9	10	7	6	7	4.3
LPG (gallons)	55	56	Q	Q	57	10.6

¹ Includes energy consumption for refrigeration and lighting.

² Averages are for those households using each of the fuels for appliances.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE5-5u. Appliances¹ Energy Consumption and Expenditures in U.S. Households by Household Demographics, 1997

Household Demographics	Appliances Energy					RSE Row Factors
	Households (millions)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
RSE Column Factor:	1.1	1.3	1.3	0.7	0.7	
Total	101.5	2.73	63.80	26.9	629	1.2
Household Size						
1 Person	25.5	0.42	10.38	16.6	407	2.1
2 Persons	33.0	0.87	20.49	26.3	621	2.2
3 Persons	17.4	0.53	12.35	30.3	709	2.5
4 Persons	15.2	0.52	11.74	34.0	770	2.7
5 Persons	6.4	0.24	5.39	37.0	839	4.7
6 or More Persons	3.9	0.15	3.46	39.7	894	6.4
1997 Household Income Category						
Less than \$5,000	3.8	0.08	1.77	20.2	472	6.1
\$5,000 to \$9,999	9.5	0.18	4.17	18.8	437	5.7
\$10,000 to \$14,999	10.3	0.21	4.94	20.8	479	4.2
\$15,000 to \$19,999	10.4	0.24	5.61	22.7	539	4.3
\$20,000 to \$24,999	8.4	0.20	4.70	24.1	558	4.1
\$25,000 to \$34,999	15.6	0.40	9.17	25.5	587	3.0
\$35,000 to \$49,999	15.5	0.44	10.27	28.6	662	2.6
\$50,000 to \$74,999	16.4	0.52	12.56	31.8	765	3.2
\$75,000 or More	11.5	0.46	10.61	39.7	924	4.1
Below Poverty Line						
100 Percent	14.6	0.33	7.51	22.3	512	3.6
125 Percent	19.7	0.44	9.98	22.2	508	3.3
150 Percent	26.7	0.60	13.77	22.5	516	2.7
Eligible for Federal Assistance²	34.1	0.77	17.78	22.5	522	2.5
Age of Householder						
Under 25 Years	5.7	0.11	2.56	19.1	451	5.0
25 to 34 Years	18.5	0.44	10.30	23.9	556	2.6
35 to 44 Years	23.2	0.71	16.21	30.6	699	2.5
45 to 59 Years	25.6	0.80	18.68	31.4	730	2.2
60 Years and Over	28.5	0.66	16.05	23.3	563	2.7
Race of Householder						
White	78.5	2.18	50.68	27.8	646	1.4
Black	12.7	0.33	7.69	26.1	606	4.0
Other ³	10.3	0.22	5.43	21.1	528	5.3
Householder of Hispanic Descent						
Yes	9.4	0.21	5.28	22.7	560	4.9
No	92.0	2.51	58.52	27.3	636	1.4

¹ These consumption and expenditures amounts cover the total energy used for all appliances (including refrigerators and lighting) and any of the three fuels (electricity, natural gas, and LPG) used in the housing unit. They do not only cover the energy used for the appliance listed.

² Below 150 percent of poverty line or 60 percent of median State income.

³ Includes 5.5 million householders who described themselves as Hispanic rather than White, Black, or other.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

Table CE5-6u. Appliances¹ Energy Consumption and Expenditures in U.S. Households by Usage Indicators, 1997

Usage Indicators	Appliances Energy					RSE Row Factors
	Households (millions)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
	RSE Column Factor:	1.2	1.3	1.4	0.7	
Total	101.5	2.73	63.80	26.9	629	1.2
Estimated Heated Floorspace Category (square feet)²						
Fewer than 600	7.9	0.11	2.84	14.6	361	4.7
600 to 999	21.5	0.42	9.96	19.5	463	3.1
1,000 to 1,599	30.4	0.80	18.48	26.3	609	2.3
1,600 to 1,999	15.3	0.48	11.26	31.5	737	2.8
2,000 to 2,399	7.9	0.27	6.45	34.6	818	4.0
2,400 to 2,999	5.3	0.22	4.77	40.5	895	5.2
3,000 or More	4.1	0.22	4.74	52.2	1,148	7.2
No Estimate Provided	9.1	0.21	5.30	23.3	582	5.0
Household Size						
1 Person	25.5	0.42	10.38	16.6	407	2.2
2 Persons	33.0	0.87	20.49	26.3	621	2.2
3 Persons	17.4	0.53	12.35	30.3	709	2.5
4 Persons	15.2	0.52	11.74	34.0	770	2.7
5 Persons	6.4	0.24	5.39	37.0	839	4.7
6 or More Persons	3.9	0.15	3.46	39.7	894	6.4
Weekday Home Activities						
Home Used for Business						
Yes	7.4	0.24	5.56	32.9	756	5.4
No	94.1	2.49	58.24	26.4	619	1.3
Energy-Intensive Activity						
Yes	2.4	0.09	2.07	38.4	863	8.5
No	99.1	2.64	61.73	26.6	623	1.3
Someone Home All Day						
Yes	51.3	1.47	34.24	28.7	667	1.9
No	50.1	1.26	29.56	25.1	589	1.7
Number of Refrigerators¹						
1	85.9	2.13	49.95	24.8	581	1.4
2 or More	15.4	0.60	13.82	39.0	898	3.0
Electric Appliances Used (more than one may apply)¹						
Refrigerators	101.3	2.73	63.77	26.9	629	1.2
Separate Freezer	33.7	1.15	25.66	34.2	762	2.0
Dishwasher	50.9	1.60	37.20	31.4	731	1.9
Clothes Washer	78.5	2.39	55.18	30.5	703	1.2
Clothes Dryer	72.2	2.27	51.85	31.4	718	1.4
Waterbed Heater	8.4	0.30	6.64	35.5	790	4.8
Swimming-Pool Pump	5.5	0.27	6.18	48.7	1,128	5.4
Hot-Tub or Spa Heater	2.7	0.12	2.78	44.9	1,037	6.7
Well Pump	14.3	0.48	11.30	33.3	788	5.1
Appliance Combination Usage						
Dishwasher, Clothes Washer, and Clothes Dryer						
All	44.4	1.50	34.48	33.7	776	2.0
Some	39.8	0.98	22.94	24.6	576	2.1
None	17.2	0.25	6.38	14.6	371	3.7

See footnotes at end of table.

Table CE5-6u. Appliances¹ Energy Consumption and Expenditures in U.S. Households by Usage Indicators, 1997 (Continued)

Usage Indicators	Appliances Energy					RSE Row Factors
	Households (millions)	Total		Per Household		
		Consumption (quadrillion Btu)	Expenditures (billion dollars)	Consumption (million Btu)	Expenditures (dollars)	
	RSE Column Factor:	1.2	1.3	1.4	0.7	
Local Electricity Utility Rate (cents per kWh)						
Less than 6	7.8	0.23	3.51	28.8	449	9.0
6 to Less than 8	37.1	1.07	21.60	29.0	583	3.9
8 to Less than 10	24.7	0.69	16.09	27.9	652	6.2
10 to Less than 12	13.7	0.33	9.05	24.2	661	6.2
12 to Less than 14	14.0	0.33	10.20	23.4	731	5.3
14 or More	4.2	0.08	3.35	19.7	795	7.3
Fuels for Appliance Use Paid by Household						
All Major Fuels³						
Yes	93.4	2.59	60.51	27.7	648	1.3
No	4.7	0.08	1.72	15.9	364	7.8
Some	3.3	0.06	1.57	19.3	475	7.8
Electricity						
Yes	96.3	2.65	61.90	27.5	643	1.3
No	5.1	0.08	1.90	16.0	370	7.5
Natural Gas						
Yes	35.5	1.11	24.64	31.2	695	2.7
No	5.0	0.09	2.19	18.8	441	6.0
LPG						
Yes	4.8	0.13	3.35	28.1	700	6.9
No	Q	Q	Q	Q	Q	NF

¹ These consumption and expenditures amounts cover the total energy used for all appliances (including refrigerators and lighting) and any of the three fuels (electricity, natural gas, and LPG) used in the housing unit. They do not only cover the energy used for the appliance listed.

² Estimates provided by the household interview respondents, who were asked which category best described the total heated floorspace in the home.

³ The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG).

NF = No applicable RSE row factor.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the corresponding column and row factors. • Because of rounding, data may not sum to totals.

• Appliances include refrigerators. • See "Glossary" for definition of terms used in this report.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A, B, C of the 1997 Residential Energy Consumption Survey.

Table CE5-13c. Appliances¹ Energy Consumption in U.S. Households by Census Region, 1997

	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	1.1	1.1	1.1	1.3	
Million Households						
Total U.S. Households	101.5	19.7	24.1	35.9	21.8	NF
Number of Households With Appliances, Fuels Used (more than one may apply):						
Electricity for:						
Refrigerators	101.3	19.7	24.0	35.8	21.7	NF
Other Appliances and Lighting	101.4	19.7	24.1	35.9	21.8	NF
Natural Gas	40.4	9.6	11.7	9.6	9.5	4.9
LPG	4.8	1.2	1.3	1.7	0.7	18.1
Quadrillion Btu						
Appliances Btu Consumption, Fuels Used:						
Electricity for:						
Refrigerators	0.46	0.07	0.10	0.19	0.09	1.9
Other Appliances and Lighting	1.87	0.30	0.46	0.77	0.35	2.1
Natural Gas	0.37	0.08	0.11	0.10	0.09	7.4
LPG	0.02	(*)	0.01	0.01	(*)	19.5
Total	2.73	0.45	0.68	1.07	0.53	1.9
Physical Units						
Physical Units of Appliances Consumption, Fuels Used:						
Electricity for:						
Refrigerators (billion kWh)	134	21	30	57	26	1.9
Other Appliances and Lighting (billion kWh)	549	87	134	225	103	2.1
Natural Gas (billion cf)	365	75	109	95	85	7.4
LPG (million gallons)	267	52	81	100	34	19.5
Million Btu per Household²						
Appliances Btu Consumption per Household, Fuels Used:						
Electricity for:						
Refrigerators	4.5	3.6	4.3	5.4	4.1	1.9
Other Appliances and Lighting	18.5	15.0	19.0	21.4	16.1	2.1
Natural Gas	9.3	8.1	9.6	10.1	9.3	4.5
LPG	5.1	4.0	5.9	5.3	4.7	10.0
Total	26.9	22.8	28.2	29.8	24.4	1.9
Physical Units per Household²						
Physical Units of Appliances Consumption per Household, Fuels Used:						
Electricity for:						
Refrigerators (kWh)	1,323	1,068	1,251	1,579	1,213	1.9
Other Appliances and Lighting (kWh)	5,412	4,406	5,571	6,279	4,717	2.1
Natural Gas (thousand cf)	9	8	9	10	9	4.5
LPG (gallons)	55	44	64	58	52	10.0

¹ Includes energy consumption for refrigeration and lighting.

² Averages are for those households using each of the fuels for appliances.

(*) = Value rounds to zero in the units displayed.

NF = No applicable RSE row factor.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Appliances Expenditures Tables

Table CE5-2e. Appliances¹ Energy Expenditures in U.S. Households by Year of Construction, 1997

	Total	Year of Construction						RSE Row Factors
		1990 to 1997 ²	1980 to 1989	1970 to 1979	1960 to 1969	1950 to 1959	1949 or Before	
RSE Column Factor:	0.4	1.8	1.4	1.0	1.0	1.1	0.8	
Million Households								
Total U.S. Households	101.5	9.7	17.3	19.6	14.4	12.5	27.9	4.1
Number of Households With Appliances, Fuels Used (more than one may apply):								
Electricity for:								
Refrigerators	101.3	9.7	17.3	19.5	14.4	12.5	27.8	4.1
Other Appliances and Lighting	101.4	9.7	17.3	19.6	14.4	12.5	27.9	4.1
Natural Gas	40.4	2.9	4.4	5.2	5.3	6.5	16.1	7.5
LPG	4.8	0.5	0.8	0.9	0.8	0.2	1.6	17.1
Billion Dollars								
Appliances Expenditures, Fuels Used:								
Electricity for:								
Refrigerators	12.14	1.07	2.08	2.31	1.79	1.62	3.27	4.6
Other Appliances and Lighting	48.44	5.05	8.59	9.48	6.66	5.99	12.67	4.4
Natural Gas	2.86	0.27	0.36	0.34	0.35	0.44	1.11	10.6
LPG	0.36	0.05	0.06	0.07	0.05	0.01	0.12	21.4
Total	63.80	6.44	11.09	12.19	8.85	8.05	17.17	4.4
Dollars per Household³								
Appliances Expenditures per Household, Fuels Used:								
Electricity for:								
Refrigerators	120	111	121	118	124	129	117	2.6
Other Appliances and Lighting	477	521	496	485	461	477	454	2.5
Natural Gas	71	92	82	65	65	68	69	6.4
LPG	75	98	73	71	68	49	79	13.2
Total	629	664	641	623	613	642	615	2.4

¹ Includes energy expenditures for refrigeration and lighting.

² New construction for 1997 includes only those housing units built and occupied between January and the April-August period when the household interviews were conducted.

³ Averages are for those households using each of the fuels for appliances.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE5-3e. Appliances¹ Energy Expenditures in U.S. Households by Household Income, 1997

	Total	1997 Household Income				Below Poverty Line	Eligible for Federal Assistance ²	RSE Row Factors
		Less than \$10,000	\$10,000 to \$24,999	\$25,000 to \$49,999	\$50,000 or More			
RSE Column Factor:	0.6	1.5	1.0	0.9	1.0	1.3	1.0	
Million Households								
Total U.S. Households	101.5	13.3	29.1	31.1	27.9	14.6	34.1	2.7
Number of Households With Appliances, Fuels Used (more than one may apply):								
Electricity for:								
Refrigerators	101.3	13.2	29.1	31.1	27.9	14.6	34.0	2.7
Other Appliances and Lighting	101.4	13.3	29.1	31.1	27.9	14.6	34.0	2.7
Natural Gas	40.4	5.8	11.3	11.7	11.7	6.8	14.7	4.8
LPG	4.8	0.7	1.6	1.4	1.1	0.8	1.9	14.7
Billion Dollars								
Appliances Expenditures, Fuels Used:								
Electricity for:								
Refrigerators	12.14	1.36	3.15	3.55	4.07	1.52	3.61	3.2
Other Appliances and Lighting	48.44	4.12	11.36	14.92	18.04	5.42	13.02	3.2
Natural Gas	2.86	0.41	0.62	0.88	0.95	0.52	1.01	6.8
LPG	0.36	0.05	0.11	0.09	0.11	0.05	0.14	18.1
Total	63.80	5.94	15.25	19.44	23.17	7.51	17.78	3.1
Dollars per Household³								
Appliances Expenditures per Household, Fuels Used:								
Electricity for:								
Refrigerators	120	103	108	114	146	104	106	2.0
Other Appliances and Lighting	477	310	390	479	646	370	382	2.0
Natural Gas	71	71	55	75	81	76	69	4.6
LPG	75	65	70	67	100	60	77	11.0
Total	629	446	523	624	830	512	522	1.9

¹ Includes energy expenditures for refrigeration and lighting.

² Below 150 percent of poverty line or 60 percent of median State income.

³ Averages are for those households using each of the fuels for appliances.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE5-4e. Appliances¹ Energy Expenditures in U.S. Households by Type of Housing Unit, 1997

	Type of Housing Unit					RSE Row Factors
	Total	Single-Family	Multifamily		Mobile Home	
			Two to Four Units	Five or More Units		
RSE Column Factor:	0.5	0.5	1.9	1.2	1.6	
Million Households						
Total U.S. Households	101.5	73.7	5.6	15.8	6.3	4.0
Number of Households With Appliances, Fuels Used (more than one may apply):						
Electricity for:						
Refrigerators	101.3	73.7	5.6	15.7	6.3	4.0
Other Appliances and Lighting	101.4	73.7	5.6	15.8	6.3	4.0
Natural Gas	40.4	30.4	2.7	5.4	1.8	6.9
LPG	4.8	3.4	Q	Q	1.3	16.2
Billion Dollars						
Appliances Expenditures, Fuels Used:						
Electricity for:						
Refrigerators	12.14	9.55	0.57	1.43	0.59	4.2
Other Appliances and Lighting	48.44	39.93	1.79	4.17	2.54	4.0
Natural Gas	2.86	2.25	0.15	0.37	0.09	8.8
LPG	0.36	0.26	Q	Q	0.10	19.4
Total	63.80	51.98	2.52	5.97	3.32	3.9
Dollars per Household²						
Appliances Expenditures per Household, Fuels Used:						
Electricity for:						
Refrigerators	120	130	102	91	93	2.5
Other Appliances and Lighting	477	542	319	264	402	2.3
Natural Gas	71	74	56	68	47	5.1
LPG	75	75	Q	Q	76	8.7
Total	629	705	449	378	525	2.1

¹ Includes energy expenditures for refrigeration and lighting.

² Averages are for those households using each of the fuels for appliances.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 10 households were sampled.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Table CE5-13e. Appliances¹ Energy Expenditures in U.S. Households by Census Region, 1997

	Total	Census Region				RSE Row Factors
		Northeast	Midwest	South	West	
RSE Column Factor:	0.6	0.9	1.2	1.2	1.3	
Million Households						
Total U.S. Households	101.5	19.7	24.1	35.9	21.8	NF
Number of Households With Appliances, Fuels Used (more than one may apply):						
Electricity for:						
Refrigerators	101.3	19.7	24.0	35.8	21.7	NF
Other Appliances and Lighting	101.4	19.7	24.1	35.9	21.8	NF
Natural Gas	40.4	9.6	11.7	9.6	9.5	4.9
LPG	4.8	1.2	1.3	1.7	0.7	18.1
Billion Dollars						
Appliances Expenditures, Fuels Used:						
Electricity for:						
Refrigerators	12.14	2.62	2.61	4.41	2.50	2.3
Other Appliances and Lighting	48.44	10.57	11.42	17.32	9.12	2.4
Natural Gas	2.86	0.86	0.65	0.76	0.59	7.6
LPG	0.36	0.10	0.09	0.13	0.04	20.3
Total	63.80	14.15	14.77	22.62	12.25	2.2
Dollars per Household²						
Appliances Expenditures per Household, Fuels Used:						
Electricity for:						
Refrigerators	120	133	109	123	115	2.3
Other Appliances and Lighting	477	536	475	483	419	2.4
Natural Gas	71	89	56	79	62	4.7
LPG	75	87	69	77	61	9.0
Total	629	717	614	631	562	2.2

¹ Includes energy expenditures for refrigeration and lighting.

² Averages are for those households using each of the fuels for appliances.

NF = No applicable RSE row factor.

Notes: • To obtain the RSE percentage for any table cell, multiply the 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, Forms EIA-457 A-G of the 1997 Residential Energy Consumption Survey.

Appendix A

How the Survey Was Conducted

Introduction

The Residential Energy Consumption Survey (RECS) was designed by the Energy Information Administration (EIA) to provide information about energy consumption within the residential sector. The RECS is conducted in two major parts: the Household Survey and the Energy Suppliers Survey. The Household Survey collects information about the housing unit via personal interviews with a representative national sample of households. The Rental-Agent Survey is an adjunct to the Household Survey and is used to verify information provided by renters in the Household Survey. In the Energy Suppliers Survey, data concerning actual energy consumption are obtained from household billing records maintained by the energy suppliers. The data are collected by questionnaires mailed to all the suppliers for the households in the Household Survey. This report is based on the results of the Household Survey, the Rental-Agent Survey, and the Energy Suppliers Survey. A subcontractor to EIA collected and processed the 1997 RECS. A copy of the data collection form for the Household Survey is reproduced in Appendix D, "Household Questionnaire."

This appendix contains detailed information about the Sample Design, Household Survey, its adjunct Rental Agent Survey, the Energy Suppliers Survey, Confidentiality of the Data, and Public Use Data File Preparation.

Sample Design

The sample design for the 1997 RECS was based on the design for the 1993 RECS. 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 definition of household is the same as that used by the U. S. Bureau of the Census. At the time of the 1997 RECS (July 1997), the universe was estimated to contain 101,481,000 households based on Current Population Survey (CPS) estimates. This definition excludes group quarters, such as military barracks, dormitories, and nursing homes, which are considered to be out-of-scope. Households on military installations are included. It should be noted that the separation time between the estimates for 1993 and 1997 was four years, instead of the 3 years between the 1990 and 1993 estimates. Estimates of annual change need to take this difference into account.

The overall plan for the 1997 RECS included a basic sample of approximately 5,000 completed household interviews, plus a supplemental sample totaling approximately 800 completed interviews. The basic sample was designed to represent the total population of households in the United States, with specified levels of precision for each of the nine geographically defined Census divisions. The supplemental sample, included in the plan to meet special analytical needs, was designed to provide disproportionately large samples of households living below the poverty level, particularly those using electricity, fuel oil, or kerosene as the main space-heating fuel.

Multistage Area Probability Sample

In a multistage area probability sample design, the universe is divided into successively smaller, statistically selected areas. The process starts with the selection of primary sampling units (PSUs) and ends with the selection of individual households.

Primary Sampling Units (PSUs)

PSUs are either metropolitan areas containing a central city of 50,000 or larger population, or they are counties or groups of counties containing small cities and rural areas. In the sample design used for the 1997 RECS, the total land area of the 50 States and the District of Columbia was divided into 1,786 PSUs. These PSUs were based on county and independent city boundaries and on Metropolitan Statistical Areas (MSAs) as defined in June 1990.

The primary mode of stratification of PSUs was by the nine Census Divisions. Strata were separately defined within Census Divisions for the four most populous States (California, Florida, New York, and Texas) and for Alaska and Hawaii because of their unique weather conditions. Stratification was also based on MSA or nonMSA status of PSUs and, to the extent feasible, on the main residential space-heating fuel and weather conditions. PSUs were grouped into 116 strata with one PSU selected from each strata. The PSUs that were used for the 1993 RECS were also used for the 1997 RECS. (See Figure A1, “Multistage Area Probability Sample Activities,” for the 1997 RECS.)

Secondary Sampling Units (SSUs)

The SSUs used for the 1997 RECS were either the SSUs selected in the 1993 redesign effort or were selected as part of a new construction update procedure. A number of SSUs, usually 8 or more, were selected in each PSU. SSUs consisting of one or more Census blocks, were selected directly from Census statistics. Blocks were combined, as necessary, to create SSUs that contained at least 50 housing units. Some SSUs that contained very large numbers of housing units were divided into smaller listing segments and one listing segment was selected for detailed address listing.

New Construction Canvass

The starting point for the new construction update procedure was to expand the SSUs selected for the 1993 RECS. This procedure was used to determine if significant new construction — defined as groups of 50 or more housing units — had occurred within the expanded SSUs since 1993. This was based on a canvass, primarily by telephone, of local sources of information, such as building-permit-issuing agencies, zoning boards, and tax offices. If significant new construction had not occurred, the 1993 selected SSU was used for the 1997 RECS. If significant construction had occurred, the expanded SSU was visited by field workers to obtain a rough count of the number of housing units by block, the expanded SSU was divided into segments, and a segment was selected as a SSU for the 1997 RECS.

Sample Selection—Ultimate Clusters

To conduct the 1997 housing unit sample selection, detailed field listings were needed for each housing unit in the selected SSUs. The detailed field listings were either carried over from the 1993 RECS or were created for SSUs in PSUs where the 1993 redesign effort was not completed and where significant new construction was found. Field workers created the detailed field listings by visiting the segments and identifying each housing unit by street address, apartment number, or other obvious features. Following the field-listing step, a penultimate cluster of approximately 50 housing units was selected from each listing segment. Addresses of these housing units were placed in a database used for actual sample selection.

Specific addresses chosen from each of the listing segments comprised the ultimate clusters of the 1997 RECS sample. An ultimate cluster of housing units to be contacted for the interview (averaging 5.6 housing units for the 1997 RECS) was randomly selected by computer from the penultimate cluster; these housing units constituted the assignments given to interviewers.

Figure A1. Multistage Area Probability Sample Activities for the 1997 RECS

Population of Special Interest

The 1997 survey featured a supplemental sample of low-income households designed to be merged with the main RECS sample and to meet the special analytical needs of the Office of Family Assistance, Family Support Administration (FSA), U.S. Department of Health and Human Services. FSA is interested in households living below the poverty level that use electricity, fuel oil, or kerosene as the main space-heating fuel.

Procedures for over sampling this population were based on interviewer observations during the listing phase. Interviewers were instructed to rate the general income level of each block in the listing segment based on their observations and their general knowledge of the area. Interviewers placed each listing segment into one of four groups: Wealthy (highest 25 percent); Upper-Middle Class (second quartile); Lower-Middle Class (third quartile); or Poor or Near Poor (lowest 25 percent). Whenever possible, interviewers also recorded main heating fuel for each listing segment. Listing segments used for the below-poverty-level supplement and the relative sampling rates used for specific classes of housing units are shown in Table A1.

Table A1. Relative Sampling Rates Based on Income Rating and Main Home-Heating Fuels

Main Home-Heating Fuel	Income Rating		
	Upper Middle or Highest	Lower Middle	Poor or Near Poor
Electricity or Fuel Oil/Kerosene	1.0	1.25	2.25
All Other Fuels	1.0	1.0	1.75

Source: Energy Information Administration, Office of Energy Markets and End Use, The 1997 Residential Energy Consumption Survey.

A relative sampling rate of 1.0 in Table A1 means that the overall sampling rate applied to households in a sample segment is the rate established for the basic sample. Relative sampling rates higher than 1.0 were used for households in the oversampled groups. For example, a relative sampling rate of 1.25 means that households in that group were sampled at a rate 25 percent higher than the rate established for the basic sample. In addition to the sampling rates shown in Table A1, Households in Alaska were over sampled by an additional 25 percent.

It is not possible to exactly divide the sample into the basic sample and supplemental sample, but it is possible to estimate how many observations of various types were added as a result of the supplemental low-income sample.

The estimated outcome of the oversampling procedure for households below the poverty level is summarized in Table A2. An estimated 807 interviews were completed in the households selected as part of the low-income supplement. Some 31.8 percent of completed interviews in the supplemental sample were with households living below the poverty level, compared with 14.5 percent of completed interviews in the main sample. The corresponding figures for the Low-Income Home Energy Assistant Program (LIHEAP) level were 57.3 percent and 34.1 percent, respectively.

Household Survey

A complete RECS interview consists of data for a completed household interview and a signed Authorization Form. The large majority of interviews were completed via a Computer-Assisted Personal Interviewing (CAPI) system. The survey instrument was programmed by using the BLAISE software system. Form EIA-457A, the paper version of the survey instrument, can be found in Appendix D, "Household Questionnaire." Because of technical problems, some of the interviews had to be conducted via Paper and Pencil Interviewing (PAPI). After the end of each interview, the household respondent was asked to sign an Authorization Form. The signed Authorization Form gave permission for EIA's subcontractor to obtain the housing unit's energy bills from each energy supplier.

A total of 8,310 units were selected to participate in the 1997 RECS. Of these 8,310 households, 7,285 were determined to be eligible to participate. Completed interviews were obtained for 5,900 (81.0 percent) of these eligible households.

Table A2. Poverty Status and Home-Heating Fuels in the 1997 RECS: Main and Supplemental Low-Income Samples

Poverty Status and Home-Heating Fuel	Basic Sample Household		Supplemental Sample Households	
	Number	Percent	Number	Percent
All Households	5,093	100.0	807	100.0
Below Poverty Level	740	14.5	257	31.8
Electricity	217	4.3	79	9.8
Fuel Oil/Kerosene	85	1.7	34	4.2
Other Fuels	436	8.6	144	17.8
Not Below Poverty Level	4,353	85.5	550	68.2
Below LIHEAP Level	1,736	34.1	463	57.3
Electricity	509	10.0	155	19.1
Fuel Oil/Kerosene	214	4.2	59	7.3
Other Fuels	1,013	19.9	249	30.7
Not Below LIHEAP Level	3,357	65.9	344	42.7

Notes: ! Households are classified according to the poverty status of the family or nonfamily householder. The actual reference period for income reported in the 1997 RECS was the 12 months preceding the RECS interview; the interview date for most households was within the second and third calendar quarters of 1997. ! 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 1997 Residential Energy Consumption Survey.

Conducting the Interviews

Interviewer Training

In April 1997, two separate three-day training sessions were held in Washington, DC. These sessions were attended by approximately 220 interviewers. Each session was led by a group of trainers who had attended a three-day trainers' workshop in Rockville, MD. The training sessions included: discussion of general interviewing techniques, RECS background, an introduction to the CAPI system and related topics, instruction on sampling issues and the use of the address lists, a series of trainer-guided practice interviews, practice with mock interviews, and a review of administrative requirements. All training sessions were monitored by EIA's staff.

The Interviewers

A total of 214 interviewers completed one or more personal interviews for this study. Seventy-five interviewers (35 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.

Each interviewer conducted an average of 27 interviews. Four interviewers each completed fewer than seven interviews, with an average of three per interviewer. Fifteen interviewers each completed 50 or more interviews, with an average of 58 per interviewer. Twenty percent of the personal interviews were verified by telephone or mail to ensure that interviews were conducted as intended.

The Interview

Household interviews were conducted with the householder or the householder's spouse and lasted, on average, 29 minutes; nearly 80 percent of the interviews lasted between 15 and 45 minutes. The questions covered energy-related features of the household, such as the type of heating and cooling systems, the fuels used for heating and cooling, household appliances and their usage, the receipt of government assistance for the cost of heating, and demographic data on household members.

Data Collection Dates

Approximately three-quarters of the personal interviews were completed between the middle of April and the middle of June. Ninety-nine percent were completed by mid-August. In a few sample locations with low-response rates, interviewing continued through August. The subcontractor conducted a follow-up with all respondents who completed a personal interview and reported paying for at least one fuel but did not complete an authorization form. Attempts were made to secure signed authorization forms from approximately 570 respondents. This follow-up continued through January 1998 and resulted in an additional 95 signed authorization forms. In late August 1997, a shortened version of the questionnaire was mailed to the 1,421 households that had not completed a personal interview. A total of 181 usable questionnaires were returned by the end of September, 1997. A mailed questionnaire was considered usable if the respondent had completed the majority of the questionnaire and signed the Authorization Form.

Data Collection Procedures

In an effort to minimize nonresponse and, therefore, maximize the validity of the survey data, a multiwave, multicontact approach was employed. Before the initial contacts, a letter was sent to each household with a street address. The letter, from the Director of EIA's Office of Energy Markets and End Use, briefly described the purposes and stressed the importance of the survey. Beginning in April 1997, interviewers made several 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.

After initial attempts to complete interviews at the selected housing units were exhausted, field supervisors determined which cases would be reassigned to another interviewer. Types of non-interview households that were reassigned included cases where the householder refused to participate and cases where the householder was not available or not at home. Types of non-interview households that were not reassigned included cases where the householder would be unable to complete an interview during the field period due to absence or illness and cases where the household had moved after the initial contact. Reassignments continued throughout the field period.

Mail follow-up attempts were made at households which had not completed a personal interview. An abbreviated, self-administered version of the questionnaire was mailed to these households with a letter asking that they return the completed questionnaire in the business reply envelope provided. The questionnaire also included a copy of the Authorization Form for the respondents to fill out and sign. A pen was included with the mailing as an incentive.

The multiwave, multicontact approach was successful in accomplishing the following improvements in response.

- ! A total of 299 household (25 percent) who initially refused later agreed to a personal interview. These cases represented over 5 percent of the personal interviews. An additional 10 percent of the refusals completed a mailed questionnaire.
- ! Twenty-six percent of the interviews were conducted on the first visit to the housing unit. An additional 36 percent of the interviews required only two to three visits. The median number of visits needed to obtain an interview was three.
- ! Of the 181 mailed questionnaires that were completed and returned, 116 (64 percent) were from households that refused to participate in person.

Of special concern during the fieldwork was the prevalence of sample units where access was prohibited primarily because of security measures. Special efforts to contact officials charged with the security were attempted for a total of 13 buildings, comprising 80 households. Of these, interviewers were able to gain access to approximately 7 buildings comprising 40 selected households. Roughly 20 interviews were completed in these buildings. In some cases, interviewers were able to gain access to buildings where the officials had refused to grant entry. These cases would not reflect a final status of "Prohibited Access." In other cases, the subcontractor was able to obtain information from the building officials as to which housing units in a particular building were vacant.

After all data collection attempts (both personal and the mailed questionnaire) 1,385 households or 19.0 percent of all eligible housing units had not responded. Table A3 provides a summary of the data collection activities.

Table A3. Data Collection Response Summary for the 1997 RECS

Units	Status After Personal Interview	Status After Mail Follow-up	Final Status
Total Listed Units	8,310	1,421	8,310
Out of Scope Units			
Business, Other	33	--	33
Not Habitable	25	--	25
Nonhousing Unit	77	--	77
Subtotal Out of Scope	135	--	135
Housing Units	8,175	1,421	8175
Ineligible Units			
Vacant	752	--	752
Seasonal Vacant	138	--	138
Subtotal Ineligible	890	--	890
Eligible Units (or number contacted)	7,285	1,421	7,285
Not Completed			
No One Home	360	--	360
Eligible Respondent Not Home	90	--	90
Refused	951	--	951
Illness	25	--	25
Language Barrier	23	--	23
Wrong Respondent or Unit	3	--	3
Prohibited Access (Code 77)	15	--	15
Other	99	--	99
Subtotal Not Completed	1,566	--	1,566
Total Interviews Completed	5,719	181	5,900

-- Data not applicable.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A and B of the 1997 Residential Energy Consumption Survey (RECS). RECS Public Use Data Files and unreleased data.

Response Rates and Household Characteristics

Various response and nonresponse rates were compared across Census region, urban status, and housing structure type (Table A4). As noted in this table, personal interviewers were most successful in the South (81.1 percent) and the Midwest (80.2), in rural areas (85 percent), and in single family and mobile homes (80.5 percent). Conversely, the interviewers had their lowest success rates in the Northeast (73.1 percent), in urban and suburban areas (76.4 percent combined), and in buildings with five or more residential units (72.1 percent). When comparing these groups, it is important to remember that their characteristics are not necessarily independent. For example, apartment buildings are concentrated in urban areas.

The total response-rate patterns generally were not affected by including the mailed-questionnaire responses. However, response rates for the mail efforts tended to be higher where the refusal rate to the personal interview was higher.

Data Editing

Data for completed interviews were transferred via modem to the main server at the survey contractor's headquarters. The data were then sent to the survey subcontractor's headquarters for further processing. All paperwork was mailed to the survey subcontractor's headquarters. The paperwork, including the Housing Unit Record Sheet (HURS), the

Authorization Form, and the Housing Unit Address Lists were reviewed to ensure that all forms had been completed correctly and that the correct housing unit had been interviewed.

Table A4. Response Rates in the 1997 RECS by Region, Metropolitan Statistical Area Status, and Type of Structure (Percentage of Eligible Housing Units)

Housing Characteristics	Response Rates ^a			Personal Interview Nonresponse Rates	
	Personal Interviews	Mail	Total Responses	Refusals	Unable to Contact
Total	78.5	2.5	81.0	13.1	8.4
Census Region					
Northeast	73.1	2.6	75.7	15.8	11.0
Midwest	80.2	2.3	82.5	11.7	8.1
South	81.1	2.3	83.4	11.5	7.4
West	79.2	2.9	82.1	13.5	7.3
Metropolitan Statistical Area Status					
Urban (Central City)	75.9	3.3	79.2	13.1	11.0
Suburban	76.9	2.6	79.5	15.0	8.0
Rural	85.0	1.2	86.2	10.0	5.0
Type of Structure					
Single-Family or Mobile Home	80.5	2.5	83.0	13.2	6.3
Buildings with Two to Four Units	76.1	1.6	77.7	12.0	11.9
Buildings with Five or More Units	72.1	2.8	74.9	13.2	14.8

^aAs a percent of the total eligible number of housing units.

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457, A and B of the 1997 Residential Energy Consumption Survey (RECS). RECS Public Use Data Files and unreleased data.

Edits were programmed into the Household Questionnaire, which resulted in far fewer missing data items than in previous surveys. For more information see Appendix B, "Survey Estimates and Data Quality."

The subcontractor attempted to resolve internal data inconsistencies or ambiguities in the data internally, by referencing interviewer notes and other parts of the questionnaire. When efforts failed to resolve an important problem, particularly those involving heating fuels or heating equipment and/or relationships between questionnaire responses, the subcontractor made a follow-up contact with the rental agent or household respondent.

Rental-Agent Survey

The Rental-Agent Survey is an adjunct to the Household Survey and is used to verify information furnished by certain RECS households on fuels used, main heating equipment, how fuels are paid for, and other energy-related topics. Telephone interviews were conducted by using Form EIA-457C, "Rental Agents, Landlords, and Apartment Managers Telephone Survey," with the rental agents and landlords of the following types of RECS households: households that did not pay for their fuels, and, households who paid a third party for their fuel and who rent their living quarters or own and occupy living quarters in a multi-unit building.

The interviews with rental agents or their representatives were conducted in early fall. Altogether, 186 landlords or rental agents were interviewed; these interviews encompassed 382 households. The 382 households represented 59 percent of the 650 total households who were eligible for inclusion in the rental agent survey.

Comparisons were made between rental agents' and household respondents' reports: on their building's year of construction; main space-heating and water-heating fuels; main space-heating equipment; fuel for cooking; central air-conditioning information; and how the fuels for all of these uses are paid. Each discrepancy was examined and changes were made to the household data whenever it was judged that the rental agent was more knowledgeable than the household respondent on the different items of information.

Generally, the person who paid for a specific fuel for a specific use was deemed the more knowledgeable person. However, error resolutions were made only after careful examination and consideration of all available sources of information, including the rental-agent questionnaire, the household questionnaire, and questionnaires of other households located in the same building. Landlords and rental agents were usually judged knowledgeable about the year the building was built and the type of main heating equipment; household respondents were typically deemed reliable concerning central air-conditioning and fuel for cooking.

Energy Supplier Survey

The overall objective of the energy supplier survey was to provide data to estimate the annual energy consumption and expenditures of sample households. Five energy sources were covered in the supplier survey--electricity, natural gas, fuel oil, kerosene, and LPG.¹ For each of the energy sources, the goal was to obtain complete consumption records from January 1, 1997, through December 31, 1997.

Toward the end of the household interview, each household reported for each use of the energy source, whether or not it was paid for by the household, included in the rent, or paid another way. For the households that paid directly, the respondent was asked for the names, addresses, and telephone numbers of the energy suppliers; these respondents were also asked to sign a form, authorizing the contractor to collect consumption data from the suppliers. Altogether, the energy supplier survey included initial contact attempts with 887 companies (Table A5).

Data-Collection Procedures

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

- ! An initial letter from the Director of the Office of Energy Markets and End Use, 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. Publications that were checked on the postcard were sent to the energy supplier.
- ! 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 letter from the survey contractor thanking the company for its effort.

¹Households 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, because it was not practical to collect these data from suppliers as is done with the major home fuels. Unless otherwise noted, consumption of wood is not included in the tables for this report.

Table A5. Companies in the Energy Supplier Survey and Number of Households Supplied in the 1997 RECS

Energy Supplier	Number of Companies ^a	Number of Households with Companies Identified
Electricity	223	5,092
Natural Gas (includes some also supplying electricity or LPG)	130	2,776
Fuel Oil or Kerosene ^b	321	541
LPG (includes some also supplying fuel oil or kerosene)	213	444

^aThe total number of companies in the survey was 887; 38 supplied both electricity and natural gas; 2 supplied natural gas and LPG; and 23 supplied fuel oil or kerosene and LPG.

^bHouseholds were asked for names of their "fuel-oil or kerosene" suppliers. Since most companies who have supplier records furnish both types and often supply both types of fuel to the same household, these companies are reported together. If a respondent reported only "cash and carry" purchases of a bulk fuel (fuel oil, LPG, or kerosene), they were not asked to furnish the name of the supplier.

Source: Energy Information Administration, Forms EIA-457A-G of the 1997 Residential Energy Consumption Survey (RECS). RECS Public Use Data Files.

- ! 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.

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

Procedures for fuel oil or kerosene and LPG suppliers were the same as for electric and natural gas suppliers up through and including the mailing of survey materials to the company person named as the contact. These suppliers, 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 suppliers would respond by telephone than as a result of a request to complete and return the forms by mail.²

After the supplier returned the information, additional contact with the suppliers and the households was sometimes required to identify the correct record in the company files.

Data-Collection Dates

The first set of advance letters was mailed to the energy suppliers in January 1998. The cutoff date for receipt of usable information was June 30, 1998. The last data were received in July 1998 and were used.

Data Processing

The energy consumption and expenditure statistics presented in this report are based on the individual annual consumption and expenditures amounts for each household. Individual consumption and expenditure amounts are calculated for each household for each of five energy sources (electricity, natural gas, fuel oil, kerosene, and LPG). None of the households that participated in the 1997 RECS used all five energy sources, but the majority of the households did use two or more energy sources. When possible, the annual consumption and expenditure amounts were calculated by using data obtained from the Energy Supplier Survey.

²The test is described in *RECS: Consumption and Expenditures--April 1980 Through March 1981, Part 1: National Data*, DOE/EIA-0321/1 (Washington, DC, September 1982), Appendix A, "How the Survey Was Conducted." Suppliers that chose to return the forms by mail, however, were not discouraged from doing so.

The Energy Supplier Survey was conducted for households that paid their own fuel bills directly to the supplier and signed a form to authorize access to their billing records. These limitations meant that imputations of fuel consumption and expenditures were required for households whose fuel bills were included in the rent and for households that did not permit access to their records.

Imputations were also required for households when the supplier failed to produce usable billing records. The billing records for a given fuel and a given household were considered missing (and hence nonusable) if: (1) the supplier refused to participate, (2) the supplier did not keep records, (3) the supplier could not find the householder's records, (4) the information provided by the household was insufficient to locate the supplier, or (5) the supplier was no longer in business.

Available but nonusable billing records occurred when: (1) the household recently moved into the dwelling unit; (2) the amount of the bill that could be attributed to the housing unit was unknown; or (3) the billing records did not cover the entire amount used by the household.

For cash-and-carry purchases, households were asked to provide estimates of consumption and expenditures for kerosene only. In addition, if the household indicated that it had the ability to use LPG, fuel oil, or kerosene but yet planned no purchases during 1997, they were assigned a consumption of zero. See "Annual Consumption and Expenditures" in Appendix B, "Quality of the Data," for more details on the annualization of monthly billing records and imputations for the energy supplier data.

Weather and Price Data

Weather and price data were added to the household data file. The weather data were taken from National Oceanic and Atmospheric Administration weather station data files of daily minimum and maximum temperatures for 1997. Weather stations were selected on the basis of their proximity and appropriateness in representing the weather experienced by sample households in the secondary sampling unit. In selecting an appropriate, nearby weather station, distance was the major consideration but intervening mountain ranges and the presence of bodies of water were taken into account. Every household record contains weather data, whether or not the household did any space heating or air-conditioning.

For each household that used electricity (99.9 percent), the cost of 1,000 kWh reported by the household's electricity supplier on Form EIA-861 was added to the household record. For each household that used natural gas (57.9 percent), the cost of 1,000 cubic feet of natural gas reported by the household's natural gas supplier on Form EIA-176 was added to the household record.

Special Data Collection for the Administration for Children and Families

The EIA collects supplemental data during the RECS interview for the Administration for Children and Families (ACF) for their use in program administration of the Low-Income Home Energy Assistance Program (LIHEAP). In the 1997 RECS, most of this information was in Section K of the Household Questionnaire (Form EIA-457A). Respondents with annual incomes and number of household members that might qualify them for assistance were asked a series of questions about the receipt of home energy assistance and lack of heat during the previous winter.

RECS also supported the LIHEAP through an ACF-funded oversampling of low-income homes. An annual report to Congress is produced by LIHEAP, which contains data from the RECS.

Confidentiality of Information

EIA does not receive or take possession of the names or addresses of individual respondents or any other individually identifiable energy data that could be specifically linked with a household respondent. All names and addresses and identifiable information are maintained by the survey subcontractor for verification purposes only. The household records that are placed on the public use data file do not have name or address information. Additional measures have been taken to mask the data for further confidentiality protection.

Public-Use Data File Preparation

The publication, *Housing Characteristics 1997*, was issued as an electronic report in two phases. First, the housing characteristics tables were produced with the survey data file received in March 1998 and placed on the Web in May 1998. The associated building survey information and analysis were placed on the Web in August 1998. The March 1998 data file contained data from the Household Survey and the adjunct Rental-Agent Survey. The Energy Suppliers Survey data were added and the data on the March 1998 file was updated. The final data file was received in February 1999. This data file was used to produce the tables in this report. The consumption and expenditures tables were placed on the Web on July 2, 1999.

The public-use file is a subset of the data on the February 1999 file. Variables that might compromise the confidentiality of the individual respondents were not placed on the public-use file or an error term was added to the variables. The public use file was placed on the Internet in October 1999.

Appendix B

Survey Estimates and Quality of the Data

Introduction

Survey Estimates

All the statistics published in this report are estimates of population values, such as the number of households using natural gas. These estimates are based on a randomly chosen subset of the universe, the entire population of households. The universe includes all households in the 50 States and the District of Columbia, including households on military installations.

The two major types of nonresponse are unit nonresponse and item nonresponse. Unit nonresponse occurs when a sampled household does not participate in the survey. Item nonresponse occurs when a particular item of interest is missing from a completed questionnaire. The next two sections provide details on the procedures followed for each type of nonresponse.

Adjustments for Unit Nonresponse

Weight adjustment was used to reduce unit nonresponse bias in the survey statistics. A weight was calculated for each sample household, which reflects the selection probability for that household. Adjustments were made to correct for potential biases arising from the failure to list all housing units in the sample area and from the failure to contact all sample housing units. Contacts were not successful with 19.0 percent of the eligible units.

Six factors are used in the processing of RECS results to develop an overall weight for each household for which a completed questionnaire, either a personal interview or mailed questionnaire, is obtained. The factors are: the basic weight, a noninterview adjustment, a first-stage ratio estimate, and three second-stage ratio adjustments. The overall household weight is the product of these six factors.

The weighting process for 1997 differed from the 1993 procedures for many of the computations. In particular, the weighting process in 1997 was conducted prior to the imputation procedures for item nonresponse. As a result, some of the questionnaire data were missing on the variables used in the weighting process, which required some modifications to the 1993 procedures. With the elimination of the new construction and the lighting supplements present in 1993, the weighting procedures for the non-interview adjustment could be simplified by reverting to the procedures used for 1990. Furthermore, the control totals from the Current Population Survey (CPS) public use files used in the second-stage adjustment process differed slightly from the characteristics used in 1993.

The Basic Weight

The basic weight is calculated and applied to households at the SSU level. For the 1997 RECS, all households in the same SSU had the same probability of selection and hence the same basic weight:

$$\text{Basic Weight} = 1/(\text{Probability of Selection})$$

The Noninterview Adjustment

The noninterview adjustment factor (NIAF) compensates for non-response households and for non-household units that were identified during the survey. Basically, this adjustment reflects the ratio of the number of completed and

incomplete households among those selected to the number of completed households. Since the probabilities of selection are constant within an SSU for 1997, these adjustments were applied at the SSU (ultimate cluster) level.

The NIAF is computed at the SSU level (1,460) cells and is equal to:

$$\frac{\text{Total Completed Plus Uncompleted Responses in the SSU}}{\text{Completed Responses in the SSU}}$$

If the ratio exceeds 2.0, then the NIAF is set equal to 2.0 and the NIAFs for SSUs in the same PSU and with the same metropolitan status are increased.

The First-Stage Ratio Adjustment Factors

The primary purpose of the first-stage adjustment factor is to reduce the sampling variation in the estimates of the number of housing units by main space-heating fuel resulting from sampling of PSUs during the first stage of the sample design. The correlation between main space-heating fuel and other important energy-related characteristics implies that this adjustment will also reduce the sampling variation for many important variables collected for the RECS.

In some cases, a single PSU comprising all or part of a large metropolitan area was large enough in population to be a stratum by itself. PSUs of this type are called Self-Representing (SR) PSUs because the sample from each SR PSU represents only that PSU. The first-stage ratio adjustment factor was 1.0 for all observations in SR PSUs.

In other strata, one PSU was selected from among two or more PSUs in the stratum. Each of the PSUs selected from these strata is called a Non-Self-Representing (NSR) PSU because each such PSU represents not only itself; it also represents the unselected PSUs in the stratum.

The 1990 Census data were used to determine the difference between the distribution of the main space-heating fuel in the set of selected NSR PSUs and the distribution in the set of all PSUs (selected and unselected) in the strata from which the NSR PSUs are selected. Fuels are under-represented if the percentage of households using the fuel is lower in the selected NSR PSUs than the percentage in the set of all PSUs in the NSR strata. Fuels are over-represented if the opposite occurs. The weights for the responding households in NSR PSUs are adjusted upward when their main space-heating fuel is under-represented and the weights are adjusted downward when it is over-represented.

The Second-Stage Ratio Adjustments

The second-stage ratio adjustments are used to improve the accuracy of the estimates of the number of households using data obtained from the Bureau of the Census as control totals. The RECS can be used to produce an estimate of the number of households in the country, but the Bureau of the Census produces much more accurate estimates. Improving the accuracy of the data on the number of households also improves the accuracy of almost all other estimates obtained from the RECS. The first priority is the accuracy of estimates for the number of households for the nine Census divisions and for the four largest States. The second priority is the accuracy of estimates for the number of households for three demographic cells (multi-person households, single-member female households, and single-member male households).

The ratio adjustment process was carried out in three steps. In step one, the population was divided into 15 geographical cells. (Hawaii and Alaska were treated as separate cells because their climates are different than that of the rest of the country.) Control totals giving the number of households in each cell were derived from Current Population Survey results. A ratio adjustment equal to the control total divided by the weighted count using the weights after the first-stage ratio adjustment was created. Multiplying the weights after the first-stage ratio adjustment by the ratio yields the new weights which, when summed, equal the control totals for the 15 cells. This calculation yielded a weighted total number of households equal to 101,481,000. Refer to Table B1 for estimates for each of the 15 geographical areas.

The second step was similar to the first step. The two differences were the input weights and cells used for control totals. The input weights are those resulting from the first step. The following three categories were used to define the cells:

1. One-person households, male householder
2. One-person households, female householder
3. All other households.

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

The third step is the same as the first step except that the input weights are those resulting from the second step. This produced a set of weights whose sum reproduced the 15 geographic cell control totals and yielded estimates that are quite close to the control totals for the three demographic cells.

Table B1. U.S. Population Estimates Used as Controls in Ratio Adjustment of Sampling In the 1997 RECS

	Thousands of Households
New England	5,310
Middle Atlantic (minus New York State)	7,597
East North Central	16,907
West North Central	7,153
South Atlantic (minus Florida)	11,764
East South Central	6,344
West South Central (minus Texas)	3,875
Mountain	6,179
Pacific (minus Alaska, California, and Hawaii)	3, 532
New York	6,827
Florida	5,929
Texas	6,964
California	11,484
Alaska	229
Hawaii	386
Total United States	101,481

Source: Linear extrapolation from U.S. Bureau of the Census, 1997 Current Population Survey.

Adjustments 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. The incidence of the latter, the interviewer not asking and/or not recording the answer, was greatly reduced by the use of Computer Assisted Personal Interviewing (CAPI). The majority of nonresponse was due to interviewers recording answers of “Don’t Know” and “Refused.” Some item nonresponse was due to programming problems in the questionnaire.

Adjustments for Item Nonresponse

The "Hot-deck" imputation was the method used most frequently (Table B2). The hot-deck procedure requires sorting the file of households by variables related to the missing item. A household is then selected that has the same value for the related variables, and this "donor" household supplies the value for the variable that is missing in the "donee" household.

Less frequently used imputation methods included random selection from the known values of variable, deductive, and allocation procedures.

The random-selection procedure was used primarily to impute for continuous numerical values and missing numbers that were conditional on other numbers (e.g., number of ceiling fans used was conditional on the number of rooms in the home).

Table B2. Imputation Methods Used for the 1997 RECS Household Questionnaire

Imputation Method	Questionnaire Items Subject to Imputation	
	Number	Percent
Not Imputed	157	53
Imputed	137	47
Hot-Deck	115	39
Random	8	3
Deductive	11	4
Allocation	3	1
Total Items*	294	100

*There are an additional 54 questionnaire items for which there were no missing values or for which values were determined by explicit editing rules in the initial stages of questionnaire editing.
Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457 A of the 1997 Residential Energy Consumption Survey (RECS). RECS Public-Use Data Files.

Deductive procedures were used primarily for missing information on fuels used for specific purposes and on methods of payment for fuels. The amount of missing data on these items was generally quite small. Other information available from the questionnaire or from related data sources (utility bills and rental agent survey) provided reasonably accurate assignments for the missing data.

Allocation procedures use explicit rules for assigning values to missing information about a householder, such as age and sex. The procedures are based on information on these variables for the household as a whole.

Table B3 lists the most frequently imputed items in the 1997 RECS. The amount of item imputations for the 181 households receiving mail questionnaires was considerable, since these questionnaires contained only a small subset of questions from the household interview. For the mail questionnaires, a modified hot-deck imputation method was used. A hot-deck matrix was created for mail questionnaires and personal-interview households by 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 mail questionnaire household from the same cell of the hot-deck matrix. For 90 percent of the mail 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 mail 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, and household structure (married couple, other). The entire set of responses from the donor household was imputed to the mail questionnaire household. This means that all responses for mail questionnaire households are imputed except

for the following: weather data, fuel-consumption data acquired from the household's energy suppliers, the geographic location of the mail questionnaire household and those items in the hot-deck imputation process for which an exact match was obtained.

Table B3. Household Questionnaire Items Most Frequently Imputed in the 1997 RECS

Imputed Item	Cases Imputed	Percentage of Total Sample ¹ (5,719)	Method of Imputing	Question Number on Questionnaire
Income in past 12 months	1,016	17.8	Hot deck	J-14a
Year home was built	395	6.9	Hot deck	A-15a
Age of water-heating equipment	348	6.1	Deductive/Hot deck	E-4
Number of children between the ages of 1 and 12	250	4.4	Hot deck	J-1e
Number of infants under the age of 1	238	4.2	Hot deck	J-1d
Fuel used to heat hot water	122	2.1	Hot deck	E-1
Electricity shut off because bill was not paid	120	2.1	Hot deck	K-4
Could not use heat because ran out of bulk fuel	120	2.1	Hot deck	K-5a
Could not use heat because utility fuel shut off	119	2.1	Hot deck	K-5b
Could not use heat because equipment broken	119	2.1	Hot deck	K-5c
Amount of heat provided by main heating equipment	108	1.9	Hot deck	D-6
Type of self-cleaning oven	104	1.8	Hot deck	B-3
Received employment income in last 12 months	103	1.8	Hot deck	K-1a
Received retirement income in last 12 months	103	1.8	Hot deck	K-1b
Received cash benefits in last 12 months	103	1.8	Hot deck	K-1c
Received non-cash benefits in last 12 months	103	1.8	Hot deck	K-1d
Government help in paying home heating costs	102	1.8	Hot deck	K-2a
Government help in paying home cooling costs	102	1.8	Hot deck	K-2b
Government help in paying other home energy costs	102	1.8	Hot deck	K-2c
Amount of wood burning in last 12 months	97	1.7	Hot deck	H-7d
Age of householder	93	1.6	Allocative	J-9
Amount of heating assistance received	82	1.4	Hot deck	K-3d

¹Mailed interviews are not included in the percentage. To account for these, add three percentage points to the percentage points given.
 Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457 A of the 1997 Residential Energy Consumption Survey (RECS). RECS Public-Use Data Files.

Nonsampling Error

Nonsampling errors can occur for the following reasons:

- ! Differences between the target population (residential sector) and the population from which the sample is selected (occupied primary residential housing units)
- ! Interviewer errors, respondent misunderstandings, questionnaire-design errors, and data-processing errors

- ! Systematic nonresponse for certain segments of the population (unit nonresponse)
- ! Nonresponse on certain questions from the questionnaire for some respondents (item nonresponse).

"Quality of Specific Data Items" discusses the derivation of some statistical data and reviews some of the nonsampling errors that occur for the second, third, and fourth reasons in the list above. These errors would be expected to occur even if the survey attempted to contact the occupants of every occupied housing unit in the country. (For example, the results of the Decennial Census conducted by the Bureau of the Census are subject to these nonsampling errors.)

Quality of Specific Data Items

The use of the CAPI system dramatically reduced the incidence of item non-response, particularly those non-responses due to interviewer error. In 1993, there were approximately 300 variables imputed. Of these, approximately 50 variables were missing data for 10 or fewer cases; approximately 40 variables were missing data for more than 100 cases. The vast majority of missing data was due to "No Answer" (meaning either the interviewer didn't record a response for that questions or the responses was determined to be inconsistent in view of other questionnaire responses) rather than "Don't Know" or "Refused." In 1997, we imputed approximately 145 variables. Of these, approximately 80 variables contained missing data for 10 or fewer cases, while only about six variables contained missing data for 100 or more cases. Most of the missing data was due to recorded responses of "Don't Know" or "Refused."

Housing Unit Type

There is a fine line between the definitions of various types of housing units. The distinction between a single-family attached unit and a unit in an apartment building is particularly complex. The collection and editing of the data on housing type changed from the paper-and-pencil questionnaire for the 1993 RECS to the CAPI questionnaire for the 1997 RECS. The change in the data collection and editing procedures may have contributed to changes in the survey results. For example, the estimated number of occupied single-family attached units increased from 7.3 million for the 1993 RECS to 10.0 million for the 1997 RECS. Conversely, the number of occupied housing units in buildings with two to four units decreased from 8.0 million for the 1993 RECS to 5.6 million for the 1997 RECS.

Programmable (Set-Back or Clock) Thermostats

The 1993 and 1997 RECS both contained questions on the presence of a programmable thermostat. In both surveys, the thermostats were referred to as "set-back or clock thermostats," but not programmable thermostats. For the 1993 RECS, the question was placed in the section on conservation measures and usage (following questions on insulation, weather stripping, and caulking). For the 1997 RECS, it was placed in the space-heating section, immediately following the question on the presence of a thermostat. The 1997 RECS also included a question that asked respondents if they programmed the thermostat or used the manual features. Based on the 1993 RECS, an estimated 10.8 million households had programmable thermostats in 1993. Based on the 1997 RECS, an estimated 44.9 million households had programmable thermostats in 1997. Of these 44.9 million, an estimated 11.7 million programmed their thermostats and an estimated 33.2 million used the manual features.

The large increase in the number of housing units with programmable thermostats from 1993 to 1997 is questionable. The change in the placement of the question may have contributed to the large change in the survey results. In addition, the question concerning programmed versus manual use of the thermostats may have changed how the interviewers coded the question on the presence of a programmable thermostat.

Annual Consumption and Expenditures

The consumption and expenditure data that were obtained from the suppliers did not list the annual amounts. Instead, the supplier provided the monthly billing records generally for a 15-month period. Some periods began as early as October 1996 and others ended as late as June 1998. These records listed the amount purchased, the cost of the purchase, and the date of purchase. For natural gas and electricity, the amount purchased was usually equivalent to the amount consumed. The major exception occurred when the supplier had estimated the bill for the billing period. For fuel oil, kerosene, and LPG, the fuel purchased in 1997 may be consumed in 1998 instead of 1997. Conversely, the fuel consumed in 1997 may have been purchased in 1996. The procedures that were used to calculate the annual consumption and expenditure amounts for electricity and natural gas were designed to avoid estimated bills when possible. The annual consumption and expenditure amounts for fuel oil, kerosene, and LPG reflected the amounts purchased. No attempt was made to distinguish between the amount purchased and the amount consumed for fuel oil, kerosene, and LPG.

Nonresponse Statistics

The proportion of households that did not sign authorization forms for suppliers to release billing data was in the range of 3 to 9 percent for the five fuels. Overall the proportion was 8 percent. 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 17 percent of this group returned signed forms in response to the mail request and, therefore, were included in the energy supplier survey.

Factors affecting nonresponse are somewhat different for fuel oil, kerosene, and LPG than they are for electricity and natural gas (Table B4). The most frequent reasons for nonresponse for households using fuel oil, kerosene, or LPG were that the company was unknown or not contacted and that the dealer could not identify the customer. A number of factors contribute to this nonresponse. First, many customers purchase fuel from a number of dealers on a cash-and-carry basis. Second, some customers use several different energy suppliers and pay cash for deliveries. In both cases, few records are kept and efforts to get consumption records for households rarely are successful.

Refusal of companies to participate in the survey was not a significant factor. Some additional factors related to the quality of fuel records are discussed in the following section on data processing and imputations.

Usable Records

Of a total of 5,900 households that participated in the 1997 RECS, 5,898 used electricity (Table B5). For 81 percent of these cases, the electric utilities provided usable billing records. On the other hand, 229 sample households used kerosene, but the kerosene suppliers provided usable kerosene billing data for only 15 percent of these.

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 B5). These households represent 12 percent of the users of natural gas and 23 percent of the users of fuel oil.

Not all the fuel records that were collected in the energy supplier survey could be used. For example, some records covered too few months and other records were incomplete (Table B5). The problem of nonusable records is small for the metered fuels (electricity and natural gas) since the partial-year records of electricity and natural gas were considered

usable. For fuel oil and LPG, the problem of nonusable records was more serious, since 6 percent of fuel oil and 4 percent of LPG records were nonusable. Partial-year records for these fuels were not acceptable.³

A variety of information from household respondents as well as from suppliers was reviewed and used as a basis for declaring a fuel oil, kerosene, or LPG record complete or incomplete. Questionnaire information from respondents include 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.

Table B4. Energy Consumption Records for Survey Households Using Electricity, Natural Gas, Fuel Oil, Kerosene, or LPG, 1997
(Percentage of Households Using the Energy Source)

Survey Households and Status of Consumption Records	Electricity	Natural Gas	Fuel Oil	Kerosene	LPG
Total Households Using the Energy Source					
Number	5,898	3,471	710	229	539
Percent	100.0	100.0	100.0	100.0	100.0
Usable Records Received from Supplier ^a	80.7	73.7	56.6	15.3	67.5
Quantity Estimated by Household ^b	(d)	(d)	(d)	63.3	(d)
Nonusable Records Received from Supplier	0.7	0.8	6.1	0.9	3.9
Household Pays Supplier Directly--No Record Available for the Household	13.0	13.5	14.3	20.5	25.8
Household Not Identified in Company Records	4.8	5.5	3.8	0.9	6.3
Company Refused to Participate	(d)	(d)	0.6	(d)	0.6
Company Unknown or Not Contacted	(d)	0.6	3.3	16.6	10.6
Authorization Form Not Signed	8.2	7.4	6.6	3.0	8.3
Fuel Used Included in Rent or Paid in Other Way ^c	5.6	12.0	23.0	(d)	2.8

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

^bHouseholds in this group are those that purchased kerosene primarily on a cash-and-carry basis. These households supplied estimated purchases of kerosene during the household interview. In addition, if a household indicated that it had the ability to use LPG, fuel oil, or kerosene—but planned no purchases during 1997—the household was assigned a zero consumption.

^cThese data exclude households that paid for some, but not all, uses of fuel.

^dRepresents or rounds to zero.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457A-G of the 1997 Residential Energy Consumption Survey (RECS). RECS Public-Use Data Files.

Imputations

Households with nonusable records, as described earlier, and households with no records had their annual energy consumption imputed using nonlinear regression techniques. The equations were developed by using RECS sample households that had approximately a full year of acceptable data. Separate regression equations were developed for the five fuels: electricity, natural gas, fuel oil, kerosene, and LPG. These equations are described in Appendix C, "End-Use Estimation Methodology." Regression equations were used to estimate 15 percent of the electricity consumption, 19 percent of the natural gas consumption, 37 percent of the fuel oil consumption, 26 percent of the kerosene consumption, and 24 percent of the LPG consumption (Table B5).

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. Second, the number of sample cases also influenced the analysis strategy. For the electric and natural gas equations, there was a large number of

³The number of households with partial-year records, as a proportion of total households using the fuel, is 7 percent for electricity and 7 percent for natural gas.

sample cases, allowing for the inclusion of a greater number of factors. For example, the electricity equations included a variable for the price of electricity.

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

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

Table B5. Basis of Estimates of Annual Consumption, 1997
(Percent of Total Consumption of Energy Source)

Source of Consumption Data	Electricity	Natural Gas	Fuel Oil	Kerosene	LPG
Actual Billing Records					
330 or More Days ^a	78.3	73.9	62.4	40.7	75.7
146 to 329 Days	6.5	4.5	NA	NA	NA
60 to 145 Days	0.1	*	NA	NA	NA
Not All Uses Paid by Household	0.1	2.2	NA	NA	NA
Estimate from Supplier/Household ^b	NA	NA	0.3	32.9	NA
Regression Estimate	15.0	19.4	37.3	26.4	24.3
Total	100.0	100.0	100.0	100.0	100.0

* = Less than 0.05 percent.

NA = Not Applicable.

^aFor fuel oil, kerosene and LPG, 365 days were required to consider the record complete.

^bFor kerosene, the estimate was supplied by the household, not the supplier.

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

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457A-G of the 1997 Residential Energy Consumption Survey.

One group of households that was particularly likely to have their consumption imputed by use of the regression procedures was apartments in buildings of 5 or more units. The amount of their electricity consumption that was imputed was somewhat higher than the average for all households (30 percent); however, 66 percent of their natural gas consumption was imputed and all of their fuel oil consumption was imputed.

Estimation of Sampling Error

Sampling error is the random difference between a survey estimate and a population value. It occurs because the survey estimate is calculated from a randomly chosen subset of the entire population. The sampling error averaged over all possible samples would be zero, but there is only one sample for the 1997 RECS. Therefore, the sampling error is nonzero and unknown for the particular sample chosen. However, the sample design permits sampling errors to be estimated. This section describes how the sampling error is estimated and how it is made available to readers of this report who are interested in the precision of the estimates in this report.

Throughout this report, standard errors are given as percents of their estimated values; that is, as relative standard errors (RSE). The RSE is also known as the coefficient of variation. Computations of standard errors are more conveniently described, however, in terms of the estimation variance, which is the square of the standard error.

For a given population parameter Y that is estimated by the survey statistic Y' , the relative standard error of Y' , $RSE_{Y'}$, is given by:

Thus the standard error of Y' , is given by:

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. In particular, convenient formulas based on an assumption of simple random sampling, typical of most standard statistical packages, are entirely inappropriate for the RECS estimates. Such formulas tend to give severely understated standard errors, making the estimates appear much more accurate than is the case. Instead, the method used to estimate sampling variances for this survey was balanced half-sample replication. The balanced half-sample replication method involves calculating the value for a statistic by using the full sample and calculating the value for each of a systematic set of half samples. (Each half sample contains approximately one-half of the observations contained in the full sample.) The variance is estimated by using the differences between the value of the statistic calculated by use of the full sample and the values of the statistic calculated by use of each of the half samples.

As mentioned above and in Appendix A, "How the Survey Was Conducted," the national total number of households is not estimated from the survey results. The household weights are ratio-adjusted so that the total weighted number of households equals the number obtained from the CPS. The same is true for the total number of households in the 15 cells mentioned above (nine Census divisions plus six States). The balanced half-sample replicate procedure used for RECS assumes that the CPS numbers are exact and are not subject to error. Any error in the CPS results can be considered as a bias in the RECS results and not as part of the sampling error for RECS. The weights for each half sample are also constructed such that the national total and the total for the 15 cells match the CPS numbers. As a result, the half-sample estimate for the RSE of the national total number of households and the RSE's for the totals in the 15 cells will always be zero. Also, the half-sample estimate of the RSE will be close to zero whenever the statistic involved is a household count that is close to a control total. Examples of this are the national total for the number of households that use electricity and the number of households that have a refrigerator.

Generalized Variances

For every estimate in this report, the RSE was computed by the balanced half-sample replication methods described above. This RSE was used for any statistical tests or confidence intervals given in the text, or to determine if the estimate was too inaccurate to publish (RSE greater than 50 percent).

Space limitations prevent publishing the complete set of RSE's with this document. Instead, a generalized variance

$$RSE_{ij} = R_i \times C_j \quad (3)$$

technique is provided, by which the reader can compute an approximate RSE for each of the estimates in the detailed tables. For the statistic in the i^{th} row and j^{th} column of a particular table, the approximate RSE is given by:

$$RSE_{Y'} = \left(\frac{S_{Y'}}{Y'} \right) \times 100 \quad (1)$$

where R_i is the RSE row factor given in the last column of row i , and C_j is the RSE column factor given at the top of column j . This value for the relative standard error can be used to construct confidence intervals and to perform hypothesis tests by standard statistical methods. However, because the generalized variance procedure gives only approximate RSE's, such confidence intervals and statistical tests must also be regarded as only approximate.

$$S_{Y'} = \left(\frac{RSE_{Y'}}{100} \right) \times Y' \quad (2)$$

For a few table cells, there were no sample cases, hence no estimate and no RSE. As a result, some of the arrays of directly estimated RSE's had a few missing values. In such cases, the formulas given above for row and column factors still apply, but only after appropriate estimates have been substituted for the missing values.

The estimation procedure used to obtain the row and column factors does not use RSE's that are less than 1.0 percent or greater than 50.0 percent. In addition, if the statistic for a cell is not listed for any reason (high RSE, small cell sample size, or missing data), the RSE for that cell is not used in the procedure. The RSE for this cell is treated as if there was a missing value for this cell. This convention is used because the product of the row and column factors frequently is an inaccurate estimate for these RSE's. Using these cells in the calculation of the row and column factors may result in factors that give inaccurate RSE estimates for other cells.

Whenever a household count is a control total, its RSE is zero. Hence, RSE's of control totals are not used in the row column factor calculations. Rows that contain only control totals have a row factor equal to zero. Rows that contain only household counts that are close to control totals do not have a listed row factor. A footnote tells the reader that the RSE's for all statistics in these rows are less than 1.0 percent. This occurs because the half-sample estimates for the RSE's for all statistics in the row are less than 1.0 percent. The row factors for these rows should be a positive number but the number will be small.

Appendix C

End-Use Estimation Methodology

Introduction

For each household that responded to the 1997 RECS, the annual amount of energy used for five end-use categories--space heating, water heating, air-conditioning, refrigerators, and general appliance usage--was estimated. The end-use estimates were produced for each of the five main energy sources: electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG). The end-use amounts were not based on data produced by placing meters on individual appliances; rather, they were obtained by estimating how much of the total annual consumption for each energy source can be attributed to each of the end-use categories for each household by using a regression technique.

For each energy source, the annual consumption attributed to each of the end-use categories can be estimated by use of regression equations. The regression equations are also used to impute energy consumption when the billing data are missing or inadequate. A separate equation was developed for each of the five main energy sources. In each equation, the dependent variable was the annual energy consumption for the 1997 calendar year. The set of independent variables varied according to energy source type. The desire to use a large number of independent variables without using a large number of interaction terms and the desire to adapt the regression procedures to account for heteroscedastic⁴ error terms led to the use of a nonlinear regression technique. The use of linear regression would have greatly restricted the ability to adequately model household energy consumption.

This appendix provides an overview of the methodology used for the 1997 RECS end-use estimation. The specific regression equations used are not presented here. (For more detailed information, please contact the person listed as the end-use estimation expert on the "Contacts" page at the beginning of this report.) The procedure used for the 1997 RECS is very similar to that used in the 1990 RECS. Detailed equations for the 1990 RECS were published in Appendix D, "End-Use Estimation Methodology," of *Household Energy Consumption and Expenditures 1990* (Energy Information Administration, February 1993, DOE/EIA-0321[90]).

A comparison between estimates from the regression equations and estimates from end uses submetering studies was presented in Appendix C, "End-Use Estimation Methodology," of *Household Energy Consumption and Expenditures 1993* (Energy Information Administration, October 1995, DOE/EIA-0321[93]).

General Consumption Equations

Basic Equation

For electricity, the basic equation is:

$$\begin{aligned} \text{Total Consumption} = & \text{Space-Heating Component} \\ & + \text{Water-Heating Component} \\ & + \text{Air-Conditioning Component} \\ & + \text{Refrigerator Component} \\ & + \text{Appliance Component.} \end{aligned}$$

The basic equation was the same for natural gas, fuel oil, kerosene, and LPG; however, (1) the refrigerator component existed only for electricity and (2) the air-conditioning component existed only for electricity and natural gas. Table

⁴Error terms are heteroscedastic when the variance of the error terms is not constant but, instead, is a function of the independent variables.

C1 shows which end uses were estimated for each fuel source. Discussions of each component of the general consumption equation will be followed by a discussion of the nonlinear regression technique.

Table C1. 1997 RECS End-Use Estimation Equations by Fuel Source

	Space Heat	Water Heat	Air-Conditioners	Refrigerators	Appliances
Natural Gas	X	X	X		X
Electricity	X	X	X	X	¹ X
Fuel Oil	X	X			X
LPG	X	X			X
Kerosene	X	X			X

X = End use was estimated for this energy source.

¹Separate estimate for freezer, lighting, cooking, dishwasher, clothes dryer, and appliance subcomponents.

Source: Energy Information Administration, Office of Energy Markets and End Use, the 1997 Residential Energy Consumption Survey.

General Space-Heating Component

For all energy sources, the space-heating component was defined as all energy used to generate heat by space-heating equipment. The equipment could be the main space-heating equipment or secondary space-heating equipment. Hence, for all energy sources, a household could have had a positive amount of energy assigned to the space-heating component even if the energy source was not used as the main space-heating energy source.

For the electricity equation in the 1987 and subsequent RECS, the electricity associated with the operation of fans in any central forced-air heating equipment was assigned to the electricity appliance component and not to the space-heating component.⁵

General Water-Heating Component

The component for water heating was defined as all energy used to heat water for hot running water, as well as water heated at point sources (such as stoves or auxiliary water-heating equipment) for bathing, cleaning, and other noncooking applications of hot water. Energy used at point sources to heat water for cooking and hot drinks was considered part of the general appliance component, as was energy used to heat water for a swimming pool, hot tub, spa, or jacuzzi.

General Air-Conditioning Component

The electricity air-conditioning component was defined as all electricity associated with (1) electric air-conditioning equipment and (2) fans in any central air-conditioning equipment, including natural gas air-conditioning equipment. The regression equations for electricity do not contain specific terms for whole-house fans, window fans, and evaporative (swamp) coolers. Hence, the consumption of electricity to operate these fans and evaporative coolers was not assigned to the air-conditioning component; it was included in the appliance component.⁶ There is a term for ceiling fans in the electricity appliance component.

⁵In previous RECS (prior to 1987), the electricity used to run fans for central forced-air heating systems was assigned to the space-heating components. This was changed in the 1987 and subsequent RECS so that the households that did not use electricity as a space-heating energy source (either main or secondary), by definition, did not have positive amounts of electricity assigned to the space-heating component.

⁶Previous RECS (prior to 1987) included a term for evaporative coolers, whole-house fans, ceiling fans, and window fans in the air-conditioning component of the electricity equation. Therefore, the consumption of electricity to operate these types of coolers and fans was assigned to the air-conditioning component. Consequently, some households that did not have air-conditioning equipment had positive consumption assigned to their air-conditioning component.

In the 1997 RECS, the households that reported that they had air-conditioning equipment but did not use the equipment were assigned a value of zero for their electricity air-conditioning component. In RECS prior to 1987, these households were assigned small but positive values for their electricity air-conditioning component.

The natural gas air-conditioning component was defined as all natural gas used to operate natural gas air-conditioning equipment. There was no air-conditioning component for fuel oil, kerosene, or LPG.

General Refrigerator Component

The refrigerator component for electricity consisted of all electricity used to operate refrigerators. The electricity used to operate freezers that are not part of a refrigerator was assigned to a separate component under General Appliance. There was no refrigerator component for natural gas, LPG, fuel oil, and kerosene.

General Appliance Component

The general appliance component consisted of all energy not used specifically for any of the other end uses. For natural gas, fuel oil, kerosene, and LPG, the general appliance component consisted of all end uses other than space heating, water heating, and (for natural gas), air-conditioning. For these fuels, there is the single general appliance component.

For electricity, the general appliance component was split into six subcomponents: (1) Appliance Subcomponent, (2) Lighting Subcomponent, (3) Cooking Subcomponent, (4) Dishwasher Subcomponent, (5) Clothes Dryer Subcomponent, and (6) Freezer Subcomponent. Electricity was the only energy source where the nonlinear regression technique was used to estimate the consumption for subcomponents of the general appliance component.

Energy used in appliances during the winter will frequently help heat the housing unit. This secondary effect of the appliance consumption was not included in the estimation of the space-heating component. In addition, during the summer, energy used in general appliances may add to the load on the air-conditioning system. This was not included in the air-conditioning component.

Appliance Subcomponent.

Natural Gas. For natural gas, the appliance subcomponent included outdoor gas lights, pool heaters, clothes dryers, hot tub heaters, natural gas outdoor grills, and other natural gas appliances.

LPG. For LPG, the appliance subcomponent included pool heaters, clothes dryers, and hot tub heaters. The consumption of LPG in outdoor grills was not covered in any LPG component. Households that use LPG only in outdoor gas grills were coded as not using LPG, and their LPG consumption and expenditures were treated as if they were zero.

Fuel Oil. The appliance subcomponent for fuel oil was zero except for 4 households that used fuel oil for heating a hot tub.

Kerosene. The appliance component for kerosene was zero for all households.

Electricity. The appliance subcomponent consisted of all electricity not used for any of the other five subcomponents or the other four main components. This included electricity used to heat water beds, hot tubs, and pools, and electricity used to operate fans (including fans for forced-air, space-heating systems), water pumps, small kitchen appliances (such as toasters, mixers, and can openers), home entertainment equipment (such as radios, televisions, stereos, video cassette recorders, electronic games, and computers), and numerous other appliances and uses not covered elsewhere.

Lighting Subcomponent. This subcomponent was estimated only for electricity; it consists of all electricity used for indoor and outdoor lighting. Natural gas lights are included in the appliance component for natural gas.

Cooking Subcomponent. This subcomponent was estimated only for electricity. The cooking subcomponent was positive if one or both of the following conditions were met. The first condition is if the household reported that electricity was the main cooking fuel and the household cooked hot meals once a week or more. The second condition is if the household reported that it used an electric oven once a day or more (even if the main cooking fuel was not electricity). If neither condition was met, the subcomponent was zero. Other than the frequent use of an electric oven, the definition of the subcomponent did not involve the type of cooking equipment that was used. Consequently, households with some electric cooking equipment (including microwave ovens) could have been assigned a zero value for the electricity cooking subcomponent if the household did not list electricity as a cooking fuel. The electricity used to operate the electric cooking equipment in households that did not list electricity as a cooking fuel was included in the appliance subcomponent. Similarly, electricity used to operate common kitchen appliances, such as toasters and mixers, was included in the appliance subcomponent. For the 1993 RECS, the definition of the cooking subcomponent did not involve the number of meals cooked or the frequency with which the oven was used.

Dishwasher Subcomponent. This subcomponent was estimated only for electricity. This subcomponent consisted of all electricity used to operate dishwashers.

Clothes Dryer Subcomponent. This subcomponent was estimated only for electricity; it consists of all electricity used to operate clothes dryers. Clothes dryers using natural gas or LPG are included in the appliance component for those fuels.

Freezer Subcomponent. This subcomponent was estimated only for electricity; there was no freezer component for natural gas, LPG, fuel oil, and kerosene. The freezer subcomponent for electricity consisted of all electricity used to operate freezers that were not part of a refrigerator.

Nonlinear Regression Technique

The nonlinear regression technique was used to produce end-use estimates for each household and each energy source. The end-use estimates were normalized so that the sum of the end-use estimates was equal to the actual or imputed yearly consumption for each energy source used by the household. The individual household end-use estimates were used to estimate averages and totals for end-use consumption over selected household categories. The results are presented in the text and in the tables in the "Detailed Tables" section of this report. Following is an overview of the basic nonlinear equations. (To obtain the detailed equations and individual coefficients, please see the Contacts page at the beginning of this report for the end use estimation contact person.⁷)

The general regression equation for each fuel splits estimated consumption into its end-use components. The result is:

$$YCOM = SPHTCOM + WTHTCOM + AIRCCOM + RFRGCOM + APPLCOM,$$

where:

YCOM is the estimated annual consumption,
SPHTCOM is the estimated space-heating component,
WTHTCOM is the estimated water-heating component,
AIRCCOM is the estimated air-conditioning component,
RFRGCOM is the estimated refrigerator component, and
APPLCOM is the estimated appliance component.

⁷For a detailed discussion of the end-use estimation procedures and the correlation of variables, see the *National Interim Energy Consumption Survey: Exploring the Variability in Energy Consumption*, DOE/EIA-072 (Washington, DC, July 1981); the *National Interim Energy Consumption Survey: Exploring the Variability in Energy Consumption - A Supplement*, DOE/EIA-0272/S (Washington, DC, October 1981); and *Residential Energy Consumption Survey: Regression Analysis of Energy Consumption by End Use*, DOE/EIA-0431 (Washington, DC, October 1983).

The regression equation for electricity splits estimated consumption for the appliance component into 6 additional subcomponents:

$$YCOM = SPHTCOM + WTHTCOM + AIRCCOM + RFRGCOM + FZZRCOM + DISHCOM + COOKCOM + LITECOM + DRYRCOM + APPSCOM,$$

where:

FZZRCOM is the estimated freezer subcomponent,
DISHCOM is the estimated dishwasher subcomponent,
COOKCOM is the estimated cooking subcomponent,
LITECOM is the estimated lighting subcomponent,
DRYRCOM is the estimated clothes dryer subcomponent, and
APPSCOM is the estimated other appliances subcomponent.

The actual annual consumption is called Y. The unit of measure for Y and YCOM is thousands of Btu. This unit of measure is used for all energy sources.

The typical regression error term is as follows:

$$e_1 = Y - YCOM.$$

Unfortunately, the variance of e_1 tends to increase as YCOM increases. Furthermore, the distribution of e_1 is skewed in the positive direction. These two facts violate the assumptions associated with linear least-squares regression. On the other hand, the distribution of

$$e_2 = (Y)^{1/4} - (YCOM)^{1/4}$$

is closer to being normally distributed with a constant variance. Hence, a nonlinear least-squares regression procedure that minimizes the sum of squares of e_2 was used.

For each energy source, the dependent variable was the household's consumption as reported on the RECS Suppliers Survey in thousands of Btu. The specific set of independent variables was not the same for all energy sources. Most of the independent variables are derived from information reported by the individual households on the Household Survey. The end-use components consisted of sums or products of terms that themselves may have been sums or products of the independent variables. The overall methodology may seem complex at first glance, but there was a common structure. In general, the components consisted of an overall term multiplied by various adjustments. This format allowed the components to be adjusted by many factors. The relative size of the adjustments was easy to determine.

The disadvantage of the format was that it yields a basic equation that is intrinsically nonlinear. As a result, standard multivariate linear regression techniques could not be used to estimate the parameters. A nonlinear technique was used. The parameters were estimated by using the nonlinear regression procedure (PROC NLIN) contained in the statistical computer package, SAS.⁸

⁸Statistical Analysis System (SAS) Institute (Cary, North Carolina).

Appendix D

Household Questionnaire

Introduction

This appendix contains only one of the forms (the Household Questionnaire) used in the data collection process for the 1997 Residential Energy Consumption Survey. Forms EIA-457A and B were used to collect household data; Form EIA-457C was used to interview the household's rental agent; and Forms EIA-457D through G were mailed to energy suppliers. (The form title and original color of each one is indicated below.)

- EIA-457A - Household Questionnaire - white (includes Authorization Form - yellow)
- EIA-457B - Household Mail Questionnaire - white.
- EIA-457C - Rental Agents, Landlords, and Apartment Managers Form - white.
- EIA-457D - Household Bottled Gas (LPG and Propane) Usage - blue.
- EIA-457E - Household Electricity Usage - yellow.
- EIA-457F - Household Natural Gas Usage - pink.
- EIA-457G - Household Fuel Oil or Kerosene Usage - green

**U.S. Department of Energy
Energy Information Administration**

**1997
Residential Energy Consumption Survey**

Household Questionnaire

INTRODUCTION TO INTERVIEW

Hello, I am _____ from Response Analysis Corporation, a social science research firm. We are conducting a study for the U.S. Department of Energy about energy consumption in homes.

Although your participation is voluntary, we hope you will participate in this important study of energy usage. Your identity and all the responses you give me will be kept strictly confidential. The survey will take about 30 minutes.

Public reporting burden for this collection of information is estimated to average 30 minutes per response. Any comments you may have regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, should be sent to the Energy Information Administration, Office of Statistical Standards, EI-73, 1000 Independence Ave., SW, Washington, DC 20585; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

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Section A: HOUSING CHARACTERISTICS

A-1 URBRUR First, I want to ask you some questions about the type of house or building you live in. Which of the following best describes the location of your home? Do you live in a city, a town, the suburbs, or in a rural area?

- City 1
- Town 2
- Suburbs 3
- Rural 4

A-2 TYPEHUQ1 Please tell me which of the following best describes the kind of structure you live in? Is it a ...

- single-family home not attached to any others, 2
- townhouse or rowhouse, 3
- duplex or triplex, 6
- apartment, or 7
- a mobile home? 1
- Some other type of structure (if volunteered) 8

[If some other type of structure] TYPEHUQ2 Can you briefly describe this type of structure? (Interviewer will mark the category below that best applies and then record verbatim response.)

- Single-family detached 2
- Single-family attached 3
- Apartment building with 2-4 units 4
- Apartment building 5 or more units 5
- Mobile home 1

A-3 [If a single-family home] STORIES How many stories does your home have? Does it have one, two, or three or more stories, or is it a split-level or some other type of building?

- One story 1
- Two stories 2
- Three or more stories 3
- Split-level 4
- Some other type (Specify _____) 5

A-4 [If a single-family home] HOMEBASE Now think about the foundation of your home. Most homes are built over a basement or a crawl space, or on a concrete slab, or some combination of these? Is any part of your home over a ...

	<u>Yes</u>	<u>No</u>	<u>Don't Know</u>
Basement, 1	1	0	6
Crawl space, or 1	1	0	6
Concrete slab? 1	1	0	6

[If Basement = Yes] BASEHEAT About how much of the basement would you say is warm enough to sit, work, or play in during the winter months? Is it ...

- All, 1
- Part, or 2
- None? 0
- Don't know 6

A-5 [If an apartment] TYPEHUQ3 Are there more than four apartments in the apartment building you live in?

- Yes 1
- No 0

[If Yes] NUMFLRS How many floors are there in your apartment building?

Enter the number

A-6 [If an apartment] CONVERT Was the structure you live in originally designed and built as an apartment building or was it converted into an apartment building?

- Built as an apartment building 1
- Converted into an apartment building 2

[If converted structure] ORIGTYP What was the original purpose of the structure? (Interviewer will mark the category below that best applies and then record verbatim response.)

- Single-family home--Detached ... 2
- Single-family--Attached
- Townhouse/Rowhouse 6
- Duplex 7
- Commercial/Manufacturing structure .. 8
- Very ambiguous 9
- Don't know 0

A-7 [If an apartment] COMMUSE Does the building in which your apartment is located contain any space that is used for commercial or manufacturing activities?

- Yes 1
- No 0

[If yes] COMMAMT How much of the total space in your building would you say is used for these other kinds of activities? Would you say it is ...

- Less than 10 percent, 1
- About one-quarter, 2
- About half, 3
- About three-quarters, or 4
- Nearly the entire building? 5
- Don't know/Can't say 6

A-8 [If a mobile home] WIDTH **Is your mobile home a single-wide or double-wide home?**

- Single-wide 1
- Double-wide 2
- Triple-wide (if volunteered) 3

A-9 [If a mobile home] TYPEHUQ4 **Does your mobile home have any permanently attached structures--such as a room or porch that is enclosed from the wind and rain-- that weren't part of the mobile home when it was first manufactured?**

- Yes 1
- No 0

A-10a NCOMBATH **How many full bathrooms do you have in your home? A full bathroom is one that has a sink with running water, and a toilet, and either a bathtub or shower.**

Enter the number

A-10b NHAFBATH **And how many half bathrooms do you have - that is, bathrooms that have either a toilet or a bathtub or a shower?**

Enter the number

A-10c BEDROOMS **How many bedrooms do you have in your home?** [If a one-room efficiency or studio apartment, BEDROOMS=0 and OTHROOMS=1.]

Enter the number

A-10d OTHROOMS **Other than bedrooms and bathrooms, how many other rooms are there in your home? Do not count laundry rooms, foyers, unfinished storage spaces, porches, or garages.**

Enter the number

A-11 PRKGPLCE [If a single family of a mobile home] **Does your home have a garage or a covered carport?**

- Yes 1
- No 0

[If Yes] GARPOR **Which does it have? Is it a ...** (Mark all that apply.)

- One-car garage, 1
- Two-car garage, 2
- Three or more car garage, or a 3
- Covered carport? 4

A-12 SQFTEST **Please look at Exhibit A-12. Which of the categories shown best describes the total heated floorspace in your home? Your best estimate will do.**

- Fewer than 600 square feet 01
- 600 to 999 square feet 02
- 1,000 to 1,599 square feet 03
- 1,600 to 1,999 square feet 04
- 2,000 to 2,399 square feet 05
- 2,400 to 2,999 square feet 06
- 3,000 or more square feet 07
- Don't know 96

[If any response other than Don't know] HOWSURE **How sure are you of the estimate you just provided? Are you ...**

- Very sure, 1
- Somewhat sure, 2
- Somewhat unsure 3
- Not sure at all 4
- Don't know 6

A-13 KOWNRENT **Do you or members of your household own this home or do you rent?**

- Own/Buying 1
- Rent 2
- Occupied without payment of rent 3

[If KOWNRENT = Rent or Occupied without payment of rent] HUPROJ **Is this residence in a public housing project -- that is, is it owned by a housing authority?**

- Yes 1
- No 0
- Don't know 6

[If HUPROJ = No or Don't know] RENTHELP **Is your household paying lower rent because the federal, state, or local government is paying part of the cost?**

- Yes 1
- No 0
- Don't know 6

A-14 KOWNCOND **Is this home part of a condominium or cooperative?**

- Yes, Condominium 1
- Yes, Cooperative 2
- No 0

YEARMADE Please look at Exhibit A-15. In what year was this house/building built? Your best estimate is fine.

BEFORE 1940 01	1990 09
1940-49 02	1991 10
1950-59 03	1992 11
1960-69 04	1993 12
1970-76 05	1994 13
1977-79 06	1995 14
1980-86 07	1996 15
1987-89 08	1997 16
	Don't know . . 96

[If 1995, 1996, 1997 or Don't Know] **OCCUPY** Did your household move into this home or apartment after December 1994?

Yes 1
 No 0 ----> SKIP TO B-1

[If Yes] **OCCUPYY** In what month and year did your household move in?

1995 1
1996 2
1997 3
Don't Know 6

OCCUPYM

January 01	July 07
February 02	August 08
March 03	September 09
April 04	October 10
May 05	November 11
June 06	December 12

Section B: KITCHEN APPLIANCES

B-1 STOVEN Now I have some questions about your use of kitchen appliances. Please look at Exhibit B-1. Do you have a kitchen stove that has both burners and an oven?

Yes 1
 No 0

[If Yes] **ELSTOVE NGSTOVE LPSTOVE OTHSTOVE** What type of fuel does that stove use? Is it . . .

Electricity, 05
Natural gas from underground pipes, 01
Bottled gas (LPG or Propane), or . . . 02
Some other fuel? 21
Don't know 96

[If No] **STOVE** Do you have a separate built-in range top or burners?

Yes 1
 No 0

[If Yes] **ELSTOVE NGSTOVE LPSTOVE OTHSTOVE** What type of fuel does that stove use? Is it . . .

Electricity, 05
Natural gas from underground pipes, 01
Bottled gas (LPG or Propane), or . . . 02
Some other fuel? 21
Don't know 96

[If No] **OVEN** Do you have a separate built-in oven?

Yes 1
 No 0

[If Yes] **ELOVEN NGOVEN LPOVEN OTHOVEN** What type of fuel does that oven use? Is it . . .

Electricity, 05
Natural gas from underground pipes, 01
Bottled gas (LPG or Propane), or . . . 02
Some other fuel? 21
Don't know 96

B-2 [If STOVEN=Yes or OVEN=Yes] **OVENUSE** Please look at Exhibit B-2. Which of the categories shown best describes, on average, how often you use your oven?

More than once a day 1
Once a day 2
Between once a day and once a week 3
Once a week 4
Less than once a week 5

B-3 [If STOVEN=Yes or OVEN=Yes] **OVENCLN** Does your oven have a self-cleaning feature?

- Yes 1
- No 0
- Don't know 6

[If OVENCLN = Yes] **TYPECLN** Is your self-cleaning oven one that cleans continuously or do you have to manually start the cleaning cycle.

- Continuous cleaning 1
- Manually start the cleaning cycle 2
- Don't know 6

B-4 **MICRO** Do you use a microwave oven to do any cooking?

- Yes 1
- No 0

[If Yes] **AMTMICRO** Please look at Exhibit B-4. Which answer best describes how much of your food is cooked in the microwave?

- Most or all 1
- About half 2
- Some or very little 3
- Used only for snacks, defrosting, or reheating food 4

B-5 **NUMMEAL** Please look at Exhibit B-5. Which of the categories shown best describes, on average, how often hot meals are usually cooked in your home?

- Three or more times a day 01
- Two times a day 02
- Once a day 03
- A few times each week 04
- About once a week 05
- Less than once a week 06

B-6 [If more than one fuel is used for cooking] **FUELFOOD** You mentioned that you used (enter the names of the fuels mentioned in B-1 and electricity if B-4=Yes and electricity not mentioned in B-1) to prepare your meals. Which of these fuels is used most for cooking in your home?

- Electricity 05
- Natural gas from underground pipes 01
- Bottled gas (LPG or Propane) 02
- Some other fuel 21
- Don't know 96

B-7 **NUMFRIG** How many refrigerators do you use in your home?

- One 1
- Two 2
- Three or more 3
- None 6 ---> SKIP to B-10

TO ASK SOME QUESTIONS ABOUT THE REFRIGERATOR THAT YOU USE THE MOST.

B-8a **TYPFRFR1** Please look at Exhibit B-8a. Which of the pictures best describes the type of refrigerator you have?

- Full-size with one door . . . 1
- Full-size with two doors . . . 2
- Half or quarter-size . . . 3
- Some other kind 4
- Don't know 6

[If Two doors] **DOORSFR1** Are those doors side-by-side or top-and-bottom?

- Side-by-side 1
- Top-and-bottom 2
- Other 3

B-8b **SIZFRFR1** [If DOORSFR1 = Top-and-Bottom or Other] Please look at Exhibit B-8b. How would you describe the size of this refrigerator?

- Very small (10 cubic feet or less) 1
- Small (11 to 14 cubic feet) 2
- Medium (15 to 18 cubic feet) 3
- Large (19 to 22 cubic feet) 4
- Very large (more than 22 cubic feet) . . . 5
- Don't know 6

B-8c **REFRIGT1** [If DOORSFR1 = Top-and-Bottom or Other] What type of defrosting does this refrigerator have? Is it . .

- Manual or 1
- Frost-free? (either automatic or semi-automatic) 2
- No working freezer section (if volunteered) 3
- Don't know 6

B-8d **ICE** [If DOORSFR1=Side-by-Side] Does this refrigerator have through-the-door ice and water service?

- Yes 1
- No 0

B-8e **AGERFR1** Please look at the Yellow Card. About how old is this refrigerator?

- Less than 2 years old 01
- 2 to 4 years old 02
- 5 to 9 years old 03
- 10 to 19 years old 04
- 20 years or older 05
- As old as the home (if volunteered) 06
- Don't know 96

[If there are two or more refrigerators in the home read this introduction:] **FIRST I WOULD LIKE**

[If B-7 is One or None SKIP to B-10, Otherwise read this introduction:] **NOW I WOULD LIKE TO ASK YOU THE SAME QUESTIONS ABOUT YOUR** (if B-7 = "Two" insert **OTHER**; if B-7 = "Three or more" insert **SECOND MOST USED**) **REFRIGERATOR**

B-9a *TYPFRFR2* Please look at Exhibit B-8a. Which of the pictures best describes the type of refrigerator you have?

- Full-size with one door, 1
- Full-size with two doors 2
- Half or quarter-size 3
- Some other kind 4
- Don't know 6

[If Two doors] DOORSFR2 Are those doors side-by-side or top-and-bottom?

- Side-by-side 1
- Top-and-bottom 2
- Other 3

B9b *SIZFRFR2* [If DOORSFR1 = Top-and-Bottom or Other] Please look at Exhibit B-8b. How would you describe the size of this refrigerator?

- Very small (10 cubic feet or less) 1
- Small (11 to 14 cubic feet) 2
- Medium (15 to 18 cubic feet) 3
- Large (19 to 22 cubic feet) 4
- Very large (more than 22 cubic feet) . . . 5
- Don't know 6

B-9c *REFRIGT2* [If DOORSFR1 = Top-and-Bottom or Other] What type of defrosting does this refrigerator have? Is it . .

- Manual or 1
- Frost-free? (either automatic or semi-automatic) 2
- No working freezer section (if volunteered) 3
- Don't know 6

B-9d *MONRFR12* During the past 12 months, how many months was this refrigerator turned on?

Enter the number

B-9e *AGERFR12* Please look at the Yellow Card. About how old is this refrigerator?

- Less than 2 years old 01
- 2 to 4 years old 02
- 5 to 9 years old 03
- 10 to 19 years old 04
- 20 years or older 05
- As old as the home (if volunteered) 06
- Don't know 96

B-10 *SEPFREEZ* Does your household use a separate freezer that is not part of a refrigerator?

- Yes 1
- No 0

[If Yes] *NUMFREEZ* How many separate freezers are used in your home?

- One 1
- Two 2
- Three or more 3

[If more than one freezer read this introduction:] **NOW I WOULD LIKE TO ASK SOME QUESTIONS ABOUT THE SEPARATE FREEZER THAT YOU USE THE MOST**

B-10a *UPRFRFRZR* What model freezer is this? Is it

- An upright or (vertical cabinet with a door on the front) 1
- A chest-type? (horizontal cabinet with the door on the top) 2

B-10b *SIZFREEZ* Please look at Exhibit B-8b. How would you describe the size of this freezer?

- Very small, (10 cubic feet or less) 1
- Small, (11 to 14 cubic feet) 2
- Medium (15 to 18 cubic feet) 3
- Large (19 to 22 cubic feet) 4
- Very large (more than 22 cubic feet) 5

B-10c *FREEZER* What type of defrosting does this freezer have? Is it . .

- Manual or 1
- Frost-free? (either automatic or semi-automatic) 2
- Don't know 6

B-10d *AGEFRZR* Please look at the Yellow Card. About how old is this freezer?

- Less than 2 years old 01
- 2 to 4 years old 02
- 5 to 9 years old 03
- 10 to 19 years old 04
- 20 years or older 05
- As old as the home (if volunteered) 06

B-11 *DISHWASH* Does your household use an automatic dishwasher?

- Yes 1
- No 0

[If Yes] *DWASHUSE* Please look at Exhibit B-11. Which category best describes how often your household actually uses the automatic dishwasher in an average week?

- Less than 4 times a week 1
- 4 to 6 times a week 2
- At least once each day 3

Section C: OTHER APPLIANCES

C-1 **CWASHER** Now I have some questions about your use of other appliances commonly used in homes. Do you use a clothes washer in your home? [Do not include community clothes washers that are located in the basement or laundry room of apartment buildings.]

Yes 1
No 0

[If Yes] **WASHLOAD** Please look at Exhibit C-1. In an average week, how many loads of laundry are washed in your clothes washer?

1 load or less each week 1
2 to 4 loads 2
5 to 9 loads 3
10 to 15 loads 4
More than 15 loads 5
Don't know 6

C-2 **DRYER** Do you use a clothes dryer in your home? [Do not include community clothes dryers that are located in the basement or laundry room of apartment buildings.]

Yes 1
No 0

[If Yes] **DRYRFUEL** What fuel does your clothes dryer use? Is it ...

Electricity, 05
Natural gas, or 01
Bottled gas? 02
Don't know 96

[If Yes] **DRYRUSE** Please look at Exhibit C-2. How often do you use your clothes dryer?

Use it every time you wash clothes 1
Use it for some, but not all, loads of wash 2
Use it infrequently 3

C-3 **WATERBED** Does your household use any waterbed heaters?

Yes 1
No 0

[If Yes] **NOWTBDHT** How many waterbed heaters do you use?

Enter the number

WTBEDUSE ... and how many of these heaters are used all year long?

Enter the number

C-4 **CFAN** Does your household use any ceiling fans?

Yes 1
No 0

[If Yes] **NUMCFAN** How many ceiling fans does your household use?

Enter the number

C-5 [If a Single-family home] **SWIMPOOL** Does your home have its own swimming pool with a filtering system?

Yes 1
No 0

[If Yes] **POOL** Is it a heated pool?

Yes 1
No 0

[If Yes] **FUELPOOL** What fuel is used most often to heat the pool water?

Electricity 05
Natural gas from under ground pipes ... 01
Bottled gas (LPG or Propane) ... 02
Solar 08
Other (Specify _____) 21
Don't know 96

C-6 **RECBATH** Does your home have a heated hot tub, spa, or jacuzzi, other than a bathtub?

Yes 1
No 0

[If Yes] **FUEL TUB** And what fuel is used most often to heat the water in your hot tub, spa, or jacuzzi?

Electricity 05
Natural gas from under ground pipes ... 01
Bottled gas (LPG or Propane) 02
Solar 08
Other (Specify _____) 21
Don't know 96

C-7 **TVCOLOR** How many color television sets do you use in your home?

Enter the number

[If TVCOLOR>0] **VCR** How many VCR's do you use in your home?

Enter the number

For each of the following appliances please tell me, yes or no, whether they are used in your home.

		<u>Yes</u>	<u>No</u>
C-8a	WELLPUMP Electric pump for well water?	1	0
C-8b	SWAMPOL Evaporative or swamp cooler?	1	0
C-8c	AQUARIUM Large, 20 gallons or more, heated aquariums?	1	0
C-8d	DIPSTICK Automobile block heaters, dip-stick engine heaters, or battery blankets?	1	0
C-9a	NOCORD A portable cordless telephone?	1	0
C-9b	ANSMACH A telephone answering machine?	1	0
C-9c	STEREO Stereo equipment?	1	0
C-9d	BATTOOLS Portable appliances or tools, such as hand-held vacuum cleaners or power drills, that are powered by a rechargeable battery?	1	0

[If Yes] BATCHRG How do you maintain these portable appliances or tools when they are not being used? Do you keep them plugged in all the time or do you let the batteries run down and then recharge them as needed?

- Keep them plugged in all the time 1
- Recharge them as needed 2
- Both ways are used 3

Do you use any of the following kinds of office equipment in you home?

		<u>Yes</u>	<u>No</u>
C-10	COMPUTER A personal computer?	1	0
	[If Yes] MULTPC Do you use more than one personal computer in your home?	1	0
	[If Yes] NUMPC How many PCS do you use?		
	Enter the number <input style="border: 1px solid red; width: 20px; height: 20px;" type="text"/>		
	[If Yes] MODEM A modem connecting the computer to a telephone line?	1	0
	[If Yes] PRINTER A laser printer?	1	0
C-11	FAX A separate fax (facsimile) machine?	1	0
C-12	COPIER A photocopier?	1	0

C-13 [If COMPUTER=Yes] PCUSE Altogether, how many hours a week is/are your personal computer(s) turned on? Is it/Are they turned on . . .

- Less than 2 hours per week, 1
- 2 to 15 hours per week, 2
- 16 to 40 hours per week, or 3
- Is it turned on all the time? 4

[If More than 16 hours] PCTASK Do you use your computer principally for personal use, such as paying bills, doing homework, or playing games, or do you use it principally for business purposes, that is, as part of your job?

- Personal use 1
- Business use 2
- Both or About equally (if volunteered) 3

[If Business Use or Both] TELECOM How would you describe the business use of your personal computer? Do you, or anyone else telecommute? That is, does anyone work on your computer at home instead of traveling to their employer's place of business?

- Yes, telecommute 1
- No, other business use 0

[If Yes] TELLDAYS How many days each week, on average, is the personal computer used for telecommuting?

Enter the number of days

Section D: SPACE HEATING

D-1 **FUELHEAT** Now I have some questions about the types of equipment and fuels you use to heat your home. Please look at the Blue Card. What is the main fuel used for heating your home? That is, which fuel is the one that provides the most heat for your home?

Electricity	05
Natural gas from underground pipes	01
Bottled gas, that is, LPG or Propane	02
Fuel oil	03
Kerosene	04
Wood	07
Solar	08
Some other fuel? (Specify _____)	21
Don't heat home	99

[If Don't heat home] DNTHEAT It's unusual not to heat a home at all. Just to clarify, is it that you have heating equipment but don't use it, or does your home not have any heating equipment?

Have equipment, but don't use it	1
Don't have any heating equipment	2

[If Have equipment] **FUELHEAT** Please look at the Blue Card. Even though you don't use your heating equipment, we are still interested in the fuel it uses. What is the main fuel used for running your heating equipment?

Electricity	05
Natural gas from underground pipes	01
Bottled gas, that is, LPG or Propane	02
Fuel oil	03
Kerosene	04
Wood	07
Solar	08
Some other fuel (Specify _____)	21

D-2 **EQUIPM** Please look at Exhibit D-2. Please tell me which type of heating equipment provides most of the heat for your home.

Heat pump	04
Central warm-air furnace with ducts to individual rooms (other than a heat pump)	03
Steam/Hot water system with radiators or convectors in each room or pipes in the floor	02
Built-in electric units in each room (installed in walls, ceiling, or baseboard)	05
Built-in floor/wall pipeless furnace	06
Built-in room heater (burning gas, oil, or kerosene)	07
Heating stove (burning wood, coal, or coke)	08
Portable electric heaters	10
Portable kerosene heaters	11
Fireplace	09
Cooking stove (that is used to heat your home as well as to cook)	12
Equipment not listed (Specify _____)	21
No heating equipment used	00

D-3 **EQUIPAGE** Please look at the Yellow Card. Approximately, how old is your household's (name the equipment identified in D-2) heating system?

Less than 2 years old	01
2 to 4 years old	02
5 to 9 years old	03
10 to 19 years old	04
20 years or older	05
As old as the home (if volunteered)	06
Don't know	96

D-4 **HEATOTH** Does the main space heating system for your home also heat any other apartments, condos, households, businesses, or farm buildings?

Yes	1
No	0

D-5 **EQUIPAUX** In addition to the (name the equipment identified in D-2), do you use any other types of equipment to heat your home, even only once in a while?

Yes	1
No	0
Don't know	6

[If Yes] Please look at Exhibit D-2. Please tell me which types you occasionally use to provide heat in addition to the (name the equipment identified in D-2). Prompt: Is there any other heating equipment you use? [Record all that are used.]

REVERSE Heat pump	04
WARMAIR Central warm-air furnace with ducts to individual rooms (other than a heat pump)	03
STEAMR Steam/hot water system with radiators or convectors in each room or pipes in the floor/walls	02
PERMELEC Built-in electric units in the walls, ceiling, or baseboards	05
PIPELESS Built-in floor/wall pipeless furnace	06
ROOMHEAT Built-in room heater burning gas, oil, or kerosene	07
WOODKILN Heating stove burning wood, coal, or coke	08
CARRYEL Portable electric Heaters	10
CARRYKER Portable kerosene Heaters	11
CHIMNEY Fireplace	09
RANGE Cooking stove (used to heat your home as well as to cook)	12
DIFEQUIP Some other type of equipment (Specify _____)	21
DKEQUIP Don't Know	96

[If WARMAIR or STEAMR or DIFEQUIP = Yes] *ELECAUX UGASAU*
LPGAUX FOILAUX KEROAUX WOODAUX SOLARAUX OTHERAUX DKAUX
What fuel does the (type of equipment) of heating equipment use?

Electricity 05
 Natural gas from underground pipes 01
 Bottled gas (LPG or Propane) 02
 Fuel oil 03
 Kerosene 04
 Wood 07
 Solar 08
 Other (Specify _____) 21
 Don't know 96

[If PIPELESS = Yes] *ELECAUX UGASAU* *LPGAUX FOILAUX KEROAUX*
WOODAUX OTHERAUX DKAUX **What fuel does the pipeless furnace use?**

Electricity 05
 Natural gas from underground pipes 01
 Bottled gas (LPG or Propane) 02
 Fuel oil 03
 Kerosene 04
 Wood 07
 Some other fuel (Specify _____) 21
 Don't know 96

[If ROOMHEAT = Yes] *UGASAU* *LPGAUX FOILAUX KEROAUX DKAUX*
What fuel does the room heater use?

Natural gas from underground pipes 01
 Bottled gas (LPG or Propane) 02
 Fuel oil 03
 Kerosene 04
 Don't know 96

[If WOODKILN = Yes] *WOODAUX OTHERAUX DKAUX* **What fuel does the heating stove use?**

Wood 07
 Some other fuel (Specify _____) 21
 Don't know 96

[If CHIMNEY = Yes] *UGASAU* *LPGAUX WOODAUX OTHERAUX DKAUX*
What fuel does the fireplace use?

Wood 07
 Natural gas from underground pipes 01
 Bottled gas (LPG or Propane) 02
 Some other fuel (Specify _____) 21
 Don't know 96

[If Natural gas or Bottled gas] *NGFPFLUE* **Does this fireplace have a flue to the outside or is it entirely self-contained?**

Flue to the outside 1
 Flueless (self-contained) 2

[If Natural gas or Bottled gas] *USENGFP* **During the winter months how frequently do you use your gas fireplace? Do you use it . . .**

Most days, 1
About once a week, or 2
Fewer than 4 times each month? . . . 3

[If RANGE = Yes] *ELECAUX UGASAU* *LPGAUX FOILAUX KEROAUX WOODAUX*
OTHERAUX DKAUX **What fuel does the cooking stove use?**

Electricity 05
 Natural gas from underground pipes 01
 Bottled gas (LPG or Propane) 02
 Fuel oil 03
 Kerosene 04
 Wood 07
 Other (Specify _____) 21
 Don't know 96

D-6 [If D-4 = Yes] *EQMAMT* **Thinking about your main heating equipment, the (name the equipment identified in D-2) that uses (main heating fuel identified in D-1), how much of the heat for your home would you say that this heating equipment provides . . .**

Almost all, 1
About three-fourths, or 2
Closer to half of all your heat? 3
 Don't know 6

D-7 [If FUELHEAT = Solar or SOLARAUX = 1 ask] *ACTSOLAR* **Does your solar heating system require pumps or fans (other than ceiling fans) to circulate warm air or hot fluids between solar collectors and the rooms they heat?**

Yes 1
 No 0
 Don't know 6

D-8 *THERMAIN* **Please look at Exhibit D-8. Do you have a thermostat that controls your main (insert name of main heating system) heating equipment and allows you to set the system to a specific temperature during the heating season? [Interviewer: If needed, add: "A thermostat automatically responds to temperature changes and turns the heat on or off until the desired temperature is reached."]**

Yes 1
 No 0
 Don't know 6

[If Yes] SETBACK Is that thermostat either an automatic set-back or clock thermostat?

- Yes 1
- No 0
- Don't know 6

[If Yes] AUTOHEAT Have you actually programmed the thermostat or do you use its' manual features to control the temperature setting?

- The thermostat is programmed 1
- Use the manual features 2
- Both are used 3

D-9 At what temperature does your household usually keep your home in the winter?

[Interviewer: If respondent keeps different parts of the house at different temperatures, record 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, record the downstairs temperature. If the respondent doesn't know the temperature, but knows the thermostat setting, record the thermostat setting. Otherwise, probe for the best estimate.]

a. TEMPHOME During the day when someone is home?

Enter degrees Fahrenheit
Heat Turned Off 95

b. TEMPGONE During the day when no one is home?

Enter degrees Fahrenheit
Heat Turned Off 95

c. TEMPNITE During sleeping hours?

Enter degrees Fahrenheit
Heat Turned Off 95

D-10 HEATROOMS Of the (enter the number from A-9c and A-9d) rooms in your home, were there any that were not heated last winter?

- Yes 1
- No 0

[If No] HEATNOT How many rooms were not heated last winter?

Enter the number

Section E: WATER HEATING

E-1 FUELH2O Please look at the Blue Card. Which fuel do you use the most to heat water for washing or bathing?

- Electricity 05
- Natural gas from underground pipes 01
- Bottled gas, that is, LPG or Propane 02
- Fuel oil 03
- Kerosene 04
- Wood 07
- Solar 08
- Some other fuel (Specify _____) 21
- Don't know 96
- Don't use hot water 99 ----> SKIP to F-1

E-2 WHEATOTH Does the main equipment for heating water for your home also heat water for any other apartments, condos, households, businesses, or farm buildings?

- Yes 1
- No 0
- Don't know 6

E-3 WHEATSIZ Please look at Exhibit E-3. Please tell me the approximate size of your household's main water heater tank.

- Small (30 gallons or less) 1
- Medium (31 to 49 gallons) 2
- Large (50 gallons or more) 3
- Don't have a separate water heater 0 ----> SKIP to F-1
- Don't know 6

E-4 WHEATAGE Please look at the Yellow Card. Approximately, how old is your household's main water heater?

- Less than 2 years old 01
- 2 to 4 years old 02
- 5 to 9 years old 03
- 10 to 19 years old or 04
- 20 years or older 05
- As old as the home (if volunteered) 06
- Don't know 96

E-5 UAUXH2OF In addition to (name of fuel from E-1) does your household use any other fuel for heating water?

Yes 1
 No 0

[If Yes] FAUXH2O Please look at the Blue Card. What is this additional water heating fuel?

Electricity 05
 Natural gas from underground pipes 01
 Bottled gas (LPG or Propane) 02
 Fuel oil 03
 Kerosene 04
 Wood 07
 Solar or 08
 Some other fuel (Specify _____) 21
 Don't know 96

E-6 SHOWERS Please look at Exhibit E-6. Because bathing and showering affect how much energy a household uses to heat water, can you give me an estimate of how many baths and showers are taken by all the members of your household during a typical week?

Fewer than 10 1
 10-20 2
 More than 20 3
 Don't Know 6

Section F: AIR CONDITIONING

F-1 AIRCOND Now I have some questions about air-conditioning. Do you use air conditioning in your home?

Yes 1
 No 0 ----> SKIP to F-12

F-2 COOLMAIN COOLUNIT What kind of air-conditioning equipment does your household have? Is it

A central system, 1
 Individual units in the windows or wall, or 2
 Both central and individual units 3
 Don't know 6

[If "A central system" or "Both central and individual units" and EQUIPM <-> Heat pump or Central warm-air furnace] DUCTS Central air-conditioning requires that the system have ducts to carry the cooled air to the individual rooms. These ducts may also carry warm air for space heating. Does your home have ducts like these?"

Yes 1
 No 0
 Don't know 6

F-3 ACHOUSE [If respondent lived here last summer, ask] Last summer did your household's air-conditioning equipment cool ...

All the rooms in your house/apartment or 1
 Only some of the rooms? 2
 None of the rooms are cooled 3
 Did not live here last summer 0

[If "Only some of the rooms"] ACROOMS Of the (enter the number from A-9c and A-9d) rooms in your home, how many were cooled by your household's air-conditioning last summer?

Enter the number

F-4 FUELCOOL [If F-2 = "A central system" or "Both central and individual units"; Else Skip to F-7] Does your central air-conditioner run on electricity or is it one of the few that uses natural gas or bottled gas?

Electricity 05
 Natural Gas from underground pipes 01
 Bottled Gas (LPG/Propane) 02
 Don't know 96

[If Electricity] CENACHP Is your central air-conditioning system a heat pump?

Yes 1
 No 0
 Don't know 6

F-5 AGEENAC Please look at the Yellow Card. Approximately, how old is your household's central air-conditioning equipment?

- Less than 2 years old 01
- 2 to 4 years old 02
- 5 to 9 years old 03
- 10 to 19 years old 04
- 20 years or older 05
- As old as the home (if volunteered) 06
- Don't know 96

F-6 USEENAC Please look at Exhibit F-6. Which of the statements shown best describes the way your household used the central air-condition system last summer?

- Not used at all 0
- Turned on only a few days or nights when really needed 1
- Turned on quite a bit 2
- Turned on just about all summer 3
- Not here last summer 4
- Other 5
- Don't know 6

[If USEENAC= 2 or 3 and D-8, SETBACK=Yes] AUTOCOOL Earlier you told me that you have an automatic set-back or clock thermostat. Do you use the programming features of that thermostat to control the temperature setting of your central air-conditioner or do you use its' manual controls?

- Use the programming features 1
- Use the manual controls 2
- Use separate thermostat for AC 3
- Set-back thermostat used only for heating (If volunteered) 4
- Both Used 5

F-7 ACOTHERS Does the central air conditioning equipment that cools your home also cool any other apartments, condos, households, businesses, or farm buildings?

- Yes 1
- No 0
- Don't know 6

F-8 [If F-2 is "Individual units in the windows or wall" or "Both central and individual units"; Otherwise SKIP to F-12] NUMBERAC How many window or wall air-conditioning units do you have in your home?

Enter the number

F-9 ANYWWHP Are any of these window/wall units a heat pump?

- Yes 1
- No 0

[if Yes] WWHTPUMP How many of these units are heat pumps?

Enter the number

F-10 WWACAGE Please look at the Yellow Card. Approximately, how old is your household's MOST-USED window/wall unit?

- Less than 2 years old 01
- 2 to 4 years old 02
- 5 to 9 years old 03
- 10 to 19 years old 04
- 20 years or older 05
- As old as the home (if volunteered) 06
- Don't know 96

F-11 USEWWAC Please look at Exhibit F-6. Which of the statements shown best describes the way your household used the (most used) wall or window unit air-conditioner last summer?

- Not used at all 0
- Turned on only a few days or nights when really needed 1
- Turned on quite a bit 2
- Turned on just about all summer 3
- Not here last summer 4
- Other 5
- Don't know 6

F-12 TREESHAD Does your home have any large trees that shade your home from the afternoon summer sun?

- Yes 1
- No 0
- Don't know 6

Section G: MISCELLANEOUS

G-1 *LGT12* Thinking of a typical November weekday, how many indoor lights are turned on for more than 12 hours each day in your home?

Enter the number

G-2 *OUTLGTNT* Are any outdoor lights left on all night?

Yes 1
No 0

[If Yes] *GASLIGHT* Do any of these lights use natural gas?

Yes 1
No 0

G-3 *SLDDRS* Does your home have any sliding glass doors that go from a heated area to the outside or to an unheated area?

Yes 1
No 0

[If Yes] *DOOR1SUM* How many of these sliding glass doors does your home have? [Interviewer: Count each pair of sliding glass doors as one door.]

Enter the number

G-4 *WINDOWS* Please look at Exhibit G-4. Approximately, how many windows does your home have? Each window that opens separately should be counted as one window. Leave out of your count any windows that are in unheated parts of your home.

1 or 2 01
3 to 5 02
6 to 9 03
10 to 19 04
20 to 29 05
More than 30 06
None (volunteered) 00

[Interviewer: If asked, double hung or slider windows count as one window. 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.]

G-5 *ADQINSUL* Overall, would you say that your home is

Well insulated, 1
Adequately insulated, or 2
Poorly insulated? 3
No insulation (if volunteered) 4
Don't know 6

Section H: FUELS USED

H-1 USEEL USENG USELP USEFO USEKERO USEWOOD USESOLAR You have mentioned using (CAPI will list the fuels identified as used by the household). Do you use (CAPI will list the fuels which have not been identified as used by the household) for any purpose in your home?

Yes 1
No 0

[If Yes] Which of these fuels do you use? [Record all that apply.]

Electricity 05
Natural gas from underground pipes 01
Bottled gas (LPG or Propane) 02
Fuel oil 03
Kerosene 04
Wood 07
Solar 08

[If Electricity is named] ELWARM *ELWATER* ELFOOD ELCOOL ELOTHER How do you use electricity in your home? Do you use it for. . . .

	<u>Yes</u>	<u>No</u>
Heating your home	1	0
Air conditioning	1	0
Heating water	1	0
Cooking	1	0
Some other use (Specify _____)	1	0

[If Natural gas is named] UGWARM *UGWATER* UGCOOK UGOTHER How do you use natural gas in your home? Do you use it for. . . .

	<u>Yes</u>	<u>No</u>
Heating your home	1	0
Heating water	1	0
Cooking	1	0
Some other use (Specify _____)	1	0

[If Bottled gas is named] LPWARM *LPWATER* LPCOOK LPGRILL LPOTHER How do you use bottled gas in your home? Do you use it for. . . .

	<u>Yes</u>	<u>No</u>
Heating your home	1	0
Heating water	1	0
Operating a Cooking Stove	1	0
Outdoor Grill	1	0
Some other use (Specify _____)	1	0

[If Fuel oil is named] FOWARM FOWATER **How do you use fuel oil in your home? Do you use it for...**

	<u>Yes</u>	<u>No</u>
Heating your home	1	0
Heating water	1	0

[If Kerosene is named] KRWARM KRWATER KROTHER **How do you use kerosene in your home? Do you use it for...**

	<u>Yes</u>	<u>No</u>
Heating your home	1	0
Heating water	1	0
Some other use (Specify _____) ..	1	0

[If Wood is named] WDWARM WDWATER WDOTHER **How do you use wood in your home? Do you use it for...**

	<u>Yes</u>	<u>No</u>
Heating your home	1	0
Heating water	1	0
Some other use (Specify _____) ..	1	0

[If Solar is named] SOLWARM SOLWATER SOLPOOL **How do you use solar in your home? Do you use it for...**

	<u>Yes</u>	<u>No</u>
Heating your home	1	0
Heating water	1	0
Swimming pool heater	1	0

H-2 PELHEAT PELHOTWA PELCOOK PELAC PELLIGHT PGASHEAT PGASHTWA PUGCOOK PUGOTH FOPAY LPGPAY [Ask for all fuels/end uses not already recorded by CAPI as N/A] **In the past 12 months was the (fuel) used for (end use) paid for by your household, included in the rent or condo fee, or paid some other way?**

	<u>HH Pays</u>	<u>Rent/Fee</u>	<u>Other Way</u>	<u>Don't Know</u>
Electricity for ...				
Heating your home	1	2	3	8
Air-Conditioning	1	2	3	8
Heating water	1	2	3	8
Cooking	1	2	3	8
Lighting and Appliances ..	1	2	3	8
Natural Gas for ...				
Heating your home 1	2	3	8	
Heating water	1	2	3	8
Cooking	1	2	3	8
Other uses	1	2	3	8
Fuel Oil	1	2	3	8
Bottled Gas	1	2	3	8

H-3 [If electricity or natural gas used for any purpose and KOWNRENT=Own/Buying] DERE **You may have heard that you will be able to shop for and select an electricity or natural gas supplier in the same way that you choose a long-distance telephone company. Some households are able to do this now. Is yours one of those households?**

[Interviewer: If the respondent does not understand the question then add: **In the past your electricity and natural gas have been supplied by your local company. Now, companies outside your local area that provide electricity and natural gas will be able to contact you and ask that you buy from them instead of the local company.]**

Yes 1
No 2

[If Yes] WCHFUEL **Which fuel could you purchase this way?**

Electricity, 1
Natural gas, or 2
Both 3

H-4 [If USELP=Yes] LPGDELV **Is bottled gas delivered to your home?**

Yes 1
No 0
Don't know 6

[If Yes] NDIFLPCO **How many different companies delivered bottled gas to you in the past 12 months?**

Enter the number

[If Yes] NLPDELNC **About how many deliveries did your household get in the past 12 months?**

Enter the number
Don't know 96
Did not live here the full 12 months 95

H-5 [If USEFO=Yes] QUANTFO **Please look at Exhibit H-5. About how much fuel oil did your household use in the past 12 months?**

Less than 100 gallons 1
100 to 499 gallons 2
500 to 1,000 gallons 3
More than 1,000 gallons 4
Don't know 6

H-5a [If USEFO=Yes] FODEL Is fuel oil delivered to your home?

Yes 1
No 0
Don't know 6

[If Yes] NDIFFOCO How many different companies delivered fuel oil to your household in the past 12 months?

Enter the number
Don't know 96

[If Yes] NFODELNC About how many deliveries did your household get in the past 12 months?

Enter the number
Don't know 96
Did not live here the full 12 months 95

H-6 [If USEKERO=Yes] KERODEL You mentioned that you use kerosene in your household. Is kerosene delivered to your home?

Yes 1
No 0
Don't know 6

[If Yes] NDIFKRCO How many different companies delivered kerosene to your household in the past 12 months?

Enter the number
Don't know 96

[If Yes] NKRDEL About how many deliveries did your household get in the past 12 months?

Enter the number
Don't know 96

H-6a [If USEKERO=Yes] KEROCASH Did your household buy kerosene in the past 12 months and bring it home, that is, cash and carry?

Yes 1
No 0
Don't know 6

[If Yes] NOCRCASH How many times in the past 12 months did your household buy kerosene and bring it home?

Enter the number
Don't know 96
Did not live here the full 12 months 95

[If Yes] NKR GALNC Please look at Exhibit H-6. There are five common sizes

of portable kerosene containers: 1 gallon, 3 gallon, 5 gallon, 10 gallon, and 55 gallon. On average how much kerosene did your household buy and bring home each time?

1 gallon 01
3 gallons 02
5 gallons 03
10 gallons 04
55 gallons 05
Other 06
Not sure 07

[If Yes] PRICEKER On average, about how much per gallon did your household pay for kerosene?

Enter the amount price
Don't know 96

[If Yes] TOTPAYKER About how much did you pay for kerosene each time your household bought it (total amount)?

Enter the total amount
Don't know 96

H-7 [If USEWOOD=Yes] TYPEWOOD You mentioned that you use wood as a fuel in your household. What kinds of wood do you burn? Do your burn ...

	<u>Yes</u>	<u>No</u>
Wood logs?	1	0
Wood scraps such as mill waste or bark?	1	0
Wood pellets?	1	0

[If Wood logs=Yes or Wood scraps=Yes] WOODAMT Please look at Exhibit H-7. In the past 12 months about how much wood has you household burned?

Less than half a cord 1
More than half but less than a whole cord 2
At least one full cord 3
More than one full cord 4
Don't know 6

[If 1+ cord] CORDPLUS About how many cords would estimate you used?

1 1
1 ½ 2
2 3
2 ½ 4
3 or more 5

[If 3+ cords] Enter the number

H-8 KNOWLEDGE I have just spent the past few minutes asking you a lot of questions about the energy you use in your home and the equipment that uses that energy. Some people are more sure than others about their knowledge of these things. In the course of answering these questions, how sure would you say you are with your answers. Would you say . . .

- Very sure, 1
- Somewhat sure, or 2
- Not too sure? 3
- Don't know how sure 6

Section I: FUEL BILLS

I-1 SIGNFORM You have just told us how your household uses energy. We would like to find out how much (name the fuels that the household uses) you actually used in the past year. We realize that this would be very difficult for you to tell us right now. But we can get that information directly from your fuel suppliers. So we can contact your fuel suppliers, would you please sign this form?

Authorization Form Signed 1
Authorization Form Not Signed 0 ----> SKIP TO J-1

For verification purposes, may I have your name, mailing address, and telephone number. My supervisor may want to call you to see if I really talked to you.

What is your name? _____

What is your mailing address?

Street _____

City _____

State _____ ZIP _____

What is your telephone number? _____

I-2 [If household uses and pays for electricity] What is the name and account number for your household's electricity supplier?

NAME _____

ACCOUNT NUMBER _____

BILNAMEL Does your electricity bill come addressed to you or is it in another name?

Same name 1
Another name 2

[If another name] What is the billing name?

BILLING NAME _____

I-3 [If household uses and pays for natural gas] **What is the name and account number for your household's natural gas supplier?**

NAME _____

ACCOUNT NUMBER _____

BILNAMNG **Does your natural gas bill come addressed to you or is it in another name?**

Same name 1

Another name 2

[If another name] **What is the billing name?**

BILLING NAME _____

I-4 [If household uses and pays for bottled gas] **What is the name and account number for your household's bottled gas (LPG) supplier?**

NAME _____

ACCOUNT NUMBER _____

BILNAMLP **Does your bottled gas (LPG) bill come addressed to you or is it in another name?**

Same name 1

Another name 2

[If another name] **What is the billing name?**

BILLING NAME _____

I-5 [If household uses and pays for fuel oil] **What is the name and account number for your household's fuel oil supplier?**

NAME _____

ACCOUNT NUMBER _____

BILNAMFO **Does your fuel oil bill come addressed to you or is it in another name?**

Same name 1

Another name 2

[If another name] **What is the billing name?**

BILLING NAME _____

I-6 [If household uses and pays for kerosene] **What is the name and account number for your household's kerosene supplier?**

NAME _____

ACCOUNT NUMBER _____

BILNAMKR **Does your kerosene bill come addressed to you or is it in another name?**

Same name 1

Another name 2

[If another name] **What is the billing name?**

BILLING NAME _____

I-7 [If NLPDELCD>1 or NFODELNC>1 or NDIFKRCO>1] OTHSUPPS **Are there any others who supplied fuel oil, bottled gas, or kerosene that we haven't covered?**

Yes 1

No 0 ----> SKIP to I-8

ADDITIONAL SUPPLIERS

FUEL: [] FUEL OIL [] BOTTLED GAS [] KEROSENE

SUPPLIER NAME _____

ACCOUNT NUMBER _____

FUEL: [] FUEL OIL [] BOTTLED GAS [] KEROSENE

SUPPLIER NAME _____

ACCOUNT NUMBER _____

FUEL: [] FUEL OIL [] BOTTLED GAS [] KEROSENE

SUPPLIER NAME _____

ACCOUNT NUMBER _____

FUEL: [] FUEL OIL [] BOTTLED GAS [] KEROSENE

SUPPLIER NAME _____

ACCOUNT NUMBER _____

I-8 KFUELOT Do any of your household fuel bills include charges for fuel used for some purpose other than for the personal use of the members of your household?

- Yes 1
- No 0
- Don't know 6

[If Yes] PURPOSE Please look at the Pink Card. For which of the following purposes are costs of fuel included in your household fuel bills?

- Farm buildings or machinery 1
- The house or apartment of another household 2
- A business or office 3
- Some use other than your own personal use? (Specify _____) 4

[If Yes] BILLPUR Which fuel bills include costs of fuel used for purposes other than your own living quarters? Is it ...

- Natural gas (from underground pipes), ... 1
- Bottled gas (LPG or Propane), 2
- Fuel oil, 3
- Kerosene, or 4
- Electricity? 5

[If Natural gas] BILLUGP Please look at the Pink Card. What portion of the natural gas bill is for nonhousehold uses?

- Very little (1-4%) 0
- Some (5-33%) 1
- About half (34-66%) 2
- About three-quarters (67-95%) 3
- Most of it (96-99%) 4

[If Bottled gas] BILLLGP Please look at the Pink Card. What portion of the bottled gas bill is for nonhousehold uses?

- Very little (1-4%) 0
- Some (5-33%) 1
- About half (34-66%) 2
- About three-quarters (67-95%) 3
- Most of it (96-99%) 4

[If Fuel oil] BILLPOLP Please look at the Pink Card. What portion of the fuel oil bill is for nonhousehold uses?

- Very little (1-4%) 0
- Some (5-33%) 1
- About half (34-66%) 2
- About three-quarters (67-95%) 3
- Most of it (96-99%) 4

[If Kerosene] BILLKERP Please look at the Pink Card. What portion of the kerosene bill is for nonhousehold uses?

- Very little (1-4%) 0
- Some (5-33%) 1
- About half (34-66%) 2
- About three-quarters (67-95%) 3
- Most of it (96-99%) 4

[If Electricity] BILLELP Please look at the Pink Card. What portion of the electric bill is for nonhousehold uses?

- Very little (1-4%) 0
- Some (5-33%) 1
- About half (34-66%) 2
- About three-quarters (67-95%) 3
- Most of it (96-99%) 4

I-9 [If home is rented, a condominium, or a cooperative] LEASER We may need some additional information about the fuels used in this building. May I have the name of the person or company to whom you pay rent or condominium/coop fees who is responsible for actually paying the (enter the names of the fuel bills paid) bills for this dwelling?

Name _____

Street _____

City _____

State _____ ZIP _____

Telephone: Area Code: (____) _____

[If Apartment/Mobile Home Complex] COMPLEXN Does the complex or development where you live have a formal name?

- Yes 1
- No 0

[If Yes] CPLXNAME What is the Name?

Name: _____

Section J: HOUSEHOLD CHARACTERISTICS

J-1 Now I have a few questions about your household. These questions will help us to make sure that the sample of households we've surveyed is really representative of all American households.

NHSLDMEM Including yourself, how many people normally live in this household? Do not include anyone who is just visiting or children who may be away at college or in the military.

Enter the number

[If > 1] *YEARS3* Of this total, how many are adults over the age of 65?

Enter the number

[If > 0] *YEARS4* Of the adults over the age of 65, how many are over the age of 75?

Enter the number

[If >1] *YEARS1* Of the remaining members of this household, how many are infants under the age of 1?

Enter the number

[If >1] *YEARS2* Of the remaining members of this household, how many are children between the ages of 1 and 12?

Enter the number

J-2 *HBUSINESS* Do you operate a home-based business or service?

Yes 1
No 0

J-3 *OTHWORK* Is there any other kind of activity occurring in your home that uses a lot more energy than would normally be used in a home?

Yes 1
No 0

[If Yes] *OTHACT* Could you please tell me what that activity is?

J-4 *ATHOME* On a typical week day is there someone at home all day?

Yes 1
No 0

J-5 *DRIVECAR* Do you or any other members of your household have the regular use of any cars, trucks or vans?

Yes 1
No 0

[If Yes] *VEHICLES* How many vehicles do you have?

Enter the number

J-6 *DRIVEMON* How many people in this household drive a car on a fairly regular basis? That is, drive a car at least once a month.

Enter the number

J-7 *HHINTRO* The next few questions are about the householder. That is, one of the people who own or rent the house/apartment. Are you a householder?

Yes 1
No 0

J-8 *HHSEX* Are you/Is the householder a male or a female?

Male 2
Female 1
Don't know 6
Refused 8

J-9 *HHAGE* How old are you/Is the householder?

Enter the age
Don't know 6
Refused 8

J-10 *EMPLOYHH* How would you describe your/the householder's employment status? Would you say ...

Employed full-time, 1
Employed part-time, or 2
Not employed? 0
Don't know 6
Refused 8

J-11 *MARRIED* Are you/Is the householder living with a spouse or partner?

Yes 1
No 0
Don't know 6
Refused 8

J-12 SDESCENT **Are you/Is the householder of Spanish or Hispanic origin or descent?**

- Yes 1
- No 0
- Don't know 6
- Refused 8

J-13 *ORIGIN* **Please look at Exhibit J-13. Which best describes your/the householder's race?**

- White 1
- Black or African-American 2
- American Indian, Alaskan Native 3
- Asian, Pacific Islander 4
- Other (if volunteered) 5
- Hispanic (if volunteered) 7
- Don't know 6
- Refused 8

J-14 *MONEYPY* **Please look at Exhibit J-14. Please tell me which category best describes the total combined income in the past 12 months of all members of your household living here from all sources -- wages, interest, alimony, Social Security, and so forth -- before taxes and deductions.**

- | | |
|-----------------------------|----------------------------|
| Less than \$3,000 01 | \$22,500 to \$24,999 15 |
| \$3,000 to \$3,999 02 | \$25,000 to \$27,499 16 |
| \$4,000 to \$4,999 03 | \$27,500 to \$29,999 17 |
| \$5,000 to \$5,999 04 | \$30,000 to \$32,499 18 |
| \$6,000 to \$7,499 05 | \$32,500 to \$34,999 19 |
| \$7,500 to \$8,999 06 | \$35,000 to \$39,999 20 |
| \$9,000 to \$9,999 07 | \$40,000 to \$44,999 21 |
| \$10,000 to \$10,999 08 | \$44,000 to \$49,999 22 |
| \$11,000 to \$12,499 09 | \$50,000 to \$74,999 23 |
| \$12,500 to \$13,999 10 | \$75,000 to \$99,999 24 |
| \$14,000 to \$14,999 11 | More than \$100,999 ... 25 |
| \$15,000 to \$17,499 12 | Don't know 96 |
| \$17,500 to \$19,999 13 | Refused 97 |
| \$20,000 to \$22,499 14 | |

[If HHIncome=96 or 97] **INC45PLU Was your household income in the past 12 months under \$45,000?**

- Yes, income under \$45,000 1
- No 0
- Don't know 6
- Refused 7

SKIP INSTRUCTIONS

- If MONEYPY=\$20,000 to \$22,499 and NHSLDMEM< 2 ----> SKIP TO L-1
- If MONEYPY=\$22,500 to \$24,999 and NHSLDMEM< 3 ----> SKIP TO L-1
- If MONEYPY=\$25,000 to \$27,499 and NHSLDMEM< 3 ----> SKIP TO L-1
- If MONEYPY=\$27,500 to \$29,999 and NHSLDMEM< 4 ----> SKIP TO L-1
- If MONEYPY=\$30,000 to \$32,499 and NHSLDMEM< 4 ----> SKIP TO L-1
- If MONEYPY=\$32,500 to \$34,999 and NHSLDMEM< 5 ----> SKIP TO L-1
- If MONEYPY=\$35,000 to \$39,999 and NHSLDMEM< 5 ----> SKIP TO L-1
- If MONEYPY=\$40,000 to \$44,999 and NHSLDMEM< 6 ----> SKIP TO L-1

- If MONEYPY=\$45,000 to 49,999 ----> SKIP TO L-1
- If MONEYPY=\$50,000 to 74,999 ----> SKIP TO L-1
- If MONEYPY=\$75,000 to 99,999 ----> SKIP TO L-1
- If MONEYPY=More than \$100,000 ----> SKIP TO L-1
- If INC45PLU=No ----> SKIP TO L-1

Section K: ENERGY ASSISTANCE

K-1 In the past 12 months, did you or any member of your household living here receive any income or benefits from any of the following sources?

	<u>Yes</u>	<u>No</u>	<u>Don't Know</u>
WORKPAY Employment income from wages and salaries or self-employment income from a business or farm	1	0	6
RETIREPY Retirement income from Social Security, Railroad Retirement, or pensions and other retirement funds	1	0	6
CASHBEN Cash benefits from Aid to Families with Dependent Children (AFDC), Supplemental Security Income (SSI), or general assistance for public assistance	1	0	6
NCASHBEN Non-cash benefits from Food Stamps or public/subsidized housing	1	0	6

K-2 Please look at Exhibit K-2. The government has a home energy assistance program that helps people pay for their heating, cooling and other home energy costs. Some names used for the program are HEAP, LIHEAP, and HEAT. It is run by State, county, or local government. The assistance can be paid directly to the household or to the electric or gas company or fuel supplier. If heat is included in a household's rent, the payment can be used to help reduce the rent. During the past 12 months did anyone in your household receive government assistance for any of the following:

	<u>Yes</u>	<u>No</u>	<u>Don't Know</u>
HEATAID Help in paying home heating costs	1	0	6
COOLAID Help in paying home cooling or air-conditioning costs	1	0	6
LIFELINE Help with other home energy costs	1	0	6
NOLIHEAP Did not receive any assistance	1	0	6

K-3 [If HEATAID=Yes] Please look at Exhibit K-3. You mentioned that your household got help in paying for home heating costs. How were these payments received?

	<u>Yes</u>	<u>No</u>	<u>Don't Know</u>
CASHAID Check sent to your household	1	0	6
FUELPAID Check sent directly to your utility company or fuel dealer	1	0	6
OTHERPMT Some other payment, including a coupon or voucher, or two-party check, sent to your household	1	0	6

GOVTAMT About how much money for your heating assistance did you or your utility or fuel supplier receive in the past 12 months?

Enter the amount received
 Don't know (if volunteered) 6

K-4 NOPY Please think about the home or homes you lived in the past 12 months. Was there ever a time during that period when your electricity was discontinued because you were unable to pay your electric bill?

Yes ... 1
 No 0

K-5 Was there ever a time during the past 12 months when you wanted to use your main source of heat, but could not, for one or more of the following reasons:

	<u>Yes</u>	<u>No</u>
NOPYFIX Your heating system was <i>broken</i> and you were <i>unable</i> to pay for its repair or replacement?	1	0
NOPYFL You <i>ran out</i> of fuel oil, kerosene, LPG, coal, or wood because you were unable to pay for a delivery? 1	1	0
NOPYEL The utility company discontinued your gas or electric service because you were <i>unable</i> to pay your bill? ..	1	0

K-6 [If NOPYFIX or NOPYFL or NOPYEL = Yes] NNOHEAT Thinking about these times that you went without heat -- how many separate times were there?

Enter the number of times ...

HRSNOHT Altogether, how many hours or days were you without heat in the past 12 months?

Enter the number of hours/days

In the past 12 months were you without heat during:

	<u>Yes</u>	<u>No</u>	<u>Not Sure</u>
NOHWIN October through March	1	0	6
NOHSUM April through September	1	0	6

OTHERWAY During these times, were you able to heat your home some other way?

Yes ... 1
 No 0

Section L: EPA ENERGY STAR PROGRAM

L-1 SEENSTAR Please look at Exhibit EPA-1. The U.S. Environmental Protection Agency and the Department of Energy award an ENERGY STAR label to energy-efficient equipment. Have you ever heard of or seen this label on any products before?

Yes 1
No 0

[If Yes] WHATPROD What were those products? [Mark all that apply.]

- Heating and Air Conditioning
 - Central air conditioner 11
 - Furnace or boiler 12
 - Heat pump 13
 - Thermostat 14
- Office Equipment
 - Computer or monitor 21
 - Computer printer 22
 - Photocopying machine 23
 - Fax machine 24
- Home Appliances
 - Dishwasher 31
 - Refrigerator 32
 - Room air conditioner 33
- New home 40
- Some other product 50

[If Yes] STARINFL Has the presence or absence of an ENERGY STAR label ever influenced your decision to purchase a particular product?

Yes 1
No 0

L-2 SEENLBL Please look at Exhibit EPA-2. Many new home appliances, such as refrigerators and clothes dryers, come with a big yellow information label that tells about the energy efficiency and energy costs of running the appliance. Do you recall ever seeing a label like this one on a product you bought or were considering buying?

Yes 1
No 0

[If Yes] READLBL Having seen this label, have you ever actually read one?

Yes 1
No 0

[If Yes] FTCCHNG Has the information in this label, ever influenced your decision to purchase a particular product?

Yes 1
No 0

**THAT IS THE LAST QUESTION I HAVE.
THANK YOU VERY MUCH FOR YOUR TIME AND COOPERATION.
HAVE A PLEASANT DAY/EVENING.**

U.S. DEPARTMENT OF ENERGY
Authorization Form
RESIDENTIAL ENERGY CONSUMPTION SURVEY

PSU#	SSU#	HU#	AddFlag	✓ Digit

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 the following data for the period from October 1, 1996 through December 31, 1999:

- 1) the total amount of fuels used by my household
- 2) the total price charged for fuels used 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 THE HOUSEHOLD
(IF MORE THAN ONE SUPPLIER OF A PARTICULAR FUEL, USE THE OTHER SIDE OF THIS SHEET.)**

ELECTRICITY

PRINT FULL NAME OF ELECTRIC COMPANY
ACCOUNT NUMBER (IF KNOWN)

NATURAL GAS

PRINT FULL NAME OF NATURAL GAS COMPANY
ACCOUNT NUMBER (IF KNOWN)

**BOTTLED GAS
(LPG or Propane)**

PRINT FULL NAME OF BOTTLED GAS COMPANY
LOCATION OF COMPANY (IF KNOWN) - STREET, CITY, STATE, ZIP
ACCOUNT NUMBER (IF KNOWN)
TELEPHONE (IF KNOWN)
AREA CODE: _____ NUMBER: _____

**FUEL OIL
or KEROSENE**

PRINT FULL NAME OF FUEL OIL OR KEROSENE COMPANY
LOCATION OF COMPANY (IF KNOWN) - STREET, CITY, STATE, ZIP
ACCOUNT NUMBER (IF KNOWN)
TELEPHONE (IF KNOWN)
AREA CODE: _____ NUMBER: _____

U.S. DEPARTMENT OF ENERGY
Authorization Form (continued)
RESIDENTIAL ENERGY CONSUMPTION SURVEY

SECOND BOTTLED GAS COMPANY

PRINT FULL NAME OF BOTTLED GAS COMPANY
LOCATION OF COMPANY (IF KNOWN) - STREET, CITY, STATE, ZIP
ACCOUNT NUMBER (IF KNOWN)
TELEPHONE (IF KNOWN)
AREA CODE: _____ NUMBER: _____

**BOTTLED GAS
(LPG or Propane)**

THIRD BOTTLED GAS COMPANY

PRINT FULL NAME OF BOTTLED GAS COMPANY
LOCATION OF COMPANY (IF KNOWN) - STREET, CITY, STATE, ZIP
ACCOUNT NUMBER (IF KNOWN)
TELEPHONE (IF KNOWN)
AREA CODE: _____ NUMBER: _____

**BOTTLED GAS
(LPG or Propane)**

SECOND FUEL OIL or KEROSENE COMPANY

PRINT FULL NAME OF FUEL OIL or KEROSENE COMPANY
LOCATION OF COMPANY (IF KNOWN) - STREET, CITY, STATE, ZIP
ACCOUNT NUMBER (IF KNOWN)
TELEPHONE (IF KNOWN)
AREA CODE: _____ NUMBER: _____

**FUEL OIL
or KEROSENE**

THIRD FUEL OIL or KEROSENE COMPANY

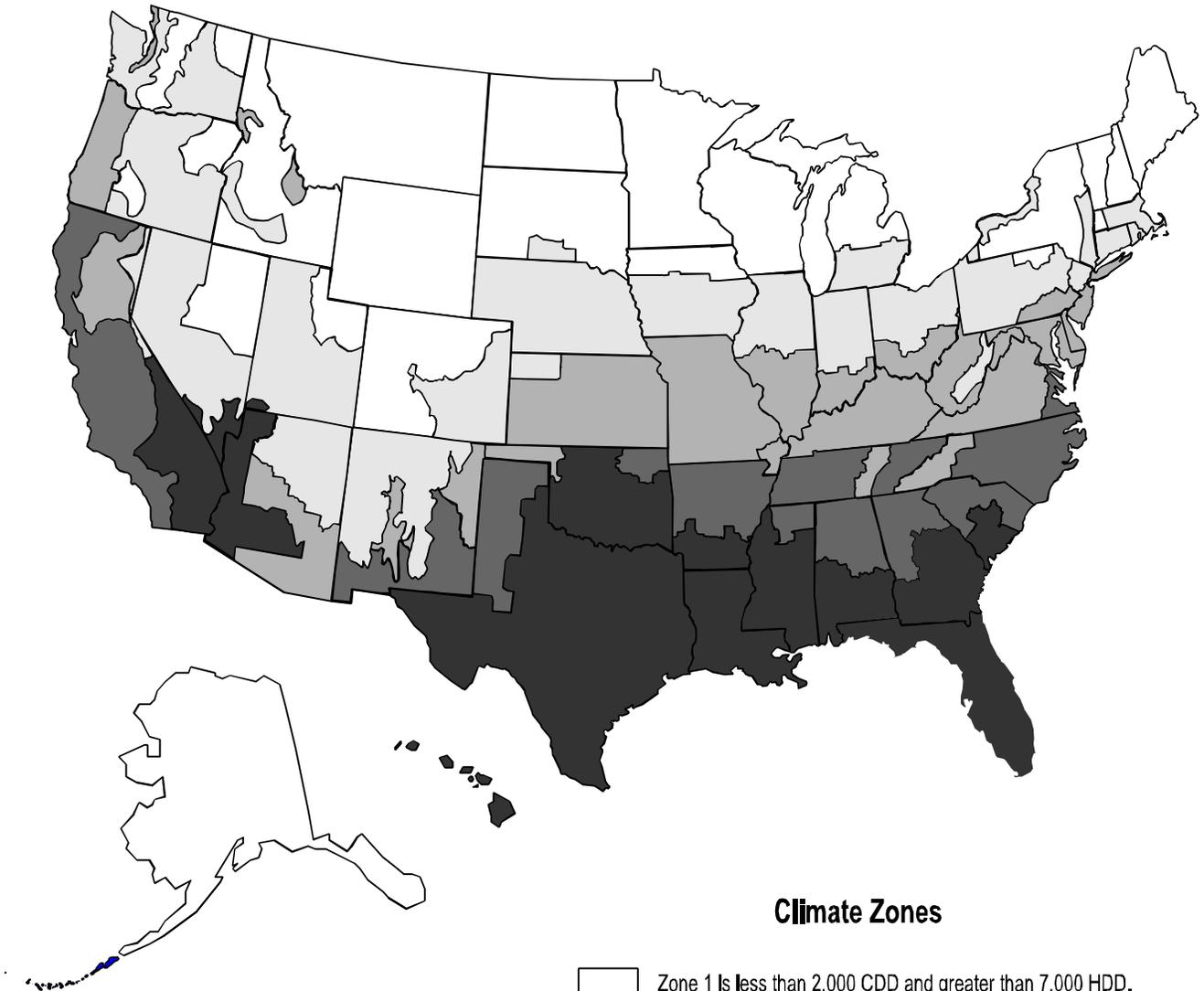
PRINT FULL NAME OF FUEL OIL or KEROSENE COMPANY
LOCATION OF COMPANY (IF KNOWN) - STREET, CITY, STATE, ZIP
ACCOUNT NUMBER (IF KNOWN)
TELEPHONE (IF KNOWN)
AREA CODE: _____ NUMBER: _____

**FUEL OIL
or KEROSENE**

Appendix E

U.S. Climate Zones and Census Regions and Divisions Maps

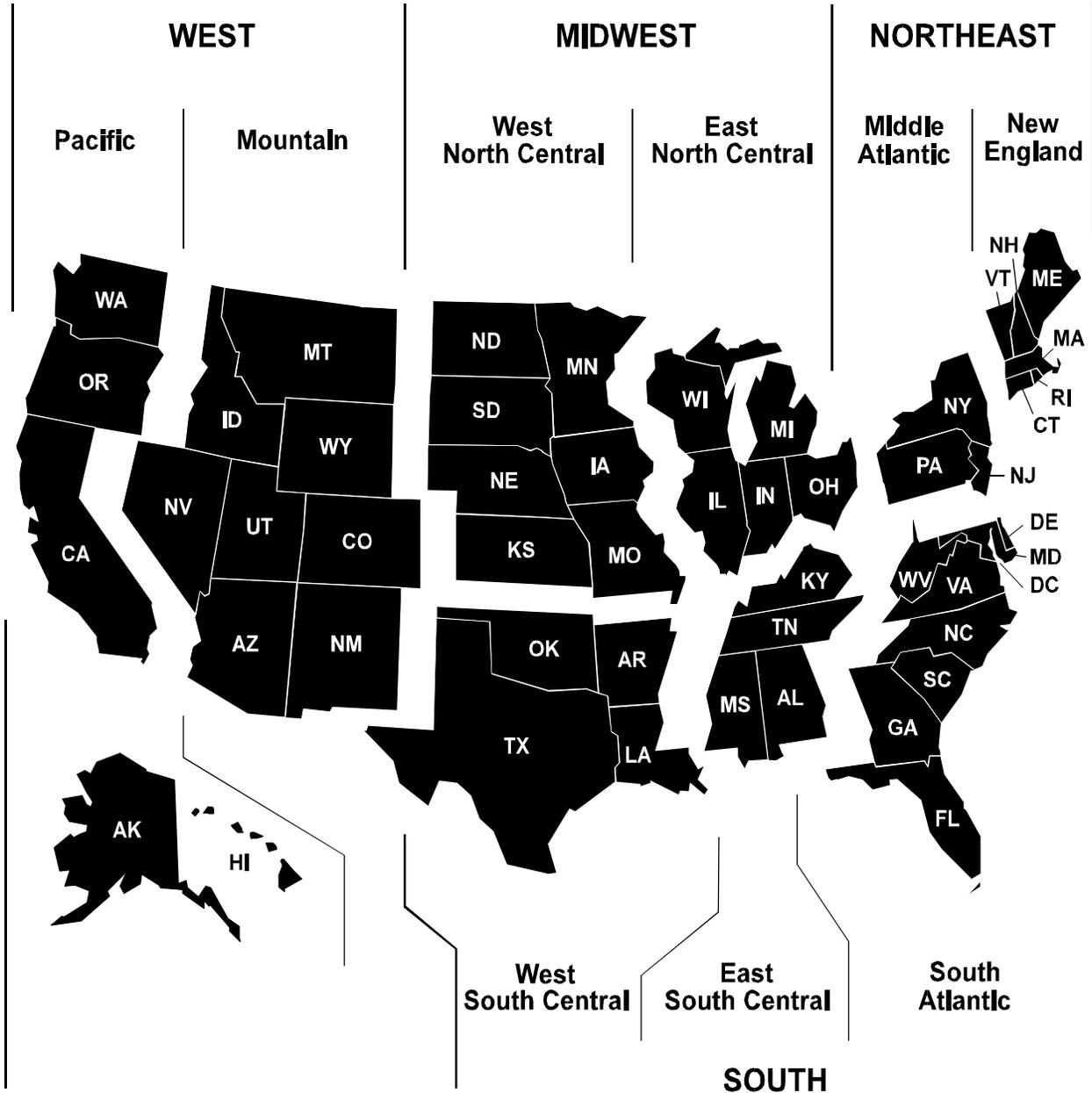
U.S. Climate Zones



Climate 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 2,000 CDD or more and less than 4,000 HDD.

U.S. Census Regions and Divisions



Source: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1996* (Washington, DC, October 1996), Figure 1.

Appendix F

Related EIA Publications on Energy Consumption

For information on obtaining hard copies of our current publications, see the inside cover of this report. Please note that the prices quoted here are subject to change. For information on later publications, contact the National Energy Information Center on (202) 586-8800. You can also go to our Web site, <http://www.eia.doe.gov/emeu/consumption/> to access reports on the commercial, manufacturing, residential, and residential transportation sectors.

Also, the most recent publication for each sector is available on the Energy Information Administration's (EIA) Energy InfoDisc (CD-ROM). This media provides instant access to comprehensive energy data. Order forms for the CD-ROM are available on EIA's Home Page at <http://www.eia.doe.gov>.

In addition to the reports listed below, public-use data for the two latest survey cycles for each sector can also be obtained from our Web site. To obtain public-use data for earlier years, contact the survey manager for that sector at <http://www.eia.doe.gov/emeu.consumption/contacts.html>.

Residential Sector

Housing Characteristics

Current Products:

- ! *Housing Characteristics 1997*; September 1998, DOE/EIA-E0314(97) **Electronic Only**. This report can be accessed at <http://www.eia.doe.gov/emeu/recs/recs97/contents.html>
- ! Presently, the tables only are available and can be accessed **electronically** at <http://www.eia.doe.gov/emeu/recs/97tblhp.html>.

Previous Products:

- ! *Housing Characteristics 1993*; June 1995, DOE/EIA-0314(93).
- ! *Housing Characteristics 1990*; May 1992, DOE/EIA-0314(90).
- ! *Housing Characteristics 1987*; May 1989, DOE/EIA-0314(87).
- ! *Residential Energy Consumption Survey: Housing Characteristics 1984*; October 1986, DOE/EIA-0314(84).
- ! *Residential Energy Consumption Survey: Housing Characteristics 1982*; August 1984, DOE/EIA-0314(82).
- ! *Residential Energy Consumption Survey Housing Characteristics 1981*; August 1983, DOE/EIA-0314(81).
- ! *Residential Energy Consumption Survey: Housing Characteristics 1980*; June 1982, DOE/EIA-0314.
- ! *Residential Energy Consumption Survey: Characteristics of the Housing Stock and Households 1978*; February 1980, DOE/EIA-0207/2.
- ! *Residential Energy Consumption Survey: Conservation*; February 1980, DOE/EIA-0207/3.
- ! *Preliminary Conservation Tables from the National Interim Energy Consumption Survey*; August 1979, DOE/EIA-0193/P.
- ! *Characteristics of the Housing Stock and Households: Preliminary Findings from the National Interim Energy Consumption Survey*; October 1979, DOE/EIA-0199/P.

Consumption and Expenditures

Current Product:

- ! The 1997 Household Energy Consumption and Expenditures tables are available **electronically** and can be accessed at <http://www.eia.doe.gov/emeu/recs/97tblce.html>.

Previous Products:

- ! *Household Energy Consumption and Expenditures 1993*; October 1995, DOE/EIA-0321(93).
- ! "Household Energy Consumption and Expenditures 1990," *Monthly Energy Review*, August 1993, DOE/EIA-0035(93/08).
- ! *Household Energy Consumption and Expenditures 1990*; February 1993, DOE/EIA-0321/1(90).
- ! *Household Energy Consumption and Expenditures 1990*; DOE/EIA-0321/2(90).
- ! *Household Energy Consumption and Expenditures 1987, Part 1: National Data*; October 1989, DOE/EIA-0321/1(87). Note: Energy end-use data are included in this report.
- ! *Household Energy Consumption and Expenditures 1987, Part 2: Regional Data*; DOE/EIA-0321/2(87).
- ! *Residential Energy Consumption Survey: Consumption and Expenditures, April 1984 Through March 1985, Part 1: National Data*; March 1987, DOE/EIA-0321/1(84).
- ! *Residential Energy Consumption Survey: Consumption and Expenditures, April 1984 Through March 1985, Part 2: Regional Data*; May 1987, DOE/EIA-0321/2 (84). Note: Energy end-use data are included in this report.
- ! *Residential Energy Consumption Survey: Consumption and Expenditures, April 1982 Through March 1983, Part 1: National Data*; November 1984, DOE/EIA-0321/1(82).
- ! *Residential Energy Consumption Survey: Consumption and Expenditures, April 1982 Through March 1983, Part 2: Regional Data*; December 1984, DOE/EIA-0321/2(82).
- ! *Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 Through March 1982, Part 1: National Data*; September 1983, DOE/EIA-0321/1(81).
- ! *Residential Energy Consumption Survey: Consumption and Expenditures, April 1981 Through March 1982, Part 2: Regional Data*; October 1983, DOE/EIA-0321/2(81).
- ! *Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, Part 1: National Data*; September 1982, DOE/EIA-0321/1(80).
- ! *Residential Energy Consumption Survey: Consumption and Expenditures, April 1980 Through March 1981, Part 2: Regional Data*; June 1983, DOE/EIA-0321/2(80).
- ! *Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures, Part I: National Data (Including Conservation)*; April 1981, DOE/EIA-0262/1.
- ! *Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures, Part II: Regional Data*; May 1981, DOE/EIA-0262/2.
- ! *Residential Energy Consumption Survey: Consumption and Expenditures, April 1978 Through March 1979*; July 1980, DOE/EIA-0207/5.
- ! *Single-Family Households: Fuel Oil Inventories and Expenditures: National Interim Energy Consumption Survey*; December 1979, DOE/EIA-0207/1.

Other Publications on the Residential Sector

One-Time Products:

- ! Energy Consumption Series—*Residential Energy Consumption Survey Quality Profile*; March 1996, DOE/EIA-0555(96)/1.
- ! Energy Consumption Series—*Sample Design for the Residential Energy Consumption Survey*; August 1994, DOE/EIA-0555(94)/1.
- ! Energy Consumption Series—*User-Needs Study of the 1993 Residential Energy Consumption Survey*; September 1993, DOE/EIA-0555(93)/2.

- ! "End-Use Consumption of Residential Energy," *Monthly Energy Review* (Article), pp. vii-xiv; July 1987, DOE/EIA-0035(87/07).
- ! *Residential Energy Consumption Survey: Trends in Consumption and Expenditures 1978-1984*; June 1987, DOE/EIA-0482.
- ! *Residential Conservation Measures*; July 1986, SR/EEUD/86/01.
- ! *An Economic Evaluation of Energy Conservation and Renewable Energy Tax Credits*; October 1985, Service Report.
- ! *Residential Energy Consumption and Expenditures by End Use for 1978, 1980, and 1981*; December 1984, DOE/EIA-0458.
- ! *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.
- ! *National Interim Energy Consumption Survey: Exploring the Variability In Energy Consumption*; July 1981, DOE/EIA-0272.
- ! *National Interim Energy Consumption Survey: Exploring the Variability in Energy Consumption--A Supplement*; October 1981, DOE/EIA-0272/S.

Commercial Sector

Characteristics of Buildings

Current Products:

- ! *A Look at Commercial Buildings in 1995: Characteristics, Energy Consumption, and Energy Expenditures*; October 1998, DOE/EIA-0625(95). This report combines building characteristics and energy consumption and expenditures. It takes the place of the two former hard copy reports-- *Commercial Buildings Characteristics and Commercial Buildings Energy Consumption and Expenditures* reports.
- ! *Commercial Buildings Characteristics 1995*; August 1997, DOE/EIA-E-0109, **Electronic Only**. This report can be accessed at www.eia.doe.gov/emeu/cbecs/cb951a.html.

Previous Products:

- ! *Commercial Buildings Characteristics 1992*; April 1994, DOE/EIA-0246(92).
- ! "Commercial Buildings Characteristics 1992," *Monthly Energy Review*; January 1994, DOE/EIA-0035(94/01).
- ! *Commercial Buildings Characteristics 1989*; June 1991, DOE/EIA-0246(89).
- ! *Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings, 1986*; September 1988, DOE/EIA-0246(86).
- ! *Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings, 1983*; July 1985, DOE/EIA-0246(83).
- ! *Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings, 1983*; A Supplemental Reference, DOE/EIA-M008.
- ! *Nonresidential Buildings Energy Consumption Survey: Characteristics of Commercial Buildings, 1983*; July 1985, DOE/EIA-0246(83).
- ! *Nonresidential Buildings Energy Consumption Survey: Fuel Characteristics and Conservation Practices*; June 1981, DOE/EIA-0278.
- ! *Nonresidential Buildings Energy Consumption Survey: Building Characteristics*; March 1981, DOE/EIA-0246.

Consumption and Expenditures

Current Product:

- ! *Commercial Buildings Consumption and Expenditures 1995*; February 1998, DOE/EIA-E0318(95) **Electronic Only**. This report can be accessed at www.eia.doe.gov/emeu/cbecs/toc_ce.html.

Previous Products:

- ! *Commercial Buildings Consumption and Expenditures 1992*; April 1995, DOE/EIA-0318(92).
- ! *Commercial Buildings Consumption and Expenditures 1989*; April 1992, DOE/EIA-0318(89).
- ! *Nonresidential Buildings Energy Consumption Survey: Commercial Buildings, Consumption and Expenditures 1986*; May 1989, DOE/EIA-0318(86).
- ! *Nonresidential Buildings Energy Consumption Survey: Commercial Buildings, Consumption and Expenditures 1983*; September 1986, DOE/EIA-0318(83).
- ! *Nonresidential Buildings Energy Consumption Survey: 1979 Consumption and Expenditures, Part 1: Natural Gas and Electricity*; March 1983, DOE/EIA-0318/1.
- ! *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.

Other Publications on the Commercial Sector

Current Product:

- ! *Energy End-Use Intensities in Commercial Buildings*; February 1998, DOE/EIA-E0555(95) **tables only in electronic form**. This product can be accessed at <http://www.eia.doe.gov/emeu/cbecs/cbec-eu3.html>.

Previous Products:

- ! *Energy End-Use Intensities in Commercial Buildings*; February 1995, DOE/EIA-E0555(92) tables only in **electronic form**. This product can be accessed at www.eia.doe.gov/emeu/cbecs/cbecs1d.html.
- ! *Service Report: Federal Buildings Supplemental Survey 1993*; November 1995, SR/EMEU/95-02.
- ! Energy Consumption Series—*Energy End-Use Intensities in Commercial Buildings*, September 1994, DOE/EIA-0555(94)/2.
- ! "Assessment of Energy Use in Multibuilding Facilities," Monthly Energy Review; December 1993, DOE/EIA-0035(93/12).
- ! Energy Consumption Series—*Assessment of Energy Use in Multibuilding Facilities*; August 1993, DOE/EIA-0555(93)/1.
- ! *Energy Consumption Series—User-Needs Study for the 1992 Commercial Buildings Energy Consumption Survey*; September 1992, DOE/EIA-0555(92)/4
- ! Energy Consumption Series—*Lighting in Commercial Buildings*; March 1992, DOE/EIA-0555(92)/1.

Industrial Sector

Current Products:

- ! *Changes in Energy Intensity in the Manufacturing Sector 1985-1994*; September 1998 -- **Electronic Only**.
- ! *Manufacturing Consumption of Energy 1994*, December 1997; DOE/EIA-0512(91).

Previous Products:

- ! *Changes In Energy Intensity in the Manufacturing Sector 1985-1991*; September 1995, DOE/EIA-0552(85-91).
- ! *Manufacturing Consumption of Energy 1991*; December 1994, DOE/EIA-0512(91).
- ! "Energy Preview: Manufacturing Energy Consumption Survey Preliminary Estimates, 1991," *Monthly Energy Review*; September 1993, DOE/EIA-0035(93/01).
- ! "Energy Efficiency in the Manufacturing Sector," *Monthly Energy Review* (Article), p.1; December 1992.
- ! *Manufacturing Energy Consumption Survey: Changes in Energy Intensity in the Manufacturing Sector 1980-1988*; December 1991, DOE/EIA-0552(80-88).
- ! *Manufacturing Energy Consumption Survey: Manufacturing Fuel-Switching Capability 1988*; September 1991, DOE/EIA-0515(88).
- ! *Manufacturing Energy Consumption Survey: Consumption of Energy, 1988*; May 1991, DOE/EIA-0512(88).
- ! *Manufacturing Energy Consumption Survey: Energy Efficiency in Manufacturing, 1985*; January 1990, DOE/EIA-0516(85).
- ! *Manufacturing Energy Consumption Survey: Fuel-Switching Capability, 1985*; December 1988, DOE/EIA-0515(85).
- ! *Manufacturing Energy Consumption Survey: Methodological Report, 1985*; November 1988, DOE/EIA-0514(85).
- ! *Manufacturing Energy Consumption Survey: Consumption of Energy, 1985*; November 1988, DOE/EIA-0512(85).
- ! "Manufacturing Sector Energy Consumption 1985 Provisional Estimates," *Monthly Energy Review* (Article), pp. vii-x; January 1987, DOE/EIA-0035 (87/01).
- ! *Report on the 1980 Manufacturing Industries' Energy Consumption Study and Survey of Large Combustors*; February 1983, DOE/EIA-0358.
- ! *Industrial Energy Consumption, Survey of Large Combustors: Report on Alternate Fuel-Burning - Capabilities of Large Boilers in 1979*; February 1982, DOE/EIA-0304.
- ! *Methodological Report of the 1980 Manufacturing Industries Survey of Large Combustors (EIA-463)*; March 1982, DOE/EIA-0306.

Other Publications on the Industry Sector

One-Time Products:

- ! Energy Consumption Series—*Derived Annual Estimates of Manufacturing Energy Consumption 1974-1988*; August 1992, DOE/EIA-0555(92)/3.
- ! Energy Consumption Series—*Development of the 1991 Manufacturing Energy Consumption Survey*; May 1992, DOE/EIA-0555(92)/2.

Residential Transportation Sector

Note: This survey has been discontinued.

Current Product:

- ! *Household Vehicles Energy Consumption 1994*; August 1997, DOE/EIA-0464(94).

Previous Products:

- ! *Household Vehicles Energy Consumption 1991*; December 1993, DOE/EIA-0464(91).
- ! "Energy Preview: Residential Transportation Energy Consumption Survey Preliminary Estimates, 1991," *Monthly Energy Review*; January 1993, DOE/EIA-0035(93/01).
- ! *Household Vehicles Energy Consumption 1988*; February 1990, DOE/EIA-0464(88).

- ! *Residential Transportation Energy Consumption Survey: Consumption Patterns of Household Vehicles 1985*; April 1987, DOE/EIA-0464(85).
- ! *Residential Transportation Energy Consumption Survey: Consumption Patterns of Household Vehicles, 1983*; January 1985, DOE/EIA-0464(83).
- ! *Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, Supplement: January 1981 to September 1981*; February 1983, DOE/EIA-0328.
- ! *Residential Energy Consumption Survey: Consumption Patterns of Household Vehicles, June 1979 to December 1980*; April 1982, DOE/EIA-0319.

Cross-Sector

Current Product:

- ! *Energy Consumption Measuring Energy Efficiency in the United States' Economy: A Beginning*; October 1995, DOE/EIA-0555(95)/2.

One-Time Products:

- ! *Energy Consumption Series-Buildings and Energy in the 1980's*; June 1995, DOE/EIA-0555(95)/1.
- ! *Energy Consumption by End-Use Sector: A Comparison of Measures by Consumption and Supply Surveys*; April 6, 1990, DOE/EIA-0533.
- ! *Natural Gas: Use and Expenditures*; April 1983, DOE/EIA-0382.

Public-Use Data

Note: **Current** microdata for the various sector surveys can be found on the **Consumption Home Page** at <http://www.eia.doe.gov/emeu/consumption/data.html>. **Later** public-use data, such as those below, are available through NTIS

Residential and Residential Transportation Sectors

- ! *Residential Transportation Energy Consumption Survey, 1988*; Order No. PB90-501461.
- ! *Residential Energy Consumption Survey: 1987 and Residential Transportation Energy Consumption Survey, 1988*; Order No. PB90-501461.
- ! *Residential Energy Consumption Survey: 1984 and Residential Transportation Energy Consumption Survey, 1985*; Order No. PB87-186540.
- ! *Residential Energy Consumption Survey: 1982 and Residential Transportation Energy Consumption Survey, 1983*; Order No. PB85-221760.
- ! *Residential Energy Consumption Survey: Consumption and Expenditures, 1980-1981; Monthly Billing Data*; Order No. PB84-166230.
- ! *Residential Energy Consumption Survey: Housing Characteristics, 1981; Consumption and Expenditures, 1981-1982; Monthly Billing Data*; Order No. PB84-120476.
- ! *Residential Energy Consumption Survey: Housing Characteristics, Annualized Consumption and Expenditures, 1980-1981*; Order No. PB83-199554.
- ! *Residential Energy Consumption Survey: Household Transportation Panel Monthly Gas Purchases and Vehicle and Household Characteristics, 6/79-9/81*; Order No. PB84-162452.
- ! *Residential Energy Consumption Survey: Household Screener Survey, 1979-1980*; Order No. PB82-114877.

- ! *Residential Energy Consumption Survey: Household Monthly Energy Consumption and Expenditures, 1978-1979; Order No. PB82-114901.*
- ! *National Interim Energy Consumption Survey (Residential), 1978; Order No. PB81-108714.*

Commercial Sector

- ! *Nonresidential Buildings Energy Consumption Survey: 1986 Data; Order No. PB90-500034.*
- ! *Nonresidential Buildings Energy Consumption Survey: 1979 and 1983 Data; Order No. PB88--245162.*

Note: The Energy Information Administration also publishes annually the *State Energy Data Report, Consumption Estimates*, DOE/EIA-0214; the *State Energy Price and Expenditures Report*, DOE/EIA-0376; and the *Monthly Energy Review*, DOE/EIA-0035. These reports contain annual and monthly consumption information derived from EIA supply surveys.

Appendix G

Metric Conversion Factors

Data in the Energy Information Administration publications are expressed in units, such as British thermal units, barrels, cubic feet, and short tons, that historically have been used in the United States. However, because U.S. activities involve foreign nations, most of which use metric units of measure, the United States is committed to making the transition to the metric system. The metric conversion factors presented in Table G1 can be used to calculate the metric-unit equivalents of values expressed in U.S. units. For example, 500 short tons are the equivalent of 453.6 metric tons (500 short tons x 0.9071847 metric tons/short tons=453.6 metric tons).

Table G1. Metric Conversion Factors

Type of Unit	U.S. Unit	Conversion Factor	Metric Unit
Mass	Short Tons	X 0.907 1847	= Metric Tons (t)
	Short Tons Uranium Oxide (U ₃ O ₈)	X 0.769	= Metric Tons Uranium (U)
	Short Tons Uranium Fluoride (UF ₆)	X 0.613	= Metric Tons Uranium (U)
	Long Tons	X 1.016	= Metric Tons(t)
	Pounds(lb)	X 0.453 592 37 ^a	= Kilograms(kg)
	Pounds Uranium Oxide(lb U ₃ O ₈)	X 0.384 645 ^b	= Kilograms (kg)
	Ounces, Avoirdupois(oz)	X 28. 349 52	= Grams(g)
Volume	Barrels of Oil(bbl)	X 0.158 987 3	= Cubic Meters (m ³)
	Cubic Yards(yd ³)	X 0.765 555	= Cubic Meters (m ³)
	Cubic Feet(ft ³)	X 0.028 316 85	= Cubic Meters (m ³)
	U.S. Gallons(gal)	X 3.785 412	= Liter (L)
	Ounces, Fluid(fl oz)	X 29.573 53	= Milliliters (ml)
	Cubic Inches(in ³)	X 16.387 06	= Milliliters (ml)
	Length	Miles (mi)	X 1,609 344 ^a
Yards (yd)		X 0.914 4 ^a	= Meters (m)
Feet (ft)		X 0.304 8 ^a	= Meters (m)
Inches (in)		X 2.54 ^a	= Centimeters (cm)
Area	Acres	X 0.404 69	= Hectares (ha)
	Square Miles (mi ²)	X 2,589 988	= Square Kilometers (km ²)
	Square Yards (yd ²)	X 0.836 127 4	= Square Meters (m ²)
	Square Feet (ft ²)	X 0.092 903 04 ^a	= Square Meters (m ²)
	Square Inches (in ²)	X 6.4561 6 ^a	= Square Centimeters (cm ²)
Temperature	Degrees Fahrenheit (°F)	X 5/9 (after subtracting 32) ^a	= Degrees Celsius (°C)
Energy	British thermal units (Btu)	X 1,055.056	= Joules (J)
	Calories (cal)	X 4.186 8	= Joules (J)
	Kilowatthours (kWh)	X 3.6	= Megajoules (MJ)

^aExact Conversion.

^bCalculated by the Energy Information Administration.

^cTo convert degrees Celsius (°C) to degrees Fahrenheit (°F), multiply by 9/5, then add 32.

Sources: General Services Administration, Federal Standard 376B, *Preferred Metric Units for General Use by the Federal Government* (Washington, DC, January 27, 1993), pp. 9-11, 13, and 16. National Institute of Standards and Technology, *Special Publications* 330, 811, and 814. American National Standards Institute/Institute of Electrical and Electronic Engineers, ANS/IEEE Std.268-1982, pp 28 and 29. Energy Information Administration/*Monthly Energy Review August 1993*, Appendix B, pp 161.

Glossary

Account Classification: The method in which suppliers of electricity, natural gas, or fuel oil classify and bill their customers. Commonly used account classifications are "Commercial," "Industrial," and "Residential." Suppliers' definitions of these terms vary from supplier to supplier and from the definitions used in RECS. In addition, the same customer may be classified differently by each of its energy suppliers.

Adequacy of Insulation: The respondent's perception of the adequacy of the housing unit's insulation.

Aggregate Ratio: The ratio of two population aggregates (totals). For example, the aggregate floorspace per household is the ratio of the total floorspace in each category to the total number of households in the category.

Air-Conditioning: One of the five major end-use categories in this report. Cooling and dehumidifying the air in a building by a refrigeration unit driven by electricity or natural gas. This definition excludes fans, blowers, or evaporative cooling systems (swamp coolers) that are not connected to a refrigeration unit. (See **End Use and Refrigeration Unit**.)

Air-Conditioning Equipment: Either a central system or window or wall units that cool the air in a housing unit by a refrigeration unit driven by electricity or natural gas. This definition excludes fans, blowers, or evaporative cooling systems (swamp coolers) that are not connected to a refrigeration unit. Air-conditioning units that were not in working condition or were not used are included if they are in place in the housing unit. If the household did not use its air-conditioning equipment during the summer of 1997, consumption and expenditures data were not imputed for air-conditioning. (See **Room- Air Conditioner**.)

Appliance Combination: Refers to the stub on the appliance end-use consumption table. Households are characterized as using or not using a particular combination of appliances.

Appliance Efficiency Standards: The National Appliance Energy Conservation Act of 1987 established minimum efficiency standards for major home appliances, including furnaces, central and room air-conditioners, refrigerators, freezers, water heaters, dishwashers, and heat pumps. Most of the standards were effective in 1990. The standards for clothes washers, dishwashers, and ranges were effective in 1988 because they required only minor changes in product design, such as eliminating pilot lights and requiring cold water rinse options. The standards for central air-conditioners and furnaces were effective in 1992. The standards for refrigerators were effective in 1993; virtually no refrigerator models on the market in 1990 met the 1993 standards.

Appliances: One of the five major end-use categories in this report. This definition includes appliances and lights used in the home during the year, including those loaned to the householder for regular use. Appliances not currently being used are not counted unless they are temporarily out of working order and a repair person has been called or the appliance has been taken to a repair shop. Refrigerators are a separate end use. (See **End Use**.)

Authorization Form: The one-page form signed by respondents that gives their energy suppliers permission to release information about the energy used during a specified reporting period. The form contains the name of each energy supplier.

Automatic Set-Back or Clock Thermostat: A thermostat that can be set to turn the heating/cooling system off and on at predetermined times.

Average: The simple arithmetic average for a population; that is, the sum of all the values in a population divided by the size of the population. Population means are estimated by computing the weighted sum of the sample values, then dividing by the sum of the sample weights. (See **Weight**.)

Average Age of Appliances: Respondents were provided five categories to determine the age of selected appliances (central and room air-conditioners, first and second refrigerators, freezers, water heaters and their main heating system). The midpoint of each category was used to estimate an average age of the appliances. The midpoints for each age category were as follows:

Age Category	Midpoint
Less than 2 years	1
2 to 4 years	3
5 to 9 years	7
10 to 19 years	14.5
20 years or more	20

Backup Fuel: In a central heat pump system the fuel used in the furnace when the outdoor temperature drops below the level that is feasible to operate a heat pump. (See **Heat Pump**).

Basement: An enclosed space in which a person can walk upright under all or part of the building.

Bathroom: A full bathroom contains a sink with running water, a flush toilet, and a bathtub or shower. A half bathroom contains a toilet or bathtub or shower.

Bedroom: Room intended for sleeping, even if not presently used for sleeping. Number of bedrooms are those that would be listed as descriptive of the apartment or house if it were on the market for sale or rent. A one-room efficiency or studio apartment has no bedrooms.

Billing Period: The time between meter readings or fuel deliveries. 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.

Boiler: A type of space-heating equipment consisting of a vessel or tank where heat produced from the combustion of such fuels as natural gas, fuel oil, or coal is used to generate hot water or steam.

Btu (British thermal unit): A Btu is defined as the amount of energy required to increase the temperature of 1 pound of water by 1 degree Fahrenheit, at normal atmospheric pressure. Energy consumption is expressed in Btu in this report to allow for consumption comparisons among fuels that are measured in different units. (See **Metric Conversion Factors**.)

Btu Conversion Factors: The Btu conversion factors used in this report are as follows:

	<u>Btu equivalent</u>	<u>Unit</u>
Electricity (site)	3,412	kilowatthour
Electricity (primary)	10,338	kilowatthour ¹
Natural gas	1,027	cubic foot
Fuel Oil No.1	135,000	gallon
Kerosene	135,000	gallon
Fuel Oil No.2	138,690	gallon
LPG (propane)	91,330	gallon
Wood	20,000,000	cord

¹Average energy input of the generation process for fossil fuel utility plants in the United States for 1993. See Energy Information Administration, *Monthly Energy Review*, April 1995.

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 space-heating devices that are plugged into an electric socket or outlet are not considered built-in.

Cash and Carry: Kerosene, fuel oil, or bottled gas (tank or propane) purchased with cash, check, or credit card and taken home by the purchaser. The purchaser provides the container or pays for the container.

CDD: See **Cooling Degree-Days (CDD)**.

Ceiling Fan: Fans permanently installed on the ceiling used to ventilate a room.

Census Region and Division: A geographic area consisting of several States defined by the U.S. Department of Commerce, Bureau of the Census. (See the map in Appendix F.) The States are grouped into four regions and nine divisions.

Region	Division	States
Northeast	New England	Connecticut, Maine, Massachusetts, New Hampshire, Vermont, and Rhode Island
	Middle Atlantic	New Jersey, New York, and Pennsylvania
Midwest	East North Central	Illinois, Indiana, Michigan, Ohio, and Wisconsin
	West North Central	Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota
South	South Atlantic	Delaware, the District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia
	East South Central	Alabama, Kentucky, Mississippi, and Tennessee
	West South Central	Arkansas, Louisiana, Oklahoma, and Texas
West	Mountain	Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming
	Pacific	Alaska, California, Hawaii, Oregon, and Washington

Central Air-Conditioning: In the detailed tables, a category including households that use both room/wall air-conditioners and central air-conditioning. (See **Air-Conditioning Equipment**.)

Central City: Usually one or more legally incorporated cities within the Metropolitan Statistical Area (MSA) that is significantly large by itself or large relative to the largest city in the MSA. Additional criteria for being classified "central city" include having at least 75 jobs for each 100 employed residents and having at least 40 percent of the resident workers employed within the city limits. Every MSA has at least one central city, which is usually the largest city. Central cities are commonly regarded as relatively large communities with a denser population and a higher concentration of economic activities than the outlying or suburban areas of the MSA. Suburban are those parts of the MSA that are not designated as central city. In this report, the central city and suburban areas are called urban; in previous RECS reports, these components were referred to as metropolitan areas. (See **Metropolitan Statistical Area, Suburban, and Urban**.)

Central Warm-Air Furnace: A type of space-heating equipment where a central combustor or resistance unit generally using natural gas, fuel oil, or electricity, providing warm air through ducts leading to the various rooms. Heat pumps are not included in this category. A forced-air furnace is one in which a fan forces 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, thus completing the circulation cycle.

City: A classification based on respondent's judgment. (See **Urban/Rural Location**.)

Climate Zone: One of five climatically distinct areas, defined by long-term weather conditions affecting the heating and cooling loads in buildings. The zones were developed by the Energy Consumption Division from seven distinct climate categories originally identified by the American Institute of Architects (AIA) for the U.S. Department of Energy and the U.S. Department of Housing and Urban Development. The zones were determined according to the 30-year average (1951-1980) of the annual heating and cooling degree-days (base 65 degrees Fahrenheit). The zones are defined as follows:

Climate Zone	Average Annual Cooling Degree-Days	Average Annual Heating Degree-Days
1	Under 2,000	Over 7,000
2	Under 2,000	5,500 to 7,000
3	Under 2,000	4,000 to 5,499
4	Under 2,000	Under 4,000
5	2,000 or More	Under 4,000.

An individual household was assigned to a climate zone according to the 30-year average annual degree-days for an appropriate nearby weather station. (See **Cooling Degree-Days [CDD]**) and **Heating Degree-Days [HDD]**.)

Clothes Dryer: An appliance that dries laundry through the application of heat and rapid air movement. The hot air used is typically heated by electricity or gas (either natural gas or LPG).

Clothes Washer: An appliance for automatically cleaning home laundry. It has an opening on its top or its front offering access to the washer tub. An agitator, located within the tub, moves the articles to be cleaned through the wash water. The machine is powered by an electric motor connected to the tub and agitator via a transmission, clutches, and linkages. In front-loading machines, the articles are moved by a rotating tube rather than an agitator.

Coal: A combustible mineral substance (carbonized vegetable matter). In this report, the term includes its derivative, coke, which is formed by destructive distillation or imperfect combustion. Data on the use of coal were collected but consumption and expenditure data were not collected .

Conditional End-Use Intensity (CEUI): A measure of how intensely energy is used that allows comparisons across housing units and households by adjusting either the end-use consumption or expenditures for the effects of certain characteristics, such as floorspace, degree-days, or household members for households that use an energy source for a particular end use. In the case of space-heating intensity, only the heated floorspace and heating degree-days are used. The air-conditioning intensity uses only the cooled floorspace and cooling degree-days. The water-heating intensity adjusts consumption and expenditures for the effects of the number of household members on water-heating consumption.

Conditional Energy Intensity: A measure of how intensely energy is used that allows comparisons across housing units and households by adjusting either energy consumption or expenditures for the effects of certain characteristics, such as weather, size of unit, and number of household members for households that use a particular energy source. (See **Conditional End-Use Intensity** and **Intensity**.)

Condo Fee: In condominiums, the fee paid to the homeowners' association for maintenance, management, insurance, and, in some cases, utilities.

Condominium: An apartment or house owned in a project of similar units. The owner has his/her own deed and, most likely, his/her mortgage on the unit. The owner also holds a common or joint ownership on all common areas, such as hallways, entrances, and elevators. Ownership may cover single-family houses, including row houses and townhouses, as well as apartments.

Consumption: The amount of electricity or natural gas used by, or delivered to, a 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 actual level of fuel in the tank were not included in the RECS data collection.

Control Total: The number of elements in the population or a subset of the population. The sample weights for the observed elements in a survey are adjusted so that they add up to the control total. The value of a control total is not obtained from the survey; it is obtained from an outside source. In this report, the control totals are obtained from the Current Population Survey. (See Appendix A, "How the Survey was Conducted.")

Conversion Factors: See **Btu Conversion Factors** and **Metric Conversion Factors**.

Cooking Stove: A stove built for preparing food. In this survey, it may be used as the main heating equipment. (See **Heating Equipment**.)

Cooling Degree-Days (CDD): A measure of how hot a location was over a period of time, relative to a base temperature. In this report, the base temperature is 65 degrees Fahrenheit, and the period of time is one year. The cooling degree-days for a single day is the difference between that day's average temperature and the base temperature if the daily average is greater than the base; it is zero if the daily average temperature is less than or equal to the base temperature. The number of cooling degree-days for a longer period of time is the sum of the daily cooling degree-days for the days in that period. Annual cooling degrees-days averaged over 30 years from 1961 to 1990 are called Normal Cooling Degree-days. Cooling degree-days can also be calculated by using a base temperature other than 65 degrees. The computation is performed in an analogous manner. (See **Climate Zone**.)

Cord of Wood: An amount of wood measuring 4 feet by 4 feet by 8 feet, or 128 cubic feet.

Crawl Space: Space between the ground and the floor of a house in which a person cannot walk upright. An enclosed crawl space is one not accessible from the outside of the house (except by a door or window) because the walls of the crawl space protect it from the weather. A crawl space "open to the outside" is accessible from outside the house, even though it may be covered by a trellis or lathwork or some kind of brickwork that leaves space for circulation of air.

Cubic Foot (cf): As a natural gas measure, the volume of gas contained in a cube with an edge that is 1 foot long at standard temperature and pressure (60 degrees Fahrenheit and 14.73 pounds standard per square inch). (See **Btu Conversion Factors** and **Natural Gas**.)

Current Dollars: Unless otherwise noted, all dollar values presented in this report are expressed in the current dollars at the time of data collection. The dollar amounts are not directly comparable across time periods since they have not been adjusted for the effects of inflation. In contrast, real dollars are current dollars that have been adjusted for the effects of inflation.

Dishwasher: A built-in or portable appliance used for automatically cleaning dishware, utensils, and cutlery. The national appliance efficiency standards required that, by 1988, dishwashers be equipped with an option to dry without heat.

Electric Air-Conditioning Intensity: In this report, the ratio of end-use electric air-conditioning consumption or expenditures to square footage of cooled floorspace and cooling degree-days (CDD) (base 65 degrees Fahrenheit). Only

the CDD and square feet for households that have air-conditioning equipment are included in the ratio. The intensity provides a way of comparing different types of housing units and households by controlling for differences in housing unit size and weather conditions. The square footage of cooled floorspace is equal to the product of the total square footage times the ratio of the number of rooms that are cooled to the total number of rooms. If the entire housing unit is cooled, the cooled floorspace is the same as the total floorspace. The ratio is calculated on a weighted, aggregate basis.

Electric Pump for Well Water: A pump that forces the water from a well below ground level up into the water pipes that circulate through the house. When this pump is not working, there is a limited supply of running water in the house.

Electricity: Metered electric power delivered by a central utility company to a residence via power lines. Because there are no volumetric measures of electricity as with the fossil fuels, electricity is measured as the amount of power used at any instant (demand expressed in watts (W) or kilowatts (kW)) or as power used over a given time (consumption expressed in kWh). The heat equivalent for electricity is 3,412 Btu per kWh, but this is a derived form of energy and does not represent the amount of energy needed to generate the electricity and transmit it to the building. Generation and transmission requires about 3 times 3,412 Btu per kWh, or 11,620 Btu per kWh. Energy is used in preparing other fuels for consumption from their condition as mined and delivering them to a site for use, but these amounts of energy are relatively small compared to the Btu value of the fuel consumed. (See **Primary Electricity and Btu Conversion Factors**.)

Electricity Paid by Household: The household paid the electric utility company directly for all household uses of electricity (such as water heating, space heating, air-conditioning, cooking, lighting, and operating appliances.) Bills paid by a third party are not counted as paid by the household.

Eligible for Federal Assistance: Households are categorized as eligible for Federal energy assistance if their income is below the Federal standard. The Federal standard is 150 percent of the poverty line or 60 percent of statewide median income, whichever is the higher income. Individual States can set the standard at a lower level than the Federal one. (See **Poverty Line**.)

End Use: A function for which fuels (energy sources) are used in the household. Five major energy end-use categories were estimated: space heating, air-conditioning, water heating, refrigerators, and appliances. The amount of energy used for these end uses is estimated by means of a nonlinear regression technique, rather than by data that are actually measured. (See **Space Heating, Air-Conditioning, Water Heating, Refrigerators, and Appliances**.)

Energy Source: A type of energy or fuel used by the household. Electricity is included as a fuel. The energy sources identified for this report are electricity, natural gas, fuel oil, kerosene, liquefied petroleum gas (propane), wood, coal, and solar. The major fuels are electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG). (See **Electricity, Natural Gas, Fuel Oil, Kerosene, Liquefied Petroleum Gas, Wood, Coal, and Solar Energy**.)

Energy Supplier: A company that provides electricity, natural gas, fuel oil, kerosene, or LPG to the household. (See **Authorization Form** and Appendix A, "How the Survey Was Conducted.")

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.

Evaporative Cooler (Swamp Cooler): A type of cooling equipment using the evaporation of water to cool air. This type of equipment is commonly found in warm, dry climates. Evaporative cooling units do not cool air by use of a refrigeration unit, so for this report they are not considered air-conditioning equipment, and are listed with appliances.

Expenditures: Money spent for the energy used in, or delivered to, a housing unit during a given period of time. For this report, all expenditure statistics are presented on an annual basis for calendar year 1997. The total dollar amount includes State and local taxes but excludes merchandise, repairs, or special service charges. Electricity and natural gas expenditures are for the amount of those energy sources consumed. Fuel oil, kerosene, and LPG expenditures are

for the amount of fuel purchased, which may differ from the amount of fuel consumed. For households that do not pay their fuel supplier directly, the expenditures for fuels are estimated and included in the tables. (See **Consumption**.)

Expenditures as a Percentage of Income: The annual household energy expenditures divided by the household's annual income. The median percentage of income is the percentage spent on energy for the household, for the middle income value in the population 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.

Facsimile Machine (FAX): Equipment that transmits and receives printed material over telephone lines.

Fireplace: Usually a masonry unit which burns wood, is built into the wall of a house and has a permanent chimney. Fireplaces in mobile homes are included. Fireplaces may have glass doors or metal shields to cover the opening into the room. Included are fireplaces that use equipment fueled by natural gas or LPG. These gas fireplaces may or may not have a flue to the outside. 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.

Floor, Wall, or Pipeless Furnace: Space-heating equipment consisting of a ductless combustor or resistance unit, having 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.

Floorspace: The floor area of the housing unit that is enclosed from the weather. For this report, the following are included: basements, whether or not they contain finished space; finished and/or heated space in attics; and garages, if they have a wall in common with the house. Not included are: crawl spaces, even if they are enclosed from the weather; and sheds and other buildings that are not attached to the house. For this survey, floorspace was estimated using a regression equation developed with the 1993 RECS data. The 1997 RECS estimated square footage tends to be larger than the 1993 measured square footage.

Heated Floorspace: the area that is heated during most of the winter season as estimated by the respondent. 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.

Cooled Floorspace: the total floorspace times the percentage of rooms that are cooled over total rooms. This method for calculating cooled floorspace is different from the method used in *Housing Characteristics 1993* that used heated floorspace rather than total floorspace.

Freezer: A cabinet designed as a unit for storing food at temperatures of about 0 degrees Fahrenheit and having a refrigeration unit driven by an electric motor. This is a separate appliance, not part of the refrigerator and can be an upright model (vertical cabinet with the door opening outward) or a chest model (horizontal cabinet with the door opening upward).

Frost-Free: A freezer, either separate from or within a refrigerator, that automatically defrosts usually on 12- or 24-hour cycles.

Fuel: A type of energy or fuel used by the household. Electricity is included as a fuel. The fuels identified for this report are electricity, natural gas, fuel oil, kerosene, LPG (propane), wood, coal, and solar. The major fuels are electricity, natural gas, fuel oil, kerosene, and LPG. (See **Electricity, Natural Gas, Fuel Oil, Kerosene, Liquefied Petroleum Gas, Wood, Coal, and Solar Energy**.)

Fuel Oil: A liquid petroleum product less volatile than gasoline that is burned for space-heating or water-heating purposes. No. 1 distillate fuel oil is used mostly as a blending stock to assure that heavier grades of fuel flow under severe cold weather conditions. No. 2 fuel oil is the most common form of heating oil. 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. 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.

Fuel Oil Paid by Household: The household paid the supplier directly for all household uses of fuel oil or kerosene (such as space heating or water heating). Bills paid by a third party are not counted as paid by the household.

Furnace: Space-heating equipment consisting of an enclosed chamber where fuel is burned or electrical resistance is used to heat air directly, without using steam or hot water. The warm air is for heating, and is distributed throughout the house, typically by air ducts.

Furnace Fan: A fan that forces air through the ducts of a central warm-air furnace.

Garage: A space large enough to accommodate a car, with a door opening at least 6 feet wide and 7 feet high.

Gas Air-Conditioning: Cooling and dehumidifying the air in a building by a refrigeration unit using natural gas (either natural gas or LPG) to isolate the refrigerant. (See **Refrigeration Unit**.)

Gas Paid by Household: The household paid the utility company directly for all household uses of natural gas (such as water heating, space heating, air-conditioning, cooking, and operating appliances, including outdoor gas lights). Bills paid by a third party are not counted as being paid by the householder.

Group Quarters: Living arrangement for institutional groups containing 10 or more unrelated persons. Such quarters are excluded from the RECS. Group quarters are typically found in hospitals, nursing homes, military barracks, halfway houses, college dormitories, fraternity and sorority houses, convents, monasteries, shelters, jails, and correctional institutions. Group quarters may also be found in houses or apartments shared by 10 or more unrelated persons. Group quarters are often equipped with a dining area for residents. (See **Housing Unit**.)

HDD: See **Heating Degree-Days (HDD)**.

Heat Pump (Reverse Cycle System): A year-round heating and 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, all heat pumps are considered to be electric.

Heated Aquarium: A tank, usually made of glass, containing fish and holding 20 or more gallons of heated water. A 20-gallon tank measures approximately 30 inches by 2 inches by 12 inches.

Heated Floorspace (estimated): In this survey, the heated floorspace of the housing unit as estimated by the respondent. (See **Floorspace**.)

Heating Degree-Days (HDD): A measure of how cold a location was over a period of time, relative to a base temperature. In this report, the base temperature used is 65 degrees Fahrenheit and the period of time is one year. The heating degree-days for a single day is the difference between the base temperature and the day's average temperature if the daily average is less than the base, and zero if the daily average temperature is greater than or equal to the base temperature. The heating degree-days for a longer period of time is the sum of the daily heating degree-days for days in that period. Average daily temperature is the mean of the maximum and minimum temperature for a 24-hour period. Heating degree-days can also be calculated by using a base temperature other than 65 degrees. The computation is performed in an analogous manner. (See **Climate Zone**.)

Heating Equipment: The equipment used for heating ambient air in the housing unit, such as central warm-air furnace; heat pump; built-in electric units; steam or hot-water system; floor, wall or pipeless furnace; heating stove; room heater; fireplace; or portable heater. The main space-heating equipment is reported as such even if it was built for preparing food. (See: **Central Warm-Air Furnace; Heat Pump; Built-In Electric Units; Steam or Hot-Water**

System; Floor, Wall or Pipeless Furnace; Heating Stove Burning Wood, Coal, and Coke; and Room Heater Burning Gas, Oil, and Kerosene.)

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.

Hispanic Descent: The question, "Is the householder of Spanish or Hispanic origin or descent," as well as the question on "origin" was determined by the respondent without any assistance from the interviewer. The interviewer was trained to record the respondent's answer.

Hot-Deck Imputation: A statistical procedure for deriving a probable response to a questionnaire item for which a response is missing. To perform the procedure, an analyst sorts the households by variables related to the missing item. Thus, a series of sort categories are formed, which are internally homogeneous with respect to the sort variables. Within each category, households for which the questionnaire item is not missing are randomly selected to serve as "donors" to supply values for the missing item of "recipient" households. (See Appendix A, "How the Survey Was Conducted.")

Hot Tub: A water-filled wood, plastic, or ceramic container in which up to 12 people can lounge. Normally equipped with a heater that heats the water from 80 to 106 degrees Fahrenheit. It may also have jets to bubble the water. The water is not drained after each use. An average-size hot tub holds 200 to 400 gallons of water. All reported hot tubs were assumed to include an electric pump. Hot Tubs are also called Spas or Jacuzzis.

Household: A family, an individual, or a group of up to nine unrelated persons, occupying the same housing unit. "Occupy" means that the housing unit was the person's usual or permanent place of residence at the time of the first field contact. Household members include babies, lodgers, boarders, employed persons who live in the housing unit, and persons who usually live in the household but are away traveling or in a hospital. Not included as household members are: (1) persons who are normally members of the household but who were away from home as college students or members of the armed forces at the time of the interview; (2) persons temporarily visiting with the household if they have a place of residence elsewhere; (3) persons who take their meals with the household but usually lodge or sleep elsewhere; (4) domestic employees or other persons employed by the household who do not sleep in the same housing unit; (5) or former members of the household who have become inmates of correctional, penal, or mental institutions, homes for the aged or needy, nursing homes, hospitals, hospices, convents or monasteries, or other places in which residents may remain for long periods of time. By definition, in this report, the number of households is the same as the number of occupied housing units. (See **Primary Residence**.)

Household Income Category: The income grouping for the total combined income from all sources (before taxes and deductions) of all household members during the 12 months prior to the interview, regardless of whether they were living there at the time of the interview. Sources of income include the following: wages, salaries, tips, commissions, interest, dividends, rental income, Social Security or railroad retirement, pensions, food stamps, Aid to Families with Dependent Children, unemployment compensation, Supplemental Security Income, General Assistance and other public assistance.

Household Member: See **Household**.

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 Unit: A house, an apartment, a group of rooms, or a single room if it is either occupied or intended for occupancy as separate living quarters by a family, an individual, or a group of one to nine unrelated persons. Separate living quarters means the occupants (1) live and eat separately from other persons in the house or apartment and (2) have direct access from the outside of the building or through a common hall--that is, they can get to it without going through someone else's living quarters. Housing units do not include group quarters where 10 or more unrelated

persons live. Hotel and motel rooms are considered housing units if occupied as the usual or permanent place of residence. (See **Primary Residence, Group Quarters, Year-Round Units, Seasonal Units, and Migratory Units.**)

Housing Unit Record Sheet: A form (pink sheet) completed by interviewers for each housing unit assigned for contact. The type of housing unit is recorded, as well as information about each visit.

Intensity: This is a method used to make comparisons of how intensely energy is used across housing units, time, regions of the country, and/or fuels by adjusting either the energy consumption or expenditures, for the effects of various housing unit and/or household characteristics, such as size of the housing unit, climate, and number of household members. (See **Conditional End-Use Intensity, and Conditional Energy Intensity.**)

Jacuzzi: See **Hot Tub.**

Kerosene: A distilled product of oil or coal with the generic name kerosene, having properties similar to those of No. 1 fuel oil. It is sometimes sold under names of "range oil," "stove oil," or "coal oil."

Kerosene Paid by Household: The household paid the fuel supplier directly for all household uses of kerosene (such as water heating and space heating). Bills paid by a third party are not counted as paid by the household.

Kilowatthour (kWh): 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 and Btu Conversion Factors.**)

Laser Printer for Computer (not dot matrix): A computer printer that uses toner, a black powder, for the printer's ink and provides high quality printing.

Lighting: An electricity energy end use, sometimes reported separately, but more commonly combined with appliances end use in this report. Lighting is defined as the energy used to supply electricity to light bulbs inside and outside of the housing unit. All types of light bulbs are included: incandescent, fluorescent, compact fluorescent, halogen, and high-intensity-discharge (HID). (See **Appliances and End Use.**)

LIHEAP: See **Low-Income Home Energy Assistance Program.**

Liquefied Petroleum Gas (LPG): Any fuel gas, such as propane or butane, supplied to a residence in liquid form. It is usually delivered by tank trucks and stored near the residence in a tank or cylinder until used. Propane was the most common liquefied petroleum gas supplied to RECS households.

Low-Income Home Energy Assistance Program (LIHEAP): This program provides assistance to eligible low-income households in paying the costs for heating or cooling their housing unit. The States administer the program using funds provided by the Federal government.

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, operating appliances, and cooking (other than cooking on an outdoor grill, which is excluded). Bills paid by a third party are not counted as paid by the household.

Main: Used Most, as in "Main Heating Equipment," e.g., is the equipment used most for space heating.

Master-Metering: Measurement of electricity or natural gas consumption of several tenants or housing units using a single meter. That is, one meter measures the energy usage for several households collectively. RECS identifies households that pay their own fuel bills but does not specifically identify a building as "master metered."

Mean Indoor Temperature: The "usual" temperature inside the housing unit. If different sections of the house are kept at different temperatures, the reported temperature is for the section where the people are. A thermostat setting is accepted if the temperature is not known.

Metric Conversion Factors: Estimates are presented in customary U.S. units. Floorspace estimates may be converted to metric units by using this relationship: 1 square foot is approximately equal to .0929 square meters. Energy estimates may be converted to metric units by using this relationship: 1 Btu is approximately equal to 1,055 joules; 1 kWh equals 3,600,000 joules; and 278 kWh are approximately equal to 1 gigajoule.

Metropolitan: See **Urban**.

Metropolitan Statistical Area (MSA): As defined by the U.S. Office of Management and Budget in 1993: "a county or group of contiguous counties that contain (1) at least one city of 50,000 inhabitants or more, or (2) an urbanized area of at least 50,000 inhabitants and a total MSA population of at least 100,000 (75,000 in New England)." The contiguous counties are included in an MSA if, according to certain criteria, they are essentially metropolitan in character and are socially and economically integrated with the central city. In New England, MSAs consist of towns and cities, rather than counties.

Metropolitan Statistical Area Status: In the detailed tables, a category including housing units located in urban (central city and suburban) and rural areas as defined by the U.S. Office of Management and Budget in 1993. (See **Metropolitan Statistical Area, Urban, and Rural**.)

Microwave Oven: A household cooking appliance consisting of a compartment designed to cook or heat food by means of microwave energy. It may also have as additional features, browning coil and convection heating/cooking.

Migratory Units: Housing units intended for occupancy by migratory workers employed in farm work during the crop season. It is excluded from the RECS if it is not the primary residence for more than 6 months of the year. (See **Primary Residence**.)

Mobile Home: A housing unit built on a movable chassis and moved to the site. 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. A manufactured house assembled on site is a single-family housing unit, not a mobile home.

Modem: A device connecting a personal computer to a telephone line that permits communication with computers or other devices outside the housing unit.

More Than One May Apply: This phrase indicates overlapping categories in a row stub. A particular household may be represented in more than one line. In general, row stubs without this phrase are exclusive.

Multifamily (2 to 4 units): A unit in a building with two to four housing units--a structure that is divided into living quarters for two, three, or four families or households in which one household lives above another. This category also includes houses originally intended for occupancy by one family (or for some other use) that have since been converted to separate dwellings for two to four families. Typical arrangements in these types of living quarters are separate apartments downstairs and upstairs or one apartment on each of three or four floors.

Multifamily (5 or more units): A unit in a building with five or more housing units--a structure that contains living quarters for five or more households or families and in which one household lives above another.

Multistage Area Probability Sample: A sample design executed in stages with geographic "clusters" of sampling units selected at each stage. This procedure reduces survey expense while maintaining representative national coverage.

Natural Gas: Hydrocarbon gas (mostly methane) delivered as an energy source to individual buildings by pipelines from a central utility company. Natural gas does not refer to LPG. A few households were supplied by a privately-owned gas well.

Nonmetropolitan: See **Rural**.

Normal Degree-Days: Annual cooling or heating degree-days averaged over 30 years (from 1961 to 1990).

Occupied Housing Unit: A unit with someone living in it as his/her usual or permanent place of residence at the time of the interviewer's first visit.

Origin: The householder's primary racial background as determined by the respondent. For this question, as well as the Hispanic descent question, the interviewer just recorded the respondent's answer. The word "race" was not used in either the questionnaire or the instructions, "Which of the groups on this exhibit best describes the householder?" The groups of origin included: white, black or Afro-American, Native American, Alaskan native, Asian, and Pacific Islander.

Oven: An appliance which is an enclosed compartment supplied with heat and used for cooking food. Toaster ovens are not considered ovens. The range stove top or burners and the oven are considered two separate appliances, although they are often purchased as one appliance.

Owned/Rented: The relationship of a housing unit's occupants to the structure itself, not the land on which the structure is located. A household is classified as "owned" when the owner or co-owner is a household member and the housing unit is either fully paid for or mortgaged. A household is classified as "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.

Ownership: See **Owned/Rented**.

Pay for Electricity for Air-Conditioning: Household uses electricity for air-conditioning and pays directly to a utility company for that use.

Payment Method for Utilities: Method by which fuel suppliers or utility companies were paid for all electricity, natural gas, fuel oil, kerosene, or LPG 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 and that had 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 the rent were classified as "all included in rent." Some households were classified as "other method," if they did not fall into any of those three categories. These are households for which fuel bills were paid by a social service agency or a relative, and households that paid for some of their fuels used but paid for other fuels through another arrangement.

Personal Computer: Included as an appliance in RECS, a microcomputer for producing written, programmed, or coded material, playing games, or doing calculations. Lap-top and notebook computers are excluded.

Portable Electric Heater: A heater that uses electricity and that can be picked up and moved.

Portable Kerosene Heater: A heater that uses kerosene and that can be picked up and moved.

Poverty Line: Low-income classifications to which certain households are assigned. "Below 100 percent of poverty" encompasses a group of households with incomes below the poverty level as defined by the U.S. Bureau of the Census and the Office of Management and Budget. "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 poverty line varies with the number of family members in the household and the income of the entire family.

Primary Electricity: A measurement of electricity that includes the approximate amount of energy used to generate electricity. To approximate the adjusted amount of electricity, the site-value of the electricity is multiplied by a factor of three. This conversion factor of three is a rough approximation of the Btu value of raw fuels used to generate

electricity in a steam-generation power plant. In this report, electricity is represented as site energy. (See **Site Energy** and **Btu Conversion Factors**.)

Primary Residence: A housing unit in which a householder spends the largest part of the calendar year; and is the householder's usual or permanent place of residence. This would normally be a year-round housing unit. It would generally exclude migratory and seasonal units. However, if a seasonal unit happened to be occupied for half of the year by the householder, that unit would be considered the primary residence. (See **Housing Unit** and **Seasonal Unit**.)

Primary Sampling Unit (PSU): A sampling unit selected at the first stage in multistage area probability sampling. A PSU typically consists of one to several contiguous counties--for example, a metropolitan area with surrounding suburban counties. PSU's can be composed of one or more MSAs or can be composed of rural counties.

Propane: See **Liquefied Petroleum Gas**.

Public Housing: Housing units owned by a local housing authority or other local public agency, such as a housing and redevelopment authority or a housing development agency. These organizations receive subsidies from the Federal or State government, but the local agency owns the property. To live in such a project, one must apply to the local housing authority.

Quadrillion: The quantity 1,000,000,000,000,000 = (10^{15}) .

Race: See **Origin**.

Radiator: A heating unit that is usually exposed to view within the room or space to be heated and that transfers heat by radiation to objects within visible range and by conduction to the surrounding air, in turn, is circulated by natural convection. The unit is usually fueled by steam or hot water.

Range: The range burners or stove top and the oven are considered two separate appliances. Counted also with range tops are stand-alone "cook tops."

Refrigeration Unit: A unit used to produce cooling in refrigerators, freezers, and air-conditioning equipment. In a typical refrigeration unit, electricity powers a motor that runs a pump to compress a refrigerant to maintain proper pressure. (A substance that changes between liquid and gaseous forms under desirable temperature and pressure conditions.) Heat from the compressed liquid is removed and discharged from the unit, and the refrigerant evaporates when pressure is reduced. As it evaporates, it picks up heat and returns to the compressor to repeat the cycle.

A few refrigeration units use gas (either natural gas or LPG) in an absorption process that does not use a compressor. The gas is burned to heat a chemical solution in which the refrigerant has been absorbed. Heating drives off the refrigerant, which is later condensed and evaporates by released pressure and, in turn, picks up heat. The evaporated refrigerant is then changed back into the chemical solution and the heat is removed from the solution and discharged as waste heat; then the process repeats itself.

Refrigerators: A cabinet designed for cooling food at temperatures above 32 degrees Fahrenheit. Most also have a second compartment for freezing and storing frozen foods at temperatures of 8 degrees Fahrenheit or below.

Regression Imputation: A statistical technique for predicting the value of a numerical variable that is missing. The technique involves developing a regression equation that predicts the value of the missing variable based upon variables that are not missing or have already been imputed. A random error is usually added to the predicted value. The sum of the predicted value and the random error are used as the imputed value for the missing variable.

Renewable Energy: Energy obtained from sources that are essentially inexhaustible (unlike, for example, the fossil fuels, of which there is a finite supply). Renewable sources of energy include wood, waste, geothermal, wind, photovoltaic cells, and solar thermal energy.

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**.)

Residential Building: A structure used primarily as a dwelling for one or more households.

Residential Energy Consumption Survey (RECS): A national multistage probability sample survey conducted by the Energy Consumption Division of the Energy Information Administration. The RECS provides baseline information on how U.S. households use energy.

Room-Air Conditioner: Electric-powered air-conditioning units that typically fit into the window or wall and are designed to cool only one room. (See **Air-Conditioning Equipment**.)

Room Heater Burning Gas, Oil, and Kerosene: Any of the following space-heating equipment: circulating heaters, convectors, radiant gas heaters, space heaters, or other nonportable room heaters that may or may not be connected to a flue, vent, or chimney.

Rooms: Subdivisions of a housing 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. "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. (See **Bathroom** and **Bedroom**.)

RSE Column Factor: An adjustment factor that appears above each column of the detailed tables and is used to compute RSE's. The column factor is equal to the geometric mean of the RSE's in a particular column of the main tables. (See **RSE or Relative Standard Error**, and **RSE Row Factor**)

RSE or Relative Standard Error: A measure of the reliability or precision of a survey statistic on a percentage scale. Variability occurs in survey statistics because different samples that could be drawn would each produce different values for the survey statistics. The RSE is defined as the standard error (the square root of the variance) of a survey estimate, divided by the survey estimate and multiplied by 100 (expressed as a percent of the estimate). For example, an RSE of 10 percent means that the standard error is one-tenth as large as the survey estimate. The RSE is also known as the coefficient of variation. For a survey estimate in a particular row and column of a table (that is, a particular "cell"), the approximate RSE is obtained by multiplying the RSE row factor by the RSE column factor for that cell.

RSE Row Factor: An adjustment factor that appears to the right of each row of the detailed tables and is 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. (See **RSE Column Factor** and **RSE or Relative Standard Error**.)

Rural: Households not located within MSA's as defined by the U.S. Office of Management and Budget in 1993. In the detailed tables, rural is included in the Metropolitan Statistical Area Status category, which is based on the definition provided by the U.S. Office of Management and Budget for 1997 and rural is included in the Urban/Rural

Location category, which is based on the respondent's judgment. (See **Metropolitan Statistical Area, Urban/Rural Location** and **Metropolitan Statistical Area Status**.)

Seasonal Energy Efficiency Ratio (SEER): Ratio of the cooling output divided by the power consumption. It is the Btu of cooling output during its normal annual usage divided by the total electric energy input in watt-hours during the same period. This is a measure of the cooling performance for rating central air conditioners and central heat pumps. The appliance standards require a minimum SEER of 10 for split-system central air-conditioners and for split-system central heat pumps. These new standards took effect in 1992. The average heat pump or central air conditioner sold in 1986 had a SEER of about 9.

Seasonal Units: Housing units intended for occupancy at only certain seasons of the year. Included are units intended only for recreational use, such as beach cottages and hunting cabins. Seasonal units are not usually included in the RECS occupied housing unit count unless they are occupied for more than half of the year. (See **Primary Residence**.)

Second Home: By definition, a second home is not the primary residence of a householder and is not included in the RECS occupied housing unit count. (See **Housing Unit, Primary Residence, and Seasonal Unit**.)

Secondary Heating Equipment: Space-heating equipment used less often than the main space-heating equipment. (See **Main**.)

Secondary Heating Fuel: Fuels used in secondary space-heating equipment.

Setback Temperature Behavior: These data were derived from differences in the temperature settings reported by respondents for their daytime temperature when someone is at home, daytime temperature when no one is at home, and the temperature for sleeping hours (assumed to be nighttime). For example, if a respondent's reported temperature setting was lower when no one was at home than when someone was at home, respondents were assumed to be "setting" back the temperature.

Single-Family: A housing unit, detached or attached, that provides living space for one household or family. 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 extending 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. Townhouses, rowhouses, and duplexes are considered single-family attached housing units, as long as there is no household living above another one within the walls extending from the basement to the roof to separate the units.

Site Energy: The Btu value of energy at the point it enters the home, sometimes referred to as "delivered" energy. (See **Btu Conversion Factors** and **Primary Electricity**.)

Solar Energy: The radiant energy of the sun which can be converted into other forms of energy, such as heat or electricity.

Spa: See **Hot Tub**.

Space Heating: One of the five major end-use categories in this report. The use of energy to generate heat in housing units using space-heating equipment. The equipment could be the main or secondary space-heating equipment. It does not include the use of energy to operate appliances (such as lights and televisions) that give off heat as a byproduct. (See **End Use** and **Heating Equipment**.)

Space-Heating Equipment: See **Heating Equipment**.

Split System: When applied to electric air-conditioning equipment, it means a two-part system—an indoor unit and an outdoor unit. The indoor unit is an evaporator coil mounted in the indoor-circulating air system, and the outdoor unit is an air-cooled condensing unit containing an electric motor-driven compressor and condenser fan and fan motor.

Square Feet: See **Floorspace**.

Standard Price: Average price data were obtained from other EIA surveys and used in the end-use regression equations for natural gas and electricity. These average prices were attached to each 1997 RECS household that used the respective fuel.

Steam or Hot-Water System: Either of two types of a central space-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.

Stock: The total number of household appliances or housing units in use at a given time, including newly purchased ones and those in use for some time.

Stove: See **Heating Stove Burning Wood, Coal and Coke**, and **Cooking Stove**.

Structure: The type of building in which the housing unit was located. The four categories include single-family, multifamily (2-4 units), multifamily (5 or more units), and mobile home. (See **Single Family**, **Multifamily (2 to 4 units)**, **Multifamily (5 or more units)**, and **Mobile Home**.)

Submetered Data: End-use consumption data obtained for individual appliances from recording devices attached to the appliance to measure the amount of energy it consumed.

Suburban: Those parts of the MSA that are not designated as a central city. In the detailed tables under the urban/rural location category, the central city and suburban areas are called urban; and, under the metropolitan status category, these components are referred to as metropolitan areas. (See **Central City**, **Metropolitan Statistical Area**, and **Urban**.)

Suburbs: Classification based on respondent's judgement. (See **Urban/Rural Location**.)

Swimming Pool Heater: Optional heating equipment that heats the pool water to an acceptable level of comfort, usually 80 to 85 degrees Fahrenheit.

Swimming Pool Pump: An electric pump for filtering and circulating the water.

Telecommuting: Instead of commuting to a place of employment, the household member works at home using a personal computer to connect via modem to the employment site.

Temperature: Respondents' reported estimates of the indoor temperature. If different sections of the house are kept at different temperatures, the temperature requested is for the part of the house being used. If the heat was turned off upstairs during the day because the family was downstairs, the downstairs temperature was used. If the respondent does not know the temperature, the thermostat setting was used.

Thermostat: A device that adjusts the amount of heating and cooling produced and/or distributed by automatically responding to the temperature in the environment.

30-Year Average Degree-Days: Annual cooling or heating degree-days averaged over 30 years (from 1961 to 1990). The 30-year average is considered "normal weather" for a region. (See **Cooling Degree-Days** and **Heating Degree-Days**.)

Toaster Oven: Portable table-top appliance used for heating or broiling food. It is not included in the "oven" category.

Town: Classification based on respondent's judgement. (See **Urban/Rural Location**.)

Transported Gas: Natural gas physically delivered to a housing unit by a utility but not bought from that utility. A separate transaction is made to purchase the volume of gas and the utility is paid for the use of its pipeline to deliver the gas.

Urban: Refers to a group of housing units located within the MSA and is composed of a central city and suburban areas as defined by the U.S. Office of Management and Budget in 1997. (See **Central City, Metropolitan Statistical Area, and Suburban**.)

Urban/Rural Location: In the detailed tables, a category based on the respondent's judgment. Respondents classified their households as being located in a city, town, the suburbs, or rural/open country.

Utilities Paid by Household: Householder directly pays an energy supplier for all uses of a fuel or fuel types used.

Vacant Housing Unit: A housing unit not occupied when the first RECS field contact was made. An occupied seasonal or migratory housing unit is classified as vacant at the time of the first contact if all of its occupants had a usual place of residence elsewhere.

Vehicles: For this survey, motorized vehicles used by U.S. households for personal transportation. Excluded are motorcycles, mopeds, large trucks, and buses. Included are automobiles, station wagons, passenger vans, cargo vans, motor homes, pickup trucks, and jeeps or similar sports utility vehicles. To be included, vehicles must be: (1) owned by members of the household, or (2) company cars not owned by household members but regularly available to household members for their personal use and ordinarily kept at home, or (3) rented or leased for 1 month or more.

Water-Bed Heater: An appliance that uses an electric resistance coil to maintain the temperature of the water in a water bed at a comfortable level.

Water Heated by a Space-Heating System: Furnaces that provide hot water as well as heat to the home. The water is heated by a coil that is part of the heating system. There is not a separate hot water tank for these systems.

Water Heater: An automatically controlled, thermally insulated vessel designed for heating water and storing heated water at temperatures less than 180 degrees Fahrenheit .

Water Heater Size: Respondents were asked the size of their water heater tank. Three categories were provided: small (30 gallons or less), Medium (31 to 49 gallons), and Large (50 gallons or more). Households were not asked this question if they shared a water heater with other housing units. (See **Water Heated by a Space-Heating System**.)

Water Heating: One of the five major end-use categories in this report. The use of energy to heat water for hot running water, as well as the use of energy to heat water on stoves and in auxiliary water-heating equipment for bathing, cleaning, and other noncooking applications of hot water. This category does not include energy used to heat water for (1) cooking , (2) hot drinks, and (3) a swimming pool. These are included in the appliance end-use category. (See **End Use**.)

Water-Heating Fuel: The fuel used to heat water for washing or bathing. 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.

Water-Heating Intensity: The amount of energy used per household member to heat water. (See **Water Heating**.)

Weight: The number of U.S. households that a particular sample unit represents. The estimate of the number of households with a certain characteristic (such as the use of electricity as the main space-heating fuel) equals the sum of the weights over the set of households with the characteristics.

Well Pump: See **Electric Pump for Well Water.**

Windows: Openings in the housing unit envelope that contains framed glass. Generally, each window that opens separately is counted as one window. Double-hung slider windows count as one window. Panes of glass in a large window are not counted separately unless they open separately. Not counted are windows in unheated spaces, such as a garage, or unheated basement and windows (glass panels) in doors.

Wood: A fuel in the form of wood logs, chips, or wood products that are burned for their heat or aesthetic value.

Wood Consumption: The amount of wood burned in a fireplace, stove, or furnace in the household at any time during the preceding 12 months. A cord of wood measures 4 feet by 4 feet by 8 feet and is approximately 128 cubic feet. To help respondents accurately report the amount of wood they burned, respondents were shown a drawing of a person, as a point of reference, standing beside 1-, 5-, and 10-cord wood piles.

Wood Conversion to Btu: An imprecise procedure for converting cords of wood into a Btu equivalent. Besides errors of memory inherent in the task of adding up the use of wood over a 12-month period, the estimates are subject to problems in the definition and the perception of a cord. 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). 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.) Also, 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. (See **Btu Conversion Factors.**)

Year of Construction: The year the structure was originally completed or the year any part of the structure was first occupied. For mobile homes, year of construction is the model year.

Year-Round Units: Housing units occupied or intended for occupancy at any time during the year. (See **Housing Unit.**)